ATTACHMENT D

PROCESS INFORMATION

[270.A ((270.15) (270.16))]

SECTION D

PROCESS INFORMATION

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D PROCESS INFORMATION

This section provides a detailed description of each regulated process unit at the Clean Harbors facility. The waste storage and process units include the following:

Container Storage and Processing

CSA I
CSA II
CSA IV
CSA V
CSA VI
CSA VII
Roll off Bin Area
Four Work Stations

Tank Storage and Treatment

Table D-1 lists tanks for the tank farm. The table also indicates the regulatory status for each tank.

Non-RCRA Regulated Process and Support Units

Tank Farm (See Table D-1 for non-regulated units)
Tanker loading/unloading area
Loading Dock
Staging Area

D.1 CONTAINERS

D.1.1 Containers With Free Liquids

The facility receives, stores, and/or bulks containerized liquid wastes prior to transfer off site. Liquid wastes consolidated or bulked at the site are transported to an off-site facility for final treatment and/or disposal. RCRA bulk containers with free liquids may be handled at CSA I, CSA II, or at the work stations. Any area can store non-RCRA materials, which includes household hazardous wastes, as long as all the materials stored in the same area are compatible. Any free liquids stored CSA IV, CSA V, CSA VI, CSA VII, or the roll off storage area will be containerized within a lab pack or other manufactured secondary containment vessel, with the outer container providing the required secondary containment for the waste. Non-RCRA materials may be stored anywhere on the property so long as they do not impede egress or are not incompatible with other materials that are stored in the storage unit.

During sample verification, a sample rod is extended into the container. When the sample is withdrawn and the sample placed into a sample container it is visually inspected for liquids. The visual inspection is recorded on the receiving documentation. Further analysis such as the Paint Filter Test, as identified in Section C of the application, will also be performed if there is any question of free liquid presence. Any free liquids are noted at this time.

D.1.1.a. Containers Without Free Liquids

Containers without free liquids can be stored in CSA I, II, IV, V, VI, VII, work stations, tank farm and the roll off area. Containers are determined to be without free liquids during the waste identification and verification procedures described in Section C. Obvious solids such as powders and debris are examples of wastes that can be visually determined to be absent of free liquids. The person collecting the verification samples notes at the time of collection, the presence of free liquids and once the sample is in the laboratory it is again examined for the presence of liquids. This information is recorded on the receiving documentation and kept as part of the operating record. Containers of waste that cannot be determined visually to be without free liquids may be tested using the paint filter test prior to storage. Semi-solids and sludges are examples of wastes that may be tested or managed as liquids. Lab packs, because they are inner containers packed with absorbent into outer shipping containers, provide their own "secondary containment" systems and are considered to be without free liquids as criteria for which storage area to place them in. Overpack containers without any free liquids can be placed in any of the containment areas.

Containers will always be closed during storage except when it is necessary to take samples or add or remove waste.

D.1.1.1 Description of Containers

All containers containing hazardous waste meet the United Nations Performance Oriented Packaging Standards (POPS) and are the approved packaging standards by the U.S. Department of Transportation (DOT) for hazardous wastes. Currently, typical container sizes used for lab packs include 5- to 85-gallon open head steel, fiber or plastic containers. The majority of containers shipped to the facility are 55-gallon steel or plastic containers. Although these are the most common containers, any DOT approved containers may be accepted.

Contents of lab packs designated for transfer are placed into the drum types listed above. Liquid wastes from RCRA lab packs are typically bulked into compatible closed steel or plastic DOT approved containers. Individual containers that comprise lab pack wastes can be repackaged into open head, steel, plastic or fiber DOT approved containers with absorbent. Also, solid lab pack materials may be consolidated into a transfer vessel that is emptied into a rolloff container. The transfer vessels will be emptied of RCRA waste at the end of each operating day. Lab packs contain no more than 40% waste of the rated capacity of the outer container, thus a 55-gallon lab pack may have up to 22-gallons of waste. When calculating 55-gallon equivalents, a 55-gallon lab pack will only take up 22-gallons on RCRA storage volumes.

D.1.1.2 Container Management Practices

Containers are inspected upon receipt to evaluate their condition and to insure proper labels are attached. In the interest of public safety and if the waste can be safely handled by facility personnel, containers that exhibit signs of severe corrosion, leakage, or imminent failure due to apparent structural defects, will be repackaged rather than rejecting the container back to the generator to correct the situation. Any containers used will be made of or lined with a material, which will not react with, and is otherwise compatible with, the hazardous waste to be stored, so that the ability of the container to contain the waste is not impaired. Leaking containers take priority over all operations and are corrected upon discovery. The containers holding hazardous waste are always closed during storage, except when it is necessary to add or remove waste. The containers will not be opened, handled or stored in a manner which may rupture the container or cause it to leak.

Containers are unloaded from the transport vehicles and transported by forklifts or hand conveyance equipment from the loading dock to the receiving area of CSA II, or the work stations, then to a container storage area containing compatible wastes. RCRA receiving or sample verification collection, as per the Waste Analysis Plan in Section C of this Application, can occur in CSA II or the work stations. The Operations Manager or his designee is responsible for directing placement and storage of incoming wastes.

The chemist or operations manager reviews the manifests and profiles of waste coming into the facility prior to unloading any vehicles. Even though all wastes are approved prior to entering the facility, employees have various reference materials available to research any issues on proper handling of the waste. Commercial reference manuals such as the Merck Index, Hawley's Condensed Chemical Dictionary, NIOSH Handbook, manufacturer's specification sheets, and or Material Safety Data Sheets are available for review. The review may indicate that a condition of the waste may preclude sampling, e.g., highly odiferous or highly toxic or the findings may be used to determine the compatibility with other wastes on site and a proper place to store the waste.

After sample verification analysis, wastes may be further segregated in storage areas, e.g., corrosives are further segregated into acids and bases for separate storage areas. Smaller storage areas, such as the work stations may completely change wastes types stored over time based on the wastes received at the facility.

Containers are visually inspected each business day for signs of leaks or deterioration of the container as a part of the facility's daily inspection program. The markings on the containers, the pallets, the secondary containment flooring are also inspected for inconsistencies or issues that would create a problem with the storage of the container. Inspections are recorded electronically or on preprinted forms with any issues so described. The forms also have available space to describe the resolution and the date the issue was resolved. Inspection procedures for containers are explained in more detail in Section F.2.2.1.

All containers arrive at the facility by truck and are loaded onto each truck by DOT load and segregation standards for chemical compatibility. The facility uses the segregation or compatibility designations as the primary means of separation of wastes at the facility. Appendix V of Part 264 is also used as a guide to indicate the need for special precautions when managing potentially incompatible wastes. The segregation tables are designed around the physical characteristics and properties of the hazardous material and the potential reaction that may occur if substances should mix. The facility stores wastes in separate storage areas based on the physical characteristics of each waste and the compatibility of wastes if two different wastes should mix. The facility regards the mixture to be compatible if the resulting mixture does not create a reaction that liberates heat, gasses, spontaneously ignites, creates a violent reaction, or creates vapors immediately dangerous to life and health.

Containerized wastes, bearing waste codes F020, F021, F022, F023, F026, and F027, will be stored in CSA II or the Work Stations, covered secondary containment areas, with the containers placed upon manufactured secondary containment pallets meeting the containment capacity as defined by 40 CFR 264.175(b).

All water reactive wastes are offsite generated wastes that have been transported to the facility in DOT approved water proof containers. The City of Phoenix Fire Department recognizes that these containers are primarily waterproof lab pack containers and granted an appeal to store these wastes in storage areas where water may be present. The facility stores water reactive wastes in the work stations or in manufactured covered weather resistant secondary containment structures meeting the secondary containment requirements of 40 CFR 264.175 in CSA IV, VI, or VII. Bar code labels are affixed to each container manifested to the site and site generated containers to identify the container and its contents. The labels contain a unique identification number, the date the container arrived at the site, and other data used to process the container while on site. The unique tracking number is only used once within the Clean Harbors database system. The unique number integrated into the bar code label allows the container to be "scanned" using a laser reader to identifying the location of the container stored in the facility, when it is processed, consolidated or shipped off site. The unique number can also be used to identify the associated profile, conformance testing results, and inbound and outbound manifests. This information is stored in the computer database, which preserves the data for the facility operating record. The information can be retrieved when needed.

All containers shipped from the facility must meet all applicable DOT and ADOT regulations. Containers will be over-packed or transferred to an acceptable DOT container if the primary container does not appear to meet DOT standards prior to shipping off-site.

D.1.1.2.1 Container Storage Areas

The layout of the facility (Figure B-1) includes Container Storage Areas (CSA) I, II, IV, V, VI, and VII. All container storage areas use poured concrete floors to store containerized waste upon. CSA I and II are pre-engineered metal buildings located at the southwest portion of the facility. The container storage areas are coated with a chemically resistant sealant to prevent hazardous waste and recyclable material from reacting with and/or penetrating the concrete. The CSA's are constructed to comply with National Fire Protection Association (NFPA) buffer zone requirements between types of wastes.

CSA I is used to store acids and acid compatible wastes. Storage of containers in CSA I will be limited to a total of 36,520 gallons in any approved combination of DOT containers. CSA I is divided in half with a high ridge along the central main aisle, 8 feet minimum width, for separation between each half of the storage area. If any leaks or spills should occur, the sloped floor will keep the free liquid on its half of the storage area. CSA I is protected with a sprinkler water system if a fire should ignite.

CSA II is used for the storage of flammable liquids, compatible materials, and sampling for waste conformance or fingerprinting. CSA II's containment areas are divided by ridges and sloped floor sections, into three different containment areas, to separate incompatibles. A minimum 8 feet aisle space will be maintained between the different containment areas. CSA II storage area will contain a maximum storage capacity of 66,880 gallons. After fingerprinting, the drums will be moved to an appropriate storage area or work station for processing. The transfer aisle on the west side of CSA II may be used to stage up to 100 55-gallon equivalents of waste. The waste will be staged meeting the requirements of DOT segregation requirements. If there is sufficient containment and aisle space, the drums may remain in the transfer aisle after operating hours. CSA II is protected with a foam fire suppression system that initiates automatically when the heat of a fire is detected.

CSA IV is located on the east side of the tank farm. Containers of compatible RCRA solids and lab packs may be stored here. A rolled berm at the north end of CSA IV prevents run-on of liquids and the storage surface of CSA IV slopes to the south. The containers are elevated on pallets to protect from contact with accumulated liquids. Storage of containers will be limited to a total of 23,760 gallons in any approved combination of DOT containers, based on the spatial requirements for double stacked 55-gallon containers.

CSA V is located along the northern edge of the facility, north of the tank farm. Containers of RCRA solids and lab packs may be stored here. Since this area is within 50 feet of the property line, no RCRA ignitable materials will be stored here. The site curbing on the northern boundary of the facility prevents run-on into CSA V while the surface of CSA V slopes to the east preventing containers placed on pallets from contact with accumulated liquid. CSA V may hold a maximum of 124,960 gallons of containers (75,000 gallons maximum permitted for the facility), based on the spatial requirements for double stacked 55-gallon containers.

CSA VI and CSA VII are located on the northern edge of the tank farm. Containers of RCRA bulk solids and RCRA lab packs along with non-RCRA waste may be stored here. CSA VI and VII have rolled berms surrounding each area and the storage area surfaces are level. RCRA regulated containers will be placed on pallets that are higher than the deepest accumulated precipitation thereby keeping containers from contacting standing liquid. CSA VI may hold a maximum of 11,000 gallons of containers, while CSA VII may hold a maximum of 15,400 gallons of containers, both capacities based on the spatial requirements for double stacked 55-gallon containers.

Containers may be double stacked to a maximum height of the equivalent of double-stacked 85-gallon overpacks. A container row is nominally four feet wide with a minimum two foot aisle space maintained between adjacent rows of RCRA regulated containers to allow easy inspection of each container.

The primary means of separating incompatibles is physical separation. CSA I and CSA II have at a least the minimum secondary containment required by 264.A (264.175(b)) based on the volume of double stacked 55 gallon containers capable of being stored in that area. In controlling the volume of waste stored in a particular area, the RCRA waste inventory will be based upon the maximum volume of waste that each container can contain in respect to the purpose of the container, such as over-pack or lab pack containers. An 85-gallon over-pack will be counted as having 55-gallons of waste because that is the largest container that can be over-packed. A 55-gallon RCRA bulk drum will be counted as 55-gallons. Bulk RCRA containers of other capacities will use the maximum design capacity for inventory purposes. Lab packs will count as 40% of the container volume since that is the maximum amount of waste they can hold. Containers will meet the stacking requirements as stated for the existing container storage building. Small volumes of incompatible waste may be segregated from other waste with the use of portable containment systems that can hold a volume equivalent greater than the volume of the largest container or 10% of the volume of all the containers captured by the containment system. Any leaks from containers will be removed from the secondary containment in a timely manner. Therefore, co-mingling of incompatible liquids will be prevented through physical separation and operational procedures.

The combined capacity of all storage areas throughout the facility is greater than the amount of RCRA container storage allowed on the Part A Application. The maximum amount of RCRA containerized wastes throughout the facility is limited to 75,000 gallons, equivalent to 1363 55-gallon containers in any combination of the designated storage areas.

D.1.1.2.2 Rolloff Bin Area

The Rolloff Bin Area located east of the Tank Farm will be used to store roll off containers containing RCRA regulated/and non-RCRA regulated waste. The common container sizes are 15 to 40 cubic yards. However, other bulk solid or lab pack containers may be stored in this area. Wastes containing free liquids are not allowed to be stored in roll-off bins. The area is capable of holding a maximum of twelve 40 cubic yard bins (97,000 gallons capacity; 75,000 gallons maximum permitted for the facility). In addition to storing incoming waste material, this area may be used to consolidate or bulk store wastes that are solid and bulked on-site prior to shipment. Before leaving the facility all material stored in rolloff bins will meet DOT and ADOT container requirements for transportation.

Roll off bins are marked and labeled in the same manner as smaller containers. The bins are used as the primary DOT transport container for bulk solids. The bins remain closed and are covered or otherwise topped while in storage to prevent the entrance of precipitation. The tops will only be opened to add or remove waste and then closed. Rolled berms surrounding the storage area create containment for the area in the unlikely event that free liquids leak from a rolloff. Absorbents may be used if necessary to control any free liquid within a container, such as when rain water contaminates a rolloff container or a filtercake is delivered with excess water.

D.1.1.2.3 Work Stations

Historically, containers of RCRA regulated and non-RCRA regulated materials have been handled many times before they are either fully emptied or transferred off-site. Container handling generally consists of moving containers in and out of storage via a forklift, as well as the opening and closing of the containers. In order to reduce the number of times containers are handled, four (4) “Work Stations” were constructed at the facility. These stations facilitate efficient unloading, sampling, emptying, bulking, elementary neutralization, or other disposition of the contents.

The utilization of each work station varies daily depending on the type of waste to be processed.

The flexibility of the work stations enables each station to be utilized either independently or together with other stations in a number of possible ways:

1) Staging and storage of up to 2750 gallons (50 55-gallon containers) in each station. The staging can be for initial verification sampling and identification or outbound loads.

2) Separate storage areas for wastes incompatible with other wastes at the facility. This would include wastes such as oxidizers, water reactives, or waste codes F020, F021, F022, F023, F026 and F027.

3) Pumping liquid drum contents from containers of compatible material into larger storage tanks or directly into a tanker.

4) Lifting by hoist, forklift or by other methods and decanting of the liquid phases of drums into other drums or larger containers.

5) Providing a safe, isolated area for the opening, emptying, and disposition of lab pack contents for recycling or disposal. This will include the pour off of compatible, similar contents of the smaller containers into larger containers.

6) Opening of drums, boxes, pails, or other containers of solid hazardous wastes. Compatible wastes, sludges, or other solids will then be bulked into larger containers for eventual transfer to rolloff boxes or other bulk-solids shipping containers or vehicles.

7) Opening, emptying, consolidating and bulking containers of compatible materials, such as paints, solvents, or cleansers, of RCRA-exempt household hazardous waste.

8) Cleaning, scraping or otherwise "emptying" containers.

9) Lab packing or similar repackaging into DOT approved shipping containers of wastes generated on-site for shipment.

10) Neutralizing RCRA corrosive liquids with only a D002 code by consolidating small containers of acids and bases in a drum together (unregulated process per 264.1 (g)(6)). Non-RCRA materials may be consolidated in the same drum if compatible.

11) Venting noble or atmospheric gases from cylinders.

Crew members will be assigned separate duties within the work stations. These duties will include: labeling new consolidation containers, drawing samples for confirmation with profiles, and operating bulk pumping equipment or forklifts to move material toward its final in-plant destination.

Each work station will be set up with a wide variety of equipment to make each operation more efficiently. The equipment included within the work stations may include the following:

- a hose, for emptying of corrosive, flammable, or other liquids from drums to tanks or other (bulk) containers.

- compressed air outlets and hoses for the operation of a variety of air-powered pumps or tools which may include drum deheaders, powered bung openers, sparkless chisels or scrapers, and related appurtenances.

- a hand-operated, swiveled hoist (500 lb. or greater).

- a manifold and outlets for supplying breathing air, for up to 6 persons per station. Air is supplied from a breathable air compressor located north of the work stations or an equivalent source of breathing air.

- A workbench table for securing and holding containers while processing.

Each Work Station has intrinsically safe electrical outlets and lighting and heat activated sprinkler fire protection. An eyewash and dousing shower unit is located at the south end of the work stations.

D.1.1.2.4 Management of Empty Containers

Empty containers (85-gallons or less) are stored at the facility until sufficient numbers are present for efficient processing and shipment. These containers are RCRA empty and are sent to an off-site reclamation company or to an appropriate permitted disposal facility or if clean and in like new condition, may be reused for shipping waste off-site for final disposal. All waste that can be removed from a container will be removed at the work stations or within one of the other drum storage areas through pumping, pouring, scraping, or aspirating. Less than one inch of residue and no more than three percent by weight of the total capacity of each container are allowed to remain in order for a container to be considered empty.

Containers will be emptied by several methods depending upon the consistency of the waste and the size of the container. Containers holding liquid or liquid with low solids content will be transferred to a tank using a self priming pump. This transfer is enhanced by tipping the container on edge near the end of the pumping process. Liquids from containers that contain liquid on top of solid/semi-solid materials are pumped through a small diameter pipe sufficiently long enough to reach the bottom of the container. The solids are then removed through pouring or scraping, using shovels or scrapers. Closed top containers will be deheaded if sufficient material cannot be removed by pumping or pouring methods. Containers are tipped if necessary to remove contents. Small containers are emptied into a larger container for more efficient transfer via pumping.

Any containers which held acutely hazardous waste are triple rinsed with a suitable solvent capable of removing the material, or the drum will be disposed of as a regulated waste. Rinsate is bulked in an appropriate container or tank and transported to an off-site treatment or disposal facility. Metal or plastic from empty RCRA containers may be collected and stored in drums or bins, or sent as is to a scrap metal facility, or to an appropriate permitted disposal facility such as an incinerator, landfill or fuel blender.

D.1.1.3 Secondary Containment System Design and Operation

The facility is comprised of several containment areas for the storage of waste. All of these areas are constructed of concrete. Each area is delineated by rolled curbs, sloped floors, berms or walls providing containment for the area. Construction Drawings and General Construction notes for each area are included in the Application. Figure B-4 is a survey of the facility, conducted in 2007, providing actual elevation points and dimensions for calculation of containment. Appendix D-1 contains secondary containment calculations for CSA I, II, and the Work Stations based upon the survey and container configurations within each unit.

The poured concrete slabs were specified to a compressive strength of 3500 PSI at 28 days per ASTM testing methodology. Secondary containment concrete was poured in shapes and sizes to minimize the number of joints in an area. Floor seams are adequately sealed with a chemically resistant compound to preclude seepage through the joint. Exhibit D-1 presents an engineered evaluation of the chemical resistant coating designed for use on the concrete surfaces to prevent hazardous waste and recyclable material from penetrating and reacting with the concrete. Exhibit D-1 presents the product information specification sheets along with the chemical resistance charts. The evaluation further provides a comparison of the chemicals of use at the facility and their effect, or lack thereof, on the coating.

The concrete containments in the RCRA areas will be checked at least weekly for cracks and other possible deterioration see Example F-1 for an example of the Daily Facility Inspection form itemizing containment inspection criteria. If cracks or excessive wear are observed, they are so noted on the inspection logs and a repair process is initiated.

Hazardous waste is stored in containers and will not be in direct contact with the concrete base except in the event of a spill or leak. If a leak or spill occurs, initiation of cleanup procedures will begin to prevent further release and penetration of the waste into the coated concrete base.

D.1.1.3.1 Containment System Drainage

Any released material within a RCRA containment area will be removed in accordance with Section D.1.1.3.4. Containers are generally stored on pallets as an added safeguard to prevent accumulation of released waste from contacting containers. Pallets may not be used while adding or removing waste from containers or staging wastes for transfer. CSA I, II and the work stations are located within enclosed buildings or roofed areas eliminating the accumulation of precipitation. CSA IV, V, and roll off area are sloped to minimize contact of precipitation with the containers. CSA VI and VII are level but the containment curb is lower than the height of a pallet and therefore the containers never come into contact with liquids.

D.1.1.3.2 Containment System Capacity

CSA I, CSA II, and the Work Stations were designed with sufficient containment capacity to contain either a minimum of 10% of the total volume of the maximum capacity of the storage area or the largest container. The other container containment areas are designed for the storage of RCRA solids and RCRA lab packs. Each area has containment to keep potential spills from spreading to other areas. Secondary containment calculations for the container storage areas are presented in Appendix D-1.

D.1.1.3.3 Control of Run-on and Run-off

CSA I, II and the workstations are covered and curbed to prevent run-on and run-off. The roll off area, and CSA's IV, V, VI and VII are curbed to prevent run-on and run-off. The loading dock is not a RCRA regulated unit but is designed to preclude run-on and prevent run-off. The tank farm is walled to prevent run-on and run-off. Appendix D-3, Drainage Evaluation, presents an evaluation of surface water flow at the facility.

D.1.1.3.4 Removal of Liquids from Containment System

In the unlikely event of accidental spills or leaks, such material will accumulate in the low points within the individual secondary containment areas. If waste is detected it will be removed with a portable pump or absorbent, then placed in a properly labelled container or tank for disposal. Several portable pumps are kept on-site in case of failure of a single pump.

Containers in the area will be examined to determine the source of the leaked or spilled material. Severely damaged or leaking containers will be overpacked or the contents will be transferred to a sound shipping container and properly labelled. Any recovered material will also be placed in appropriately labeled containers or tanks for treatment or disposal. In the unlikely event that the recovered material cannot be readily identified, the material will be analyzed for the properties or constituents identified by the profiles for all containers in that area.

If there is a leak from a single drum within an area, the repacked drum will be similarly labeled as the original drum. In the event multiple drums containing compatible materials from different sources leak or spill simultaneously, the mixture will be collected and re-containerized or, if compatible, pumped into a tank. The newly generated waste will be handled according to the appropriate requirements for that waste. The waste will be properly labelled and stored until final disposition is determined. Since containers of incompatible materials will not be stored within the same containment area, leakage and subsequent mixing of waste would not be expected to cause any adverse reactions. Section G of this application provides more information regarding the response to a leaking container.

Accumulated precipitation in the RCRA storage areas will be removed in as timely a manner as necessary to prevent overflow of the containment area. Precipitation determined to be hazardous, either through analysis or generator knowledge, will be collected and treated at an appropriate treatment facility. Precipitation may be left in place to evaporate if there are no RCRA materials stored in that area.

The facility may discharge collected precipitation to the City of Phoenix Storm Drain System after analysis indicates that the conditions of the NPDES permit have been satisfied.

D.2 TANK SYSTEMS

The tank farm contains 12 tanks. Six tanks are RCRA regulated and six are non-RCRA storage and treatment tanks as shown in Figure B-1. Table D-1 lists tank information including size, volume, potential content and regulatory status. The waste type handled within a particular tank may vary based upon operational considerations. However, the facility will not exceed maximum allowable RCRA tank storage capacities and will maintain separation of any incompatible materials within the tank farm. Incompatibles being defined as when the wastes from two tanks mix and liberate heat, gas, or create a chemically unstable mixture.

Only compatible materials will be stored within a segregated area. Flammable liquids, materials for recycling, rainwater, wastewaters and/or other compatibles will be stored in the tank farm area. If any tanks are isolated from the remainder of the tank farm, secondary containment will be sufficient to meet the minimum requirements of 264A.(264.193). Drawing 581-ADA-108 shows the current tank layout. A permit modification will be requested from the ADEQ prior to increasing tank capacity or changing the design specifications of a tank or replacement.

All tanks are designed to meet applicable codes such as American Petroleum Institute (API), Underwriters Laboratory (UL) and/or American Society of Mechanical Engineers (ASME). Tanks are located to meet NFPA buffer zone requirements as they relate to tank contents and volume. Specific precautions for tanks containing flammable wastes are addressed in Section D.2.8. All tanks will be operated at atmospheric pressure and ambient temperatures.

D.2.1 Existing Tank Systems

All tanks meet the regulatory definition of new tank systems and will be assessed under new tank standards (see Section D.2.2).

D.2.2 New Tank Systems

D.2.2.1 Assessment of New Tank System's Integrity

Appendix D-2 contains an assessment for the storage tanks, including a specification sheet for each tank. This assessment indicates the tanks are adequately designed with sufficient structural integrity to prevent failure due to collapse or rupture.

The specification sheet provides the design standard for each tank's construction, dimensions, capacity, construction material, control devices, operating temperatures and pressures. Material selection for any particular tank is determined by the tank's service requirements. The material selection was based on published scientific information, previous waste analysis data, and results from the storage or treatment of similar wastes. While the primary hazard of the tanks in the tank farm will be flammable and toxic, any waste codes, except "P"- waste codes, bulked at the facility may be in the tanks in low concentrations due to liquids from decontamination projects, lab waste, etc. Acids, oxidizers, and reactives will also be excluded from the tanks. The hazardous characteristics of the wastes to be handled through the tank system are contained in Table C-1.

Tanks storing flammable wastes, wastewaters and recyclable materials will be constructed of carbon steel. Carbon steel is generally resistant to a wide range of waste streams; Exhibit D-3 presents a Chemical Compatibility Chart for Carbon Steel. The potential rate of corrosion depends upon many factors, such as concentration of the waste stream, temperature, chemical composition and physical characteristics of the wastes. The tanks are visually inspected through the man way opening whenever tank cleanouts are performed. If corrosion is evident, tank integrity testing will be performed to monitor tank shell thickness. Future tank assessments will be scheduled and performed based upon a qualified registered engineer's assessment.

A new tank assessment has been reviewed and certified by a professional engineer registered in Arizona. This information is presented in Appendix D-2.

Installation inspections of the tanks by an independent, registered professional engineer were performed and are on file in accordance with 264.A (264.192) prior to placing the tanks in service. Certification statements that attest to the proper installation of the tank system are maintained on-site.

D.2.2.2 External Corrosion Protection

The tank systems consist of aboveground tanks that are not in contact with soil or standing water. Carbon steel tank exterior coatings will consist of a primer and a suitable paint as indicated on the tank detail design sheets (Appendix D-2).

D.2.2.3 Description of Tank System Installation and Testing Plans and Procedures

Each installed tank system was inspected by an independent, qualified installation inspector or an independent, qualified, registered engineer in accordance with 264.A (264.192). The plan used, and which will be used on any future replacement tanks, will be subjected to the same installation and testing plan. Normally a tank manufacturer or suppler arranges for the transport of a new tank to the installation site and retains the responsibility for the tank until such time as it is delivered and accepted by the buyer. The installation inspector will observe the arrival of the tank at the site and it's off-loading from the tank transporter. While the tank is still on the transport vehicle, the inspector will visually examine the tanks for:

- Weld breaks
- Punctures
- Abrasions affecting protective coatings and/or linings
- Cracks
- Corrosion

Pre-installation handling of tank system components, particularly the tank itself, must be done carefully so that the components are not scraped, dented, or cracked. Coatings and welds on steel tanks are particularly vulnerable to damage from improper handling.

Before a tank is moved, the capacity and reach of hoisting equipment will be checked. Tanks will be moved using lifting lugs installed by the tank manufacturer. Cables or chains of adequate length will be attached to the lifting lugs, and manufacturer's guidelines regarding distribution of tank load during installation will be followed. Tanks will not be accepted by the facility if they have been dropped, handled with a sharp object, dented, dragged, or rolled.

Tank tightness testing will be performed after the tank has been placed in its designated location in the tank farm using standard testing procedures with air, inert gas, or water. Prior to performing the tightness test, where appropriate, factory-installed plugs will be removed, and tank fittings will be securely installed.

The visual inspection(s) and tightness test will assist the inspector to identify the defects listed in Section 264.192(b). Section 264.192(b) also requires that any damage to a new tank system or component must be remedied prior to installation. Normally, such repairs are the responsibility of the supplier or an authorized representative. The facility will not place any tank into service that has not been properly installed.

Fluid transfer in the tank farm will be through hoses. Any hard piped ancillary equipment will be supported by steel supports designed in accordance with the Manual of Steel Construction published by the American Institute of Steel Construction (AISC). The spacing of the supports along the pipe will be determined by the type of pipe used and will be designed to support the pipe and prevent physical damage from deflections. Foundations will be designed to support the loads of ancillary equipment and contents.

D.2.3 Dimensions and Capacity of Each Tank

Carbon steel tanks were designed in accordance with UL-142, or equivalent design criteria that incorporate the American Society of Mechanical Engineers (ASME) allowable stresses. Design specifications for UL-142 for welded steel tanks allow operational conditions of up to 250° F with pressures less than or equal to 15 psig. Clean Harbors' tanks operate at ambient temperature and up to 6" of water column pressure.

All structural steel supports are designed in accordance with the Manual of Steel Construction published by AISC. All concrete foundations consist of reinforced concrete designed in accordance with the Building Code Requirements for Reinforced Concrete, as published by the American Concrete Institute (ACI) 318-83. All design features came from current editions of the codes at the time the design was performed.

Ancillary equipment for the flammable tanks conforms to Class I, Division I NEC code requirements. Tank vent vapors are collected and treated through an emission control system.

Detailed specifications of tanks and structural steel supports are available for each tank. This information is specific to each tank.

D.2.4 Description of Feed Systems, Safety Cutoffs, Bypass Systems and Pressure Controls

A duel system of appropriate tank controls has been designed to minimize the potential for spills and overflows in the tank farm. The design includes a Rosemount 5400 level controller and an Echotel Model 961/962 Ultrasonic Level Switch mounted on each tank. The Rosemount 5400 radar transmitter level controller is the primary control mechanism that provides continuous tank level information to a control panel display. The level controller also initiates a high level shutoff at 90% of tank capacity that simultaneously activates an audio alarm, strobe, and a solenoid valve to shut off the pump air supply. The facility uses pneumatic double diaphragm operated pumps to transfer liquids between vessels.

The Echotel Ultrasonic Level Switch provides a redundant (or Hi-Hi level) shutdown actuated at 95% of tank volume should the Rosemount level controller not shut the system down properly. The Echotel system utilizes a liquid contact to initiate a shutdown. The equipment is specifically rated for use in a chemical environment, suitable for a hazardous waste facility. Appendix D-4 shows the detail specifications and applications for the Rosemount 5400 level controller and the Echotel Model 961/962 Ultrasonic Level Switch. The equipment is shown schematically in the P& ID drawing (PH-F-01) included in the application. Exhibit D-4 is a flow diagram that explains how the system works if the tank reaches capacity.

Both switching mechanisms activate a solenoid valve to shut off air supply to the pneumatic pump filling the tank, halting operations, simultaneously an audio and strobe alarm are activated to alert personnel. Supervisors will be alerted by the alarms when operations are halted. Pump operators will confer with a supervisor prior to moving pump operations to another tank. The air supply to the pump is reconnected after a different tank has been selected to receive the remaining fluid to be transferred.

Pneumatic pumps are air operated and therefore do not pose a fire or explosion hazard as would a pump with an electric motor. These pumps will "stall" or quit pumping when reaching their maximum operating pressure. This will ensure that the pump will not keep operating and over pressure or burst a line. Flexible hoses, instead of hard piping, are used between the initial and receiving vessels. The hoses have a higher maximum allowable working pressure rating than the stall pressure of the pump. The hoses are inspected prior to each use for cracks or other deterioration. The hoses are drained after each use to prevent any residual waste from solidifying or plugging the hose. A hard piped system would never be completely drained and more susceptible to plugging.

The tanks are vented through a carbon adsorption emission control system; see Exhibit E-3 for a description and evaluation. There is a difference in the emission controls for each RCRA tank due to the manufacturer's recommended setting for the tanks pressure relief valves. Tanks 101, 102, 103 and 301 are set at 1 psi (16 oz.). Tank 104 is set at 0.75 psi (12 oz.) and Tank 303 is set at 0.50 psi (8 oz). The tanks utilize a thief hatch with a vacuum and pressure relief valve to prevent the tank from collapsing or expanding under normal operating conditions. Each tank also contains an emergency relief vent that will release in the event the carbon adsorption system and thief hatch cannot handle the volume of gases being emitted from the tank, this would release enough pressure from the tank to prevent a massive deformation of the tank.

Calculations are performed by the pumping supervisor to ensure adequate volume is available in the tank prior to initiating pumping operations. The fill volume is calculated not to exceed 90% of the tank volume. Standard procedure does not rely on the level controller to deactivate a pump. The liquid levels in the receiving vessel will be recorded prior to any pumping operation. Calculations are performed for the volume of liquid to be transferred and checked for available capacity in the receiving tank using the tank inventory log for each tank, Exhibit F-3. The liquid level in the vessel is checked, the calculations are checked and the hose connections checked prior to commencing filling operations. During pumping operations, the fluid transfer pumping flow rate will not exceed 100 gallons per minute. The water level in the knockout tank will not exceed 10 inches. The post filling volume is recorded to verify the new vessel volume. An operator will be in attendance for all fluid transfer activities. The operator will immediately close any feed valves and discontinue pump operations should a leak or overflow condition evolve.

Other spill prevention controls include a specific procedure to drain hoses prior to disconnecting, placing drip pans under connections to collect any potential leaks, ensuring the gaskets are in good shape, and capping the hose ends immediately after use. Operators are always present when pumping operations are being conducted to immediately halt pumping if a leak was to occur. The pumping operations would be discontinued until the spill was collected, the cause determined and remedied. Tank fluid transfer is prohibited during carbon change out activities.

D.2.5 Containment and Detection of Releases

The secondary containment for the tank systems will meet the requirements of 264.A (264.193) These requirements are considered in the following sections.

D.2.5.1 Plans and Description of the Design, Construction, and Operation of the Secondary Containment System for the Tank System

Drawing 581-CDA-104 provides plan views of the tank farm's secondary containment. Secondary containment consists of a reinforced post tension concrete slab and 8 inch thick reinforced concrete containment walls.

The containment area drains to a low point. The tank farm concrete is covered with a protective coating which prevents waste or recycled material from reacting with or penetrating the concrete. Exhibit D-1 presents an engineered evaluation of the chemical resistant coating designed for use on the tank farm concrete surfaces. The evaluation specifically addresses the PVC water stop used in the tank farm wall joints and the coating used to protect it and the concrete. Exhibit D-1 presents the product information specification sheets along with the chemical resistance charts. The evaluation further goes on to compare the chemicals of use at the facility and their effect, or lack thereof, on the coating.

The containment volume within the tank farm is sufficient to contain 100% of the largest tank volume plus the volume of a 24 hour - 25 year storm which is conservatively estimated at four (4) inches of precipitation. Tank secondary containment calculations are provided in Appendix D-1. The foundation design meets the requirements per American Concrete Institute (ACI) construction details. The foundation design consists of a minimum 6-inch reinforced concrete slab placed over compacted subgrade. Using multi-stranded cable on 18 inch centers perpendicular to each other and placed in tension after the concrete is set up to 80% tensile strength.

The structural capacity of the foundation design is adequate to support all elements of the tank system. The following elements demonstrate adequate design requirements for the foundation.

- Shear forces and moments influenced by design loads on the concrete slab, pad and subbase were designed using safety factors based on ACI Codes.

- The structural concrete is designed with steel reinforcement. This reinforcement provides additional structural strength to the concrete, as well as providing shrinking and cracking control.

- Compression loads experienced upon pump and equipment foundations are minimal compared to the compression strength of the reinforced concrete of which these foundations are constructed.

The secondary containment system is a passive system composed of a concrete containment structure. The containment is inspected each operating day for cracks in the system or accumulations of liquids. Any spilled or leaked liquids are immediately contained and cleaned up. Precipitation is collected within 24 hours of detection if waste is being stored in the tanks. If all tanks in a secondary containment area are empty, the precipitation is not required to be removed in the same time period. Repair procedures will begin upon discovery of cracks or deterioration of the secondary containment system. If the integrity of the secondary containment system appears to be compromised, the tanks will be emptied until the secondary containment system is once again adequate.

All of the tanks containing RCRA regulated fluids, except Tank 104, are of a flat bottom design that will rest on an electrically grounded, grooved, concrete pedestal raised off the concrete floor of the tank farm to create an annulus for visual inspection. The groove in the pedestal will provide a channel for liquids to migrate out to the edge of the pedestal if a leak should occur. Tank 104 is not flat bottomed and consequently raised on legs about 18 inches to anchor to a similar grooved concrete pedestal.

The tank farm area is inspected each operating day for leaks or spills. The sides of the tank and the concrete pedestal are viewed for any signs of leakage. If a leak or spill is detected from a tank, the spilled waste will be removed within 24-hours or as soon as practical using portable pumps to pump the waste into a compatible waste storage tank, or other suitable container. The remaining contents of the tank will be transferred to another vessel and the tank removed from service until repairs are made.

Ancillary equipment, which includes pumps and hoses, is located within the containment areas. This equipment is connected to a tank prior to use and disconnected after use so that the only time anything is attached to the tank is while fluid is being added or removed. During times of no liquid transfer, the tank valves are closed and capped. The equipment is all aboveground and visually inspected prior to and during use for signs of leakage or deterioration. The ancillary equipment within the tank farm area will provide a negligible load to the concrete pad compared to the loads resulting from the tanks, and will therefore meet loading requirements. The volume of the ancillary equipment within the tank farm will have negligible effect upon the secondary containment volume required for the tanks located in the containment volume.

D.2.5.2 Response to Leaks and Spills

Within 24 hours of detection of a release or spill from a tank, as much as waste as possible will be removed from the tank to stop the leak, perform an inspection or repair the leak. Any material released to the secondary containment system will be removed within 24 hours of detection or as timely a manner as possible to prevent harm to human health or the environment. An immediate visual inspection will be performed to assess the situation and based upon that assessment, determine a course of action to prevent further migration to soils or surface water and remove or properly dispose any visible contamination of the soil or surface water.

If the leak was from a tank, the tank will be repaired prior to returning the tank to service. If the repairs to the tank were extensive, e.g., installation of an internal liner, repair of a rupture of the tank wall, a certification by an independent qualified registered professional engineer will be obtained in accordance with §270.11(d) that the required tank is capable of handling hazardous wastes without the release for the intended life of the system and the certification will be submitted to the Arizona Department of Environmental Quality within seven days of returning the tank to service.

If a release occurs that is greater than one pound or not immediately cleaned up, will be reported to ADEQ within 24 hours of detection. Within 30 days of detection of the release to the environment, a report containing the following information will be submitted to ADEQ:

Likely route of migration;

Characteristics of the surrounding soil;

Results of any monitoring or sampling conducted in connection with the release;

Proximity to down gradient drinking water, surface water and populated areas; and

Description of response action taken or planned.

D.2.5.3 Variance from Secondary Containment Requirements

No variance from secondary containment requirements is requested.

D.2.6 Controls and Practices to Prevent Spills and Overflows

All of the treatment and processing operations require attendance by plant personnel. A plant operator is in constant attendance to monitor and control all waste transfer operations, to ensure wastes are moved as scheduled, and to detect problems at the first possible moment. Equipment layouts and valve arrangements are selected to minimize errors in transporting wastes from one position to another.

All of the tanks are designed to facilitate visual inspection. Operators physically check for the correct tank, the valve positions, and observe the fluid level prior to transferring wastes. Supervision and coordination of waste movements are provided by the Operations Manager or his designee. Information concerning tank status and fluid content are documented on the tank logs allowing operators to verify the fluid level and status of tank availability. Personal protective equipment, appropriate for the liquid being pumped, is worn by the operations personnel during these procedures. All tanks are closed top and will not be affected by overtopping from precipitation, wind, or wave action.

D.2.7 Requirements for Incompatible Wastes

The facility takes precautions to ensure that incompatible wastes do not react to generate extreme heat or pressure, fire, explosions, or violent reactions. Precautions are also taken to prevent the production of uncontrolled flammable or toxic mists, fumes, dust, or gases in sufficient quantities to pose a risk of fire, explosion, or create reactions that may damage the structural integrity of the tank or facility or through other like means threaten human health or the environment.

All waste codes in the Part A permit, except "P" waste codes and D003, are allowed to be placed in the RCRA regulated tanks. Insignificant amounts of acids, oxidizers and reactives may be present in waste streams such that if pumped into the tanks, would not cause an uncontrolled reaction. However, profiled wastes of acids, oxidizers and reactives are not introduced into the tank system.

All wastes that will be pumped to the tanks have completed the sample verification analysis as described in the Waste Analysis Plan verifying that the wastes match the profile and manifest and have been fully accepted at the facility. These wastes have been described, appropriate physical and chemical characteristics identified, and waste codes established, all of this information is recorded in the facility operating record.

Based on the type of material to be received in the tank, the computer database system selects wastes that meet the selection criteria; examples include BTU range or inorganic metals in water. The Operations Manager or designee will select a tank to receive the waste. A sample of the waste or residue from the selected tank will be mixed with a sample(s) of the incoming waste(s) in the order in which the wastes will be pumped. The compatibility (bucket) test found in Section C, Appendix C-IV will be used to check compatibility prior to mixing the bulk waste streams. The facility carefully selects and tests the wastes to be commingled so that a reaction of incompatibles does not occur. The sample verification analysis and the liquid compatibility testing create a high assurance level that incompatibles will not be mixed. The waste mixture will be evaluated by observing physical and chemical changes that may occur. Parameters observed include temperature changes, as indicated by a thermometer, color changes, formation of precipitates, change in pH, and the evolution of gas. If any of these parameters change significantly, the wastes will be classified "incompatible" and will not be mixed. Each individual container is tracked into and out of the tank and kept as part of the operating record.

Before the type of waste in a tank is changed, the materials are verified for compatibility. If an incompatibility issue could exist, the tank is emptied of all waste, visually cleaned of residue and all cleaning wastes removed and properly disposed. No waste will be transferred into an unwashed tank that previously contained an incompatible waste.

The facility will have the option to use RCRA tanks for non-RCRA waste. If such an option was to be exercised, the tank would need to go through the closure procedure outlined in Section I prior to being used for non-RCRA waste streams. The facility could elect to return the tank to RCRA service with the introduction of RCRA waste streams. The operating record will identify when RCRA or non-RCRA material is stored in a tank and also document the cleaning of tanks.

If an incompatible reaction occurred, it would be contained within the system. The operator would immediately stop the pumping operation and close the valve to the tank, preventing any additional incompatible material from mixing with the tank volume. The pumping operation would cease, and all valves would be closed to prevent the migration or mixing of any additional incompatible material. Any bleeder valves would be opened to prevent the buildup of pressure in the hoses or pump. The tanks are vented to the emission control system, which would prevent the tanks from overpressuring. Upon discovery of a reaction occurring, the operations manager or his designee would begin investigating what caused the reaction. All pieces of the equipment would be isolated and drained into separate containers to isolate any more incompatible materials and prevent further reactions. Any reactions that were occurring would be allowed to finish before the waste could be prepared for shipment offsite, after a new profile was generated for the mixed waste.

D.2.8 Requirements for Ignitable or Reactive Wastes

Upon arrival at the facility, all bulk shipments are analyzed as required in the waste analysis plan. This analysis will determine storage and handling requirements.

All unloading operations take place in designated unloading zones. Safe practices are enforced for all employees in these areas, including observing the "No Smoking or open flames" regulations, using grounding devices on all ignitable material transfers, and wearing proper personal protective equipment. The unloaded material is transferred into an assigned tank based on the profile sheet, sample verification and compatibility testing with the tank contents. Wastes are pumped through the bottom valve of the tank to minimize potential for static creation. Tanks are monitored to ensure sufficient freeboard is maintained to prevent liquids from overtopping the tank. Vapor balancing the tankers with the tanks minimizes the potential amount of emissions emitted from the tanks.

The location of the waste storage tanks are in compliance with the City of Phoenix Uniform Fire Code which adapts the National Fire Protection Associations' "Flammable and Combustible Liquids Code" for protective distances between the tanks and any public streets or adjoining property line.

D.3 NON-RCRA REGULATED SUPPORT UNITS

In addition to regulated storage and treatment operations, the facility will operate a loading dock as a non-RCRA regulated support unit. This unit will support facility operations and is described for information purposes only.

D.3.1 Loading Dock

The loading dock is designed to simultaneously accommodate four vans or flat bed trailers for the loading or unloading of containers. The nominal, 46 ft. by 57 ft. recessed area, which trucks can back into, is constructed of concrete and sloped to contain spills. The area is divided into 2 containment areas separated by a berm to reduce the possibility of spreading or co-mingling incompatible materials. The loading dock is designed to allow forklifts to drive nearly horizontally onto the bed of the trailer. The use of forklifts reduces worker's time spent inside the enclosed vans. The potential for spills is lessened due to the nearly level grades for forklift travel and thus reduced strain on the container during container transfer.

Drums are gathered from the storage areas in the facility in preparation of a known load leaving the facility. The containers are checked for proper closure, leakage, proper DOT labels, and checked against completed manifests.

Incoming wastes are sampled and analyzed according to the Waste Analysis Plan in the receiving area of CSA II or the work stations. This is done to verify the wastes match the waste profile. After wastes have been properly analyzed, drums will be moved to an appropriate storage area. Waste containers will be removed from the loading dock within 24 hours of unloading and be staged on the loading dock less than 24 hours when prior to loading.

Trucks coming into the facility transporting containers or bulk waste may be stored at the facility for up to 10 calendar days while awaiting transfer. This will occur only for material being passed through the facility under the original manifest (40CFR 263.12). The date of receipt for transfer waste manifests is input into the corporate database log for transfer activities. The date the waste is removed from the facility is also recorded in the operating log database to provide an accurate log of the waste on site. Manifests for loads of 10 day transfer material are physically kept in a designated filing slot which is checked regularly as a visual reminder that the 10 day period has not been exceeded. Exclusive of vehicles transporting wastes for which the facility is acting solely as a transfer facility, the appropriate shipping documentation verifying transfer facility activity shall be maintained.

All 10 day transfer material is placed into designated rows. The material is stored compatibly within permitted storage. While onsite the containers are managed in accordance with the identical permitted conditions as inbound waste.

TABLE D-1

TANK INVENTORY LIST

TABLE D-1
TANK INVENTORY LIST

Tank No.	Description of Contents	Previous Tank Number*	Tank Capacity (gal)	Emissions Control	Tank Dimensions
	Tanks subject to RCRA regulation				
101	RCRA Flammable & Non-flammable Liquid	104-T	2570	Yes	6'd x 12'-2"
102	RCRA Flammable & Non-flammable Liquid	102-T	2570	Yes	6'd x 12'-2"
103	RCRA Flammable & Non-flammable Liquid	103-T	2570	Yes	6'd x 12'-2"
104	RCRA Flammable & Non-flammable Liquid	105-T	4530	Yes	6'6"d x 18'3"
301	RCRA Flammable Liquid	114-T	10250	Yes	10'1"d x 17'2"
303	RCRA Flammable & Non-flammable Liquid	109-T	10150	Yes	10'1"d x 17'
	Total RCRA Tank Capacity		**32640**		

* Specfication Sheets for tanks had different numbering system than current numbering.

Tank No.	Description of Contents	Previous Tank Number*	Tank Capacity (gal)	Emissions Control	Tank Dimensions
	Tanks not subject to RCRA Regulation				
201	Used Oil and Water		7540	No	7'11"d x 20'6"
401	Used Oil and Water		7540	No	7'11"d x 20'6"
601	Used Oil and Water		4530	No	6'6"d x 20'
602	Used Oil and Water		10150	No	10'1"d x 17'
701	Non-RCRA Water		10150	No	10'1"d x 17'
702	Non-RCRA Water		10150	No	10'1"d x 17'
	Total non-RCRA Tank Capacity		**50060**		

EXHIBIT D-1

CHEMICAL RESISTANT SEALER

H. C. NUTTING COMPANY
GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS
SINCE 1921

CORPORATE CENTERE
611 LUNKEN PARK DRIVE
CINCINNATI, OHIO 45226
(513) 321-5816
FAX (513) 321-0294

W.O.#15744002

CHEMICAL RESISTANCE STUDY
CHEM TEC ONE
CHEM TEC INT'L, INC.

Concrete Treated with Chem Tec One			Non-Treated Concrete		
	Chemical Reaction	Absorption		Chemical Reaction	Absorption
Hydrochloric Acid 28%	0	0	Hydrochloric Acid 28%	3	3
Acetone	0	0	Acetone	3	3
Pain Thinner	0	0	Paint Thinner	3	3
Triochloroethylene	1	0	Triochloroethylene	3	3
Potassium hydroxide	0	0	Potassium hydroxide	0	3
Sulfuric Acid 50%*	0	1	Sulfuric Acid 50%*	3	3
Citric Acid	0	0	Citric Acid	3	1
Nitric Acid 70%	0	0	Nitric Acid 70%	2	2
Benzene	0	0	Benzene	0	3
Xylene	1	0	Xylene	3	3
Phenol	0	0	Phenol	3	3
Anti-Freeze	0	0	Anti-Freeze	3	1
Kerosene	0	0	Kerosene	0	3

0 = No reaction, to slight

1 = Mild Reaction

2 = Mild to Severe Reaction

3 = Severe Reaction

* Discolored surface-turned white

Duration of test = 1 minute + / - 10 seconds for all chemicals applied

Concrete manufactured per ASTM C 672

WE CARE SAFETY- KLEEN CORP. MEMORANDUM

To: Robert Chopp

From: Todd Borowski

Date: April 16, 1999

Subject: A Test of the CHEMTEC ONE Concrete Sealer

Ref: 1243/3.10

Objective: To make sure the acid test given by CHEMTEC can accurately show that the Desired saturation level has been reached and if surface impurities interfere with this Test. Also, to test if the concrete sealer is impervious to short-term exposure of certain Solvents.

Materials/Methods: See Attached

Discussion: The acid test provided by the CHEMTEC company seems to be an acceptable Indicator of the desired sealant application. All three treated samples of concrete Exhibited no reaction when a drop of HCL was placed on the treated surface, while the Untreated sample of concrete exhibited a bubbling reaction (see attached Table 1). When The treated samples were placed in 24 hour contact with select solvents (PERC. THF and NMP), there was no noticeable reaction (see attached Table 2). These results suggest that the sealant provides at least, 24 hour protection for the concrete. After Placing the samples outside, allowing two weeks of exposure to the elements (i.e. rain, dirt, ect.) the acid test was run on each concrete sample and the same results were experienced as before the exposure (see attached table 3).

Conclusion: The CHEMTEC ONE acid test seems to work as a good indicator of proper application of concrete sealer. Surface impurities do not appear to interfere with his test. Also, the sealant is resistant to several strong types of solvents for at least a 24 hour period.

Materials: Three samples of concrete with one surface coated with CHEMTEC ONE, one untreated sample of concrete. PERC (Mallinckrode – lot#1933 KEJT), THF (Fisher- lot#921882-12), NMP (Aldrich – lot# 03623LZ), 28% HCL, three holding trays (glass and metal).

Methods:

1. Place one drop of 28% HCL on the treated surface of a concrete sample and record an observation of the reaction then wipe up the drop. (CHEMTEC's acid test, see attached)
2. Repeat step 1 on the other untreated samples and the untreated one.
3. Fill each holding tray with solvent (PERC< THF< and NMP respectively) to a depth of about 1 cm and place in tray a suspension device.

Note: A glass holding tray and suspension device was used for PERC & THF and a metal tray and device was used with the NMP.

4. Place one treated sample of concrete in each holding tray so that the sealed surface is submerged in the solvent but not touching the bottom of the tray.
5. Seal tray with parafilm and allow to sit for 24 hours. (3/30/99 8:45am – 3/31/99 8:45 am.
6. After he 24 hours, remove each sample of concrete and allow to dry (approx. 3 hours)
7. Repeat the acid test on each sample of concrete, noticing if the reaction has changed for the prior results.
8. Place all samples outside where they can be exposed to the elements for a period of two weeks. (Placed outside on 3/31/99 at 1:20)
9. After two weeks have expired (4/14/99), bring samples back inside.
10. Perform the acid test on each sample again, record results.

Acid Test Results Before Solvent Exposure (Table 1)

	Observations
Sample 1 (Treated)	No Reaction
Sample 2 (Treated)	No Reaction
Sample 3 (Treated)	No Reaction
Sample 4 (Untreated)	Bubbling and yellow color

Acid Test Results After Solvent Exposure (Table 2)

	Observations
Sample 1 (PERC)	No Reaction
Sample 2 (THF)	No Reaction
Sample 3 (NMP)	No Reaction
Sample 4 (Untreated)	None (Did not expose to solvent)

Acid Test Results After Exposure To Elements (Table 3)

	Observations
Sample 1 (PERC)	No Reaction
Sample 2 (THF)	No Reaction
Sample 3 (NMP)	No Reaction
Sample 4 (Untreated)	Bubbling and yellow color

HIGH PERFORMANCE PROTECTION FOR YOUR INDUSTRIAL AND COMMERCIAL CONCRETE FLOORS & CURING, HARDENING & DENSIFING OF ALL CONCRETE INFRASTRUCTURES, INCLUDING BRIDGES, ROADS, PARKING FACILITIES, RUNWAYS, LOADING RAMPS AND MORE.

CHEMTEC ONE, a **concrete sealer**, is a MULTI-COMPONENT STATE OF THE ART process used for superior **concrete protection**, that is, a proprietary blend of reactive silicates plus surface active agents, which penetrates into the **concrete** and reacts with the free calcium and lime to form an insoluble by-product that closes the porosity, increases the mass, strengthens, hardens and seals the **concrete**, makes it much more durable and resistant to damage by chemicals and mechanical abrasion.

The process is non-toxic, non-hazardous, non-flammable. There are no special handling requirements under environmental regulations and contains ZERO% VOC content.

CHEMTEC ONE **concrete sealer** is designed primarily to **protect, harden, dustproof, seal**, increase the mass the durability and abrasion resistance of your high strength steel troweled **concrete floors** and also **bridge decks, loading ramps, driveways, runways, fueling stations, tank farms** and to increase the useful life of all **concrete infrastructures**. Do not use on porous concrete blocks or other porous material where their are actual holes in the material.

Upon application the CHEMTEC ONE **sealer** penetrates into the **concrete** forming a solid
by-product in the gel pours, decreasing the porosity and increasing the mass of the concrete thereby increasing the surface hardness and strength. The process stops solids and liquids from penetrating into the **concrete**, but does allow air molecules to flow freely through the **concrete** and thus allowing the **concrete** to "breathe".

THE BASIC BENEFITS:

CHEMTEC ONE is a MULTI-COMPONENT STATE OF THE ART PROCESS that produces the following results in two application on brushed finished air entrained **concrete** and usually just one application on steel troweled non-air entrained surfaces, by just spraying it on the **concrete** and letting it dry.(see application instruction methods for all surfaces before using) **Steel troweled concrete floors** will normally develop a sheen over time.

CURING OF NEW CONCRETE:

The process is extremely effective in stopping moisture loss in fresh **concrete** by applying the process to the **concrete** as soon as possible after the finish troweling operation (as soon as the concrete is firm and dry enough to walk on with out marking), saturating the surface with the product. The product immediately reacts with the free lime and calcium, produces a by-product that closes up the pours there by trapping the moisture in the concrete and greatly slowing the rate of evaporation. CHEMTEC ONE **sealer** can be used as a curing agent and **surface hardener** on most **concrete surfaces**. This product is extremely effective at stopping moisture loss in fresh **concrete**, but does not meet ASTM C-309. DO NOT APPLY TO ALLY WET **CONCRETE:**

HARDENING, DUST PROOFING AND SEALING OF CONCRETE:

Unlike some other **concrete sealers** the CHEMTEC process actually produces a chemical reaction that creates an insoluble by-product that encapsulates the calcium component of the concrete. It increases the mass and surface hardness of the treated concrete thereby making it much more resistant to wear and damage. Because of this chemical reaction the pours of the concrete are filled with this by-product and the porosity of the concrete is greatly reduced, not allowing liquids or solids into the **concrete** thereby sealing out the contaminates and keeping the pH high.

USES:

A unique state of the art product designed for use on dense high strength new and existing steel troweled commercial **concrete floors**. Our **concrete floor sealer** is primarily used for inside buildings where the objective is to densify, harden, dust proof and seal the floors. CHEMTEC ONE can be used to **harden, densify, seal** and increase the mass of any concrete infrastructure, such as airport runways and **taxiway's, parking facilities, bridges, roads, loading ramps, fueling areas** and many other uses. CHEMTEC ONE **sealer** is designed to deeply penetrate and protect outside concrete infrastructures and is installed after the concrete is fully cured. CHEMTEC ONE is the only reactive silicate product in the world that meets both the Illinois & Ohio DOT's specification for use on **bridge structures** and **decks**.

TEMPERATURE LIMITS:

Applications in temperatures up to 95° F and as low as
38° F. **Concrete** must not be allowed to freeze for 12 to 14 hours after application. DO NOT ALLOW THIS PRODUCT TO FREEZE.

SURFACE PREPARATION:

Freshly poured concrete: NONE
Existing concrete: Clean all surfaces so that they are water permeable. Strip off coatings, sealers, paint or anything else that would prevent the CHEMTEC process from penetrating into the concrete. The concrete must be completely dry before you apply the application except where it is used as a curing medium.

COVERAGE:

On steel troweled industrial floors the anticipated coverage is approximately 175 to 250 square feet per gallon, and on brushed finish concrete anticipated coverage is 100 to 125 square feet per gallon for each application. Actual coverage will depend on the porosity and temperature of the **concrete** being treated. It takes two applications to properly protect your porous **concrete**, and generally only one application on steel troweled surfaces.

MIXING REQUIREMENTS:

NONE: CHEMTEC ONE comes pre-mixed and ready to use.

COLOR / CLEAN UP METHOD:

Clear / Clean up with soap and water immediately after use. CAUTION: Leaving residue in spraying equipment may damage equipment.

DRYING TIME:

...rs. Surface may be used as soon as it is completely dry. Do not get surface wet for 12 hours. If used as a curing medium observe normal loads for new concrete.

CURING TIME:

CHEMTEC ONE starts curing immediately and reaches it full cure in about 75 days. Surface can be used as soon as it is completely dry.

APPLICATION METHOD:

Apply by spraying on the surface, saturating the surface. Keep material from puddling, if necessary by spreading it around bristle brooms. Areas that puddle should be brushed over to dryer areas, areas that dry prematurely should have more material pushed to it or be re-sprayed . After the material has been on the steel troweled floor for 35 to 45 minutes then squeegee off the surface. On brushed finished surfaces, just let it dry(see installation instructions for details).
CAUTION! DO NOT ALLOW AREAS TO PUDDLE AND DRY, AS THEY WILL LEAVE A HARD WHITE CRYSTAL ON THE SURFACE WHEN DRY ON STEEL TROWELED SURFACES.

TOOLS NEEDED:

Low pressure sprayers, bristle brooms, squeegees, safety equipment and so on.

STORAGE LIFE:

Up to 24 months. Do not allow product to freeze or be stored in temperatures above
120 ° F or below 38° F. Agitate barrel if stored for periods over 3 months

CAUTION: DO NOT store in aluminum containers or use spraying equipment with aluminum fittings. Product may react with the aluminum to create flammable hydrogen gas. See MSDS sheet. DO NOT spray or splash on glass, painted surfaces or decorative fronts as product may stain these surfaces. If you do splash the product on these surfaces wipe off with fresh water immediately. Make sure you have adequate ventilation. Dispose of waste properly per federal, state or local environmental regulations if required.

TECHNICAL DATA:

For complete information please see the Material Data Safety Sheet "MSDS" and the CHEMTEC ONE installation procedure.

...TED WARRANTY:

CHEMTEC INT'L will warrant our products to be of good quality and that a properly prepared and structurally sound concrete surface treated with CHEMTEC ONE formulation in accordance with the manufactures directions by an approved applicator will remain dust proof, hardened and protected for a minimum period of five to twenty years (depending on structure type & use). If after the specific treating period the surface does not remain dust proof, hardened and protected from penetration by liquids. CHEMTEC INT'L will supply at its own expense sufficient CHEMTEC ONE to retreat the defective surface. This warranty does not apply if the CHEMTEC ONE is improperly applied or if structural faults occur due to poor workmanship, improper design, failure of other materials used in the project. The CHEMTEC ONE formula must be used before the end of the 24 month shelf life expires. Satisfactory results depend not only upon quality products but also upon many factors beyond our control. Therefore except for such replacement CHEMTEC INT'L MAKES NO WARRANTY OR GUARANTEE EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY, RESPECTING ITS PRODUCTS, and CHEMTEC INT'L shall have no other liabilities with respect thereto. Any claim regarding product defect must be received in witting within 90 days of the date of defect during the warranty period. User shall determine the suitability of the products for the intended use and assume all risks and liability in connection therewith. All sales are final.

SYNOPSIS OF LAB TEST:

ASTM C-672 / 666 NO SCALING/ see airport report
Cycles 100 with calcium chloride solution
Absorption Less than 1% after 48 hours / Less than 2% after 50 days.
AASHTO T 259 Modified Crack sealing capability Per-ODOT Spec. 841 Passed.
Chloride Absorption Specimen#1= 0.081% Specimen #2=0.056%
Dry Time
To Touch 4 hrs
Dry Hard 12 hrs

Color Clear
Specific Gravity ($H2O$ = 1) 1.04
VOC, grams / liter 0
pounds / gallon 0

Abrasion Resistance Treated vs Non-Treated Specimen ASTM C-779
Continuous rotating grinding disk under pressure for 60 minuets.
Abrasion Resistance Increase @ 30 minutes 45% wear in. 0.044 vs 0.080
Also see Airport and Safety-Kleen private test reports

CHEMTEC ONE
Manufactured by
CHEMTEC INT'L
Cincinnati Ohio
(Member CSI)
"THE ULTIMATE CONCRETE PROTECTION"
lud12/03

Medium Film

6/27/2006

	Cor-Cote VEN FF		Cor-Cote VEN GF		Cor-Cote HCR FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Acetaldehyde 20%	80	R	80	R	NR	R
Acetaldehyde 100%	NR	R	NR	R	NR	NR
Acetic Acid 2%; Formic Acid 2%	150	R	150	R	NR	R
Acetic Acid 10%	150	R	150	R	NR	R
Acetic Acid 15%	150	R	150	R	NR	R
Acetic Acid 25%	150	R	150	R	NR	R
Acetic Acid 40%	150	R	150	R	NR	NR
Acetic Acid 50%	150	R	150	R	NR	NR
Acetic Acid 75%	150	R	150	R	NR	NR
Acetic Acid 100% Glacial Acetic	100	R	80	R	NR	NR
Acetic Acid Vapors 1%	100	R	80	R	NR	NR
Acetic Anhydride	80	R	80	R	NR	NR
Acetone 10%	150	R	150	R	NR	R
Acetone 100%	NR	R	NR	R	NR	R
Acetophenone	NR	NR	NR	NR	NR	NR
Acetyl Chloride	NR	NR	NR	NR	NR	R
Acid Sulfite pH 1-2	150	R	150	R	NT	NT
Acrolein (Acrylaldehyde) 20%	80	R	80	R	NT	NT
Acrolein (Acrylaldehyde) 100%	NR	R	NR	R	NT	NT
Acrylamide 50%	100	R	100	R	NT	NT
Acrylic Acid 20%	NR	NR	100	NR	NR	R
Acrylic Acid 25%	NR	NR	100	NR	NR	R
Acrylic Acid 100%	NR	NR	100	NR	NR	R
Acrylic Acid (Esterified)	NR	NR	NR	NR	NT	NT
Acrylic Copolymer PPG-03611	150	R	150	R	NT	NT
Acrylic Ester Copolymer	150	R	150	R	NT	NT
Acrylic Latex	150	R	150	R	NT	NT
Acrylonitrile 100%	NR	R	NR	R	NR	NR
Activated Carbon Beds	150	R	150	R	NT	NT
Adipic Acid, Dry	NT	NT	NT	NT	NT	NT
Adipic Acid 25%	150	R	120	R	80	R
Adipic Acid 23%	150	R	120	R	80	R
Adipic Acid 60% in Ethyl Alcohol	100	R	100	R	NT	NT
Adipic Acid, Saturated	80	R	80	R	NT	NT
Advastab	NT	NT	NT	NT	NT	NT
Alkyd Benzene, Linear	120	R	120	R	NT	NT
Alkyd Glycidal Ether	150	R	150	R	NT	NT
Alkyd Glycidyl Ether Sulfonate 58%; Sodium Chloride 2%	NR	R	NR	R	NT	NT
Alkyl Benzene Sulfate Acid 92%	150	R	150	R	NT	NT
Allyl Alcohol 100%	80	R	80	R	NR	R
Allyl Chloride, All	80	R	80	R	NR	R
Allyl Glycidyl Ether	NT	NT	NT	NT	NT	NT
Almond Oil	NT	NT	NT	NT	NT	NT
Alpha Methylstyrene	120	R	120	R	NT	NT
Alpha Oleum Sulfates	120	R	120	R	NT	NT
Alum, (Aluminum Pottassium Sulfate,dodecahydrate)	150	R	150	R	120	R
Aluminum Acetate 25%	NT	NT	NT	NT	NT	NT
Aluminum Ammonium Sulfate 50%	NT	NT	NT	NT	NT	NT
Aluminum Bromide	150	R	150	R	120	R
Aluminum Chloride, All	150	R	150	R	120	R
Aluminum Chloride 13%; Benzol 2%	NT	NT	NT	NT	NT	NT
Aluminum Chloride 30%	150	R	150	R	120	R
Aluminum Chlorohydrate, All	150	R	150	R	NT	NT

ARIZONA DEPARTMENT OF
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	Cor-Cote HP		Cor-Cote HP FF		Cor-Cote SC	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Acetaldehyde 20%	NR	NR	NR	NR	NR	NR
Acetaldehyde 100%	NR	NR	NR	NR	NR	NR
Acetic Acid 2%; Formic Acid 2%	NR	R	NR	R	NR	R
Acetic Acid 10%	NR	R	NR	R	NR	R
Acetic Acid 15%	NR	NR	NR	NR	NR	NR
Acetic Acid 25%	NR	NR	NR	NR	NR	NR
Acetic Acid 40%	NR	NR	NR	NR	NR	NR
Acetic Acid 50%	NR	NR	NR	NR	NR	NR
Acetic Acid 75%	NR	NR	NR	NR	NR	NR
Acetic Acid 100% Glacial Acetic	NR	NR	NR	NR	NR	NR
Acetic Acid Vapors 1%	NR	NR	NR	NR	NR	NR
Acetic Anhydride	NR	NR	NR	NR	NR	NR
Acetone 10%	NR	NR	NR	NR	NR	NR
Acetone 100%	NR	R	NR	R	NR	R
Acetophenone	NR	NR	NR	NR	NR	NR
Acetyl Chloride	NR	NR	NR	NR	NR	NR
Acid Sulfite pH 1-2	NT	NT	NT	NT	NT	NT
Acrolein (Acrylaldehyde) 20%	NT	NT	NT	NT	NT	NT
Acrolein (Acrylaldehyde) 100%	NT	NT	NT	NT	NT	NT
Acrylamide 50%	NT	NT	NT	NT	NT	NT
Acrylic Acid 20%	NT	NT	NT	NT	NT	NT
Acrylic Acid 25%	NT	NT	NT	NT	NT	NT
Acrylic Acid 100%	NT	NT	NT	NT	NT	NT
Acrylic Acid (Esterified)	NT	NT	NT	NT	NT	NT
Acrylic Copolymer PPG-03611	NT	NT	NT	NT	NT	NT
Acrylic Ester Copolymer	NT	NT	NT	NT	NT	NT
Acrylic Latex	NT	NT	NT	NT	NT	NT
Acrylonitrile 100%	NR	NR	NR	NR	NR	NR
Activated Carbon Beds	NR	R	120	R	100	R
Adipic Acid, Dry	NT	NT	NT	NT	NT	NT
Adipic Acid 25%	NR	R	120	R	80	R
Adipic Acid 23%	NT	NT	NT	NT	NT	NT
Adipic Acid 60% in Ethyl Alcohol	NT	NT	NT	NT	NT	NT
Adipic Acid, Saturated	NT	NT	NT	NT	NT	NT
Advastab	NT	NT	NT	NT	NT	NT
Alkyd Benzene, Linear	NR	R	120	R	100	R
Alkyd Glycidal Ether	NR	R	120	R	120	R
Alkyd Glycidyl Ether Sulfonate 58%; Sodium Chloride 2%	NT	NT	NT	NT	NT	NT
Alkyl Benzene Sulfate Acid 92%	NT	NT	NT	NT	NT	NT
Allyl Alcohol 100%	NR	R	NR	R	NR	R
Allyl Chloride, All	NR	R	NR	R	NR	R
Allyl Glycidyl Ether	NT	NT	NT	NT	NT	NT
Almond Oil	NT	NT	NT	NT	NT	NT
Alpha Methylstyrene	NT	NT	NT	NT	NT	NT
Alpha Oleum Sulfates	NT	NT	NT	NT	NT	NT
Alum, (Aluminum Pottassium Sulfate,dodecahydrate)	NR	R	120	R	120	R
Aluminum Acetate 25%	NT	NT	NT	NT	NT	NT
Aluminum Ammonium Sulfate 50%	NT	NT	NT	NT	NT	NT
Aluminum Bromide	NR	R	120	R	120	R
Aluminum Chloride, All	NR	R	120	R	120	R
Aluminum Chloride 13%; Benzol 2%	NT	NT	NT	NT	NT	NT
Aluminum Chloride 30%	NR	R	120	R	120	R
Aluminum Chlorohydrate, All	NT	NT	NT	NT	NT	NT

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Acetaldehyde 20%	NR	NR	NT	NT
Acetaldehyde 100%	NR	NR	NT	NT
Acetic Acid 2%; Formic Acid 2%	NT	NT	NR	R
Acetic Acid 10%	NR	R	NR	NR
Acetic Acid 15%	NR	NR	NR	NR
Acetic Acid 25%	NR	NR	NR	NR
Acetic Acid 40%	NR	NR	NR	NR
Acetic Acid 50%	NR	NR	NR	NR
Acetic Acid 75%	NR	NR	NR	NR
Acetic Acid 100% Glacial Acetic	NR	NR	NR	NR
Acetic Acid Vapors 1%	NT	NT	NT	NT
Acetic Anhydride	NT	NT	NR	NR
Acetone 10%	NR	NR	NT	NT
Acetone 100%	NR	NR	NR	NR
Acetophenone	NR	NR	NT	NT
Acetyl Chloride	NR	NR	NT	NT
Acid Sulfite pH 1-2	NT	NT	NT	NT
Acrolein (Acrylaldehyde) 20%	NT	NT	NT	NT
Acrolein (Acrylaldehyde) 100%	NT	NT	NT	NT
Acrylamide 50%	NT	NT	NT	NT
Acrylic Acid 20%	NT	NT	NT	NT
Acrylic Acid 25%	NT	NT	NT	NT
Acrylic Acid 100%	NT	NT	NT	NT
Acrylic Acid (Esterified)	NT	NT	NT	NT
Acrylic Copolymer PPG-03611	NT	NT	NR	R
Acrylic Ester Copolymer	NT	NT	NT	NT
Acrylic Latex	NT	NT	NT	NT
Acrylonitrile 100%	NT	NT	NT	NT
Activated Carbon Beds	NT	NT	100	R
Adipic Acid, Dry	80	R	NT	NT
Adipic Acid 25%	NR	NR	NT	NT
Adipic Acid 23%	NR	NR	NT	NT
Adipic Acid 60% in Ethyl Alcohol	NR	NR	NT	NT
Adipic Acid, Saturated	NR	NR	NT	NT
Advastab	NT	NT	NT	NT
Alkyd Benzene, Linear	NT	NT	100	R
Alkyd Glycidal Ether	NT	NT	140	R
Alkyd Glycidyl Ether Sulfonate 58%; Sodium Chloride 2%	NT	NT	NT	R
Alkyl Benzene Sulfate Acid 92%	NT	NT	NT	NT
Allyl Alcohol 100%	NT	NT	NT	NT
Allyl Chloride, All	NT	NT	NR	NR
Allyl Glycidyl Ether	NT	NT	NT	NT
Almond Oil	NT	NT	NT	NT
Alpha Methylstyrene	NT	NT	NT	NT
Alpha Oleum Sulfates	NT	NT	NT	NT
Alum, (Aluminum Pottassium Sulfate,dodecahydrate)	NT	NT	NT	R
Aluminum Acetate 25%	NT	NT	NT	NT
Aluminum Ammonium Sulfate 50%	NT	NT	NT	NT
Aluminum Bromide	NT	NT	NT	NT
Aluminum Chloride, All	NT	NT	NT	NT
Aluminum Chloride 13%; Benzol 2%	NT	NT	NT	NT
Aluminum Chloride 30%	NT	NT	100	R
Aluminum Chlorohydrate, All	NT	NT	NT	NT

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	Magnalux 304 Vinyl Ester		Sher-Glass FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Acetaldehyde 20%	80	R	NT	NT
Acetaldehyde 100%	NR	NR	NT	NT
Acetic Acid 2%; Formic Acid 2%	140	R	NT	NT
Acetic Acid 10%	120	R	NT	NT
Acetic Acid 15%	120	R	NT	NT
Acetic Acid 25%	120	R	NT	NT
Acetic Acid 40%	120	R	NT	NT
Acetic Acid 50%	120	R	NT	NT
Acetic Acid 75%	NR	R	NT	NT
Acetic Acid 100% Glacial Acetic	NR	NR	NT	NT
Acetic Acid Vapors 1%	NR	NR	NT	NT
Acetic Anhydride	NR	R	NT	NT
Acetone 10%	100	R	NT	NT
Acetone 100%	NR	NR	NT	NT
Acetophenone	NR	NR	NT	NT
Acetyl Chloride	NR	NR	NT	NT
Acid Sulfite pH 1-2	140	R	NT	NT
Acrolein (Acrylaldehyde) 20%	80	R	NT	NT
Acrolein (Acrylaldehyde) 100%	NR	NR	NT	NT
Acrylamide 50%	100	R	NT	NT
Acrylic Acid 20%	100	R	NT	NT
Acrylic Acid 25%	100	R	NT	NT
Acrylic Acid 100%	NR	NR	NT	NT
Acrylic Acid (Esterified)	NR	NR	NT	NT
Acrylic Copolymer PPG-03611	140	R	NT	NT
Acrylic Ester Copolymer	140	R	NT	NT
Acrylic Latex	140	R	NT	NT
Acrylonitrile 100%	NR	NR	NT	NT
Activated Carbon Beds	140	R	NT	NT
Adipic Acid, Dry	NT	NT	NT	NT
Adipic Acid 25%	120	R	NT	NT
Adipic Acid 23%	120	R	NT	NT
Adipic Acid 60% in Ethyl Alcohol	100	R	NT	NT
Adipic Acid, Saturated	80	R	NT	NT
Advastab	NT	NT	NT	NT
Alkyd Benzene, Linear	NR	R	NT	NT
Alkyd Glycidal Ether	140	R	NT	NT
Alkyd Glycidyl Ether Sulfonate 58%; Sodium Chloride 2%	NR	R	NT	NT
Alkyl Benzene Sulfate Acid 92%	140	R	NT	NT
Allyl Alcohol 100%	NR	R	NT	NT
Allyl Chloride, All	80	R	NT	NT
Allyl Glycidyl Ether	NT	NT	NT	NT
Almond Oil	NT	NT	NT	NT
Alpha Methylstyrene	80	R	NT	NT
Alpha Oleum Sulfates	140	R	NT	NT
Alum, (Aluminum Pottassium Sulfate,dodecahydrate)	140	R	NT	NT
Aluminum Acetate 25%	NT	NT	NT	NT
Aluminum Ammonium Sulfate 50%	NT	NT	NT	NT
Aluminum Bromide	140	R	NT	NT
Aluminum Chloride, All	140	R	NT	NT
Aluminum Chloride 13%; Benzol 2%	NT	NT	NT	NT
Aluminum Chloride 30%	80	R	NT	NT
Aluminum Chlorohydrate, All	140	R	NT	NT

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	Cor-Cote VEN FF		Cor-Cote VEN GF		Cor-Cote HCR FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Aluminum Chlorohydroxide 50%	150	R	150	R	NT	NT
Aluminum Citrate, All	150	R	150	R	NT	NT
Aluminum Fluoride, All	80	R	80	R	NT	NT
Aluminum Fluoride 1%	80	R	80	R	NT	NT
Aluminum Fluoride 5%	80	R	80	R	NT	NT
Aluminum Fluoride 10%	80	R	80	R	NT	NT
Aluminum Fluoride 20%	80	R	80	R	NT	NT
Aluminum Hydroxide, Dry	150	R	150	R	NT	NT
Aluminum Nitrate 10%	150	R	150	R	120	R
Aluminum Nitrate 50%	150	R	150	R	120	R
Aluminum Nitrate	150	R	150	R	120	R
Aluminum Nitrate, Saturated	150	R	150	R	120	R
Aluminum Sulfate, All	150	R	150	R	120	R
Aluminum Sulfate 10%	150	R	150	R	120	R
Aluminum Sulfate 50%	150	R	150	R	120	R
Ambitrol Ethylene Glycol	150	R	150	R	NT	NT
Ambush Insecticide	NT	NT	NT	NT	NT	NT
Amine Salts	120	R	120	R	NT	NT
Amino Acids	100	R	100	R	NT	NT
Ammonium Phosphate, All	150	R	150	R	NT	NT
Ammonia Gas	100	R	100	R	120	R
Ammonia Vapors, Wet Gas	150	R	150	R	120	R
Ammonia Liquified Gas	NR	NR	NR	NR	120	R
Ammonia 10%	120	R	120	R	120	R
Ammonia Silicofluoride	NT	NT	NT	NT	NT	NT
Ammonia Aqueous (see Ammonium Hydroxide)	NT	NT	NT	NT	NT	NT
Ammonium Acetate 65%	100	R	100	R	NT	NT
Ammonium Bicarbonate 10%	150	R	150	R	NT	NT
Ammonium Bicarbonate 50%	150	R	150	R	NT	NT
Ammonium Bifluoride 10% (4)	150	R	150	R	NT	NT
Ammonium Bifluoride (4)	150	R	150	R	NT	NT
Ammonium Bisulfite (Black Liquor)	150	R	150	R	100	R
Ammonium Bromate 43%	150	R	150	R	NT	NT
Ammonium Bromide 43%	150	R	150	R	NT	NT
Ammonium Carbonate, All	150	R	150	R	NT	NT
Ammonium Carbonate 25%	150	R	150	R	NT	NT
Ammonium Chloride, All	150	R	150	R	80	R
Ammonium Chloride 30%	150	R	150	R	80	R
Ammonium Chloride 50%	150	R	150	R	80	R
Ammonium Chloride, Saturated	150	R	150	R	80	R
Ammonium Citrate, All	150	R	150	R	NT	NT
Ammonium Cocoampholyte 30%	150	R	150	R	120	R
Ammonium Dichromate 50%	NT	NT	NT	NT	NT	NT
Ammonium Fluoride, All (1, 2, 4, 7)	150	R	150	R	120	R
Ammonium Hexaflorosilicate	NT	NT	NT	NT	NT	NT
Ammonium Hydroxide 5% (4)	120	R	120	R	100	R
Ammonium Hydroxide 10% (4)	80	R	80	R	100	R
Ammonium Hydroxide 20% (4)	80	R	80	R	100	R
Ammonium Hydroxide 30% (4)	80	R	80	R	80	R
Ammonium Hydroxide 40% (4)	NR	NR	NR	NR	NR	NR
Ammonium Lauryl Sulfate 30%	150	R	150	R	120	R
Ammonium Ligno Sulfonate 50%	150	R	150	R	NT	NT
Ammonium Nitrate	150	R	150	R	120	R
Ammonium Nitrate, Saturated	150	R	150	R	120	R
Ammonium Nitrate 5%	150	R	150	R	120	R
Ammonium Nitrate 50%	150	R	150	R	120	R
Ammonium Nitrate 65%	150	R	150	R	120	R
Ammonium Nitrate 83%	150	R	150	R	120	R
Ammonium Perchlorate 10%	NT	NT	NT	NT	120	R
Ammonium Persulfate 10%	150	R	150	R	120	R
Ammonium Persulfate 50%	150	R	150	R	120	R
Ammonium Persulfate, All	150	R	150	R	120	R
Ammonium Phosphate	150	R	150	R	120	R
Ammonium Phosphate 40%	150	R	150	R	120	R
Ammonium Phosphate 50%	150	R	150	R	120	R

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	Cor-Cote HP		Cor-Cote HP FF		Cor-Cote SC	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Aluminum Chlorohydroxide 50%	NT	NT	NT	NT	NT	NT
Aluminum Citrate, All	NT	NT	NT	NT	NT	NT
Aluminum Fluoride, All	NT	NT	NT	NT	NT	NT
Aluminum Fluoride 1%	NT	NT	NT	NT	NT	NT
Aluminum Fluoride 5%	NT	NT	NT	NT	NT	NT
Aluminum Fluoride 10%	NT	NT	NT	NT	NT	NT
Aluminum Fluoride 20%	NT	NT	NT	NT	NT	NT
Aluminum Hydroxide, Dry	NT	NT	NT	NT	NT	NT
Aluminum Nitrate 10%	NR	R	120	R	120	R
Aluminum Nitrate 50%	NR	R	120	R	120	R
Aluminum Nitrate	NR	R	120	R	120	R
Aluminum Nitrate, Saturated	NR	R	120	R	120	R
Aluminum Sulfate, All	NR	R	120	R	120	R
Aluminum Sulfate 10%	NR	R	120	R	120	R
Aluminum Sulfate 50%	NR	R	120	R	120	R
Ambitrol Ethylene Glycol	NT	NT	NT	NT	NT	NT
Ambush Insecticide	NR	R	120	R	100	R
Amine Salts	NT	NT	NT	NT	NT	NT
Amino Acids	NT	NT	NT	NT	NT	NT
Ammonium Phosphate, All	NT	NT	NT	NT	NT	NT
Ammonia Gas	NT	NT	NT	NT	NT	NT
Ammonia Vapors, Wet Gas	NR	R	120	R	120	R
Ammonia Liquified Gas	NR	R	120	R	120	R
Ammonia 10%	NR	NR	NR	NR	NR	NR
Ammonia Silicofluoride	NT	NT	NT	NT	NT	NT
Ammonia Aqueous (see Ammonium Hydroxide)	NT	NT	NT	NT	NT	NT
Ammonium Acetate 65%	NT	NT	NT	NT	NT	NT
Ammonium Bicarbonate 10%	NT	NT	NT	NT	NT	NT
Ammonium Bicarbonate 50%	NT	NT	NT	NT	NT	NT
Ammonium Bifluoride 10% (4)	NT	NT	NT	NT	NT	NT
Ammonium Bifluoride (4)	NT	NT	NT	NT	NT	NT
Ammonium Bisulfite (Black Liquor)	NR	NR	NR	NR	NR	R
Ammonium Bromate 43%	NT	NT	NT	NT	NT	NT
Ammonium Bromide 43%	NT	NT	NT	NT	NT	NT
Ammonium Carbonate, All	NT	NT	NT	NT	NT	NT
Ammonium Carbonate 25%	NT	NT	NT	NT	NT	NT
Ammonium Chloride, All	NR	R	80	R	80	R
Ammonium Chloride 30%	NR	R	80	R	80	R
Ammonium Chloride 50%	NR	R	80	R	80	R
Ammonium Chloride, Saturated	NR	R	80	R	80	R
Ammonium Citrate, All	NT	NT	NT	NT	NT	NT
Ammonium Cocoampholyte 30%	NR	R	120	R	120	R
Ammonium Dichromate 50%	NT	NT	NT	NT	NT	NT
Ammonium Fluoride, All (1, 2, 4, 7)	NR	R	120	R	120	R
Ammonium Hexaflorosilicate	NT	NT	NT	NT	NT	NT
Ammonium Hydroxide 5% (4)	NR	R	100	R	120	R
Ammonium Hydroxide 10% (4)	NR	R	100	R	120	R
Ammonium Hydroxide 20% (4)	NR	R	100	R	120	R
Ammonium Hydroxide 30% (4)	NR	R	NR	R	NR	R
Ammonium Hydroxide 40% (4)	NR	NR	NR	NR	NR	NR
Ammonium Lauryl Sulfate 30%	NR	R	80	R	100	R
Ammonium Ligno Sulfonate 50%	NT	NT	NT	NT	NT	NT
Ammonium Nitrate	NR	R	120	R	120	R
Ammonium Nitrate, Saturated	NR	R	120	R	120	R
Ammonium Nitrate 5%	NR	R	120	R	120	R
Ammonium Nitrate 50%	NR	R	120	R	120	R
Ammonium Nitrate 65%	NR	R	120	R	120	R
Ammonium Nitrate 83%	NR	R	120	R	120	R
Ammonium Perchlorate 10%	NR	R	100	R	100	R
Ammonium Persulfate 10%	NR	R	100	R	100	R
Ammonium Persulfate 50%	NR	R	NR	R	100	R
Ammonium Persulfate, All	NR	R	NR	R	100	R
Ammonium Phosphate	NR	R	120	R	120	R
Ammonium Phosphate 40%	NR	R	120	R	120	R
Ammonium Phosphate 50%	NR	R	120	R	120	R

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Aluminum Chlorohydroxide 50%	NT	NT	NT	NT
Aluminum Citrate, All	NT	NT	NT	NT
Aluminum Fluoride, All	NT	NT	NT	NT
Aluminum Fluoride 1%	NT	NT	NT	NT
Aluminum Fluoride 5%	NT	NT	NT	NT
Aluminum Fluoride 10%	NT	NT	NT	NT
Aluminum Fluoride 20%	NT	NT	NT	NT
Aluminum Hydroxide, Dry	NT	NT	NT	NT
Aluminum Nitrate 10%	NT	NT	100	R
Aluminum Nitrate 50%	NT	NT	100	R
Aluminum Nitrate	NT	NT	NT	NT
Aluminum Nitrate, Saturated	NT	NT	NT	NT
Aluminum Sulfate, All	80	R	140	R
Aluminum Sulfate 10%	80	R	140	R
Aluminum Sulfate 50%	80	R	140	R
Ambitrol Ethylene Glycol	NT	NT	NT	NT
Ambush Insecticide	NT	NT	100	R
Amine Salts	NT	NT	NT	NT
Amino Acids	NT	NT	NT	NT
Ammonium Phosphate, All	NT	NT	NT	NT
Ammonia Gas	NT	NT	NT	NT
Ammonia Vapors, Wet Gas	NT	NT	NT	NT
Ammonia Liquified Gas	NT	NT	NR	NT
Ammonia 10%	NT	NT	NR	R
Ammonia Silicofluoride	NT	NT	NT	NT
Ammonia Aqueous (see Ammonium Hydroxide)	NT	NT	NT	NT
Ammonium Acetate 65%	NT	NT	NT	NT
Ammonium Bicarbonate 10%	NT	NT	NT	NT
Ammonium Bicarbonate 50%	NT	NT	NT	NT
Ammonium Bifluoride 10% (4)	NT	NT	NT	NT
Ammonium Bifluoride (4)	NT	NT	NT	NT
Ammonium Bisulfite (Black Liquor)	NT	NT	NT	NT
Ammonium Bromate 43%	NT	NT	NT	NT
Ammonium Bromide 43%	NT	NT	NT	NT
Ammonium Carbonate, All	NT	NT	NT	NT
Ammonium Carbonate 25%	NT	NT	NT	NT
Ammonium Chloride, All	NT	NT	NT	NT
Ammonium Chloride 30%	NT	NT	NT	NT
Ammonium Chloride 50%	NT	NT	NT	NT
Ammonium Chloride, Saturated	NT	NT	NT	NT
Ammonium Citrate, All	NT	NT	NT	NT
Ammonium Cocoampholyte 30%	NT	NT	NT	NT
Ammonium Dichromate 50%	NT	NT	NT	NT
Ammonium Fluoride, All (1, 2, 4, 7)	NT	NT	NT	NT
Ammonium Hexaflorosilicate	NT	NT	NT	NT
Ammonium Hydroxide 5% (4)	80	R	NR	R
Ammonium Hydroxide 10% (4)	80	R	NR	R
Ammonium Hydroxide 20% (4)	NR	R	NR	R
Ammonium Hydroxide 30% (4)	NR	R	NR	R
Ammonium Hydroxide 40% (4)	NR	R	NT	NT
Ammonium Lauryl Sulfate 30%	NT	NT	NT	NT
Ammonium Ligno Sulfonate 50%	NT	NT	NT	NT
Ammonium Nitrate	80	R	NT	NT
Ammonium Nitrate, Saturated	80	R	NT	NT
Ammonium Nitrate 5%	80	R	140	R
Ammonium Nitrate 50%	80	R	140	R
Ammonium Nitrate 65%	80	R	140	R
Ammonium Nitrate 83%	80	R	NT	NT
Ammonium Perchlorate 10%	NT	NT	100	R
Ammonium Persulfate 10%	NT	NT	100	R
Ammonium Persulfate 50%	NT	NT	NT	NT
Ammonium Persulfate, All	NT	NT	NT	NT
Ammonium Phosphate	NR	R	NT	NT
Ammonium Phosphate 40%	NR	R	140	R
Ammonium Phosphate 50%	NR	R	NT	NT

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	Magnalux 304 Vinyl Ester		Sher-Glass FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Aluminum Chlorohydroxide 50%	140	R	NT	NT
Aluminum Citrate, All	140	R	NT	NT
Aluminum Fluoride, All	80	R	NT	NT
Aluminum Fluoride 1%	80	R	NT	NT
Aluminum Fluoride 5%	80	R	NT	NT
Aluminum Fluoride 10%	80	R	NT	NT
Aluminum Fluoride 20%	80	R	NT	NT
Aluminum Hydroxide, Dry	140	R	NT	NT
Aluminum Nitrate 10%	140	R	NT	NT
Aluminum Nitrate 50%	140	R	NT	NT
Aluminum Nitrate	140	R	NT	NT
Aluminum Nitrate, Saturated	140	R	NT	NT
Aluminum Sulfate, All	140	R	NT	NT
Aluminum Sulfate 10%	140	R	NT	NT
Aluminum Sulfate 50%	140	R	NT	NT
Ambitrol Ethylene Glycol	140	R	NT	NT
Ambush Insecticide	NT	NT	NT	NT
Amine Salts	140	R	NT	NT
Amino Acids	100	R	NT	NT
Ammonium Phosphate, All	140	R	NT	NT
Ammonia Gas	100	R	NT	NT
Ammonia Vapors, Wet Gas	140	R	NT	NT
Ammonia Liquified Gas	NR	NR	NT	NT
Ammonia 10%	140	R	NT	NT
Ammonia Silicofluoride	NT	NT	NT	NT
Ammonia Aqueous (see Ammonium Hydroxide)	NT	NT	NT	NT
Ammonium Acetate 65%	80	R	NT	NT
Ammonium Bicarbonate 10%	140	R	NT	NT
Ammonium Bicarbonate 50%	140	R	NT	NT
Ammonium Bifluoride 10% (4)	140	R	NT	NT
Ammonium Bifluoride (4)	140	R	NT	NT
Ammonium Bisulfite (Black Liquor)	140	R	NT	NT
Ammonium Bromate 43%	140	R	NT	NT
Ammonium Bromide 43%	140	R	NT	NT
Ammonium Carbonate, All	140	R	NT	NT
Ammonium Carbonate 25%	140	R	NT	NT
Ammonium Chloride, All	140	R	NT	NT
Ammonium Chloride 30%	140	R	NT	NT
Ammonium Chloride 50%	140	R	NT	NT
Ammonium Chloride, Saturated	140	R	NT	NT
Ammonium Citrate, All	140	R	NT	NT
Ammonium Cocoampholyte 30%	120	R	NT	NT
Ammonium Dichromate 50%	140	NT	NT	NT
Ammonium Fluoride, All (1, 2, 4, 7)	140	NR	NT	NT
Ammonium Hexaflorosilicate	NT	NT	NT	NT
Ammonium Hydroxide 5% (4)	150	NR	NT	NT
Ammonium Hydroxide 10% (4)	120	NR	NT	NT
Ammonium Hydroxide 20% (4)	120	NR	NT	NT
Ammonium Hydroxide 30% (4)	80	NR	NT	NT
Ammonium Hydroxide 40% (4)	NR	NR	NT	NT
Ammonium Lauryl Sulfate 30%	140	R	NT	NT
Ammonium Ligno Sulfonate 50%	140	R	NT	NT
Ammonium Nitrate	140	R	NT	NT
Ammonium Nitrate, Saturated	140	R	NT	NT
Ammonium Nitrate 5%	140	R	NT	NT
Ammonium Nitrate 50%	140	R	NT	NT
Ammonium Nitrate 65%	140	R	NT	NT
Ammonium Nitrate 83%	140	R	NT	NT
Ammonium Perchlorate 10%	140	R	NT	NT
Ammonium Persulfate 10%	140	R	NT	NT
Ammonium Persulfate 50%	140	R	NT	NT
Ammonium Persulfate, All	140	R	NT	NT
Ammonium Phosphate	140	R	NT	NT
Ammonium Phosphate 40%	140	R	NT	NT
Ammonium Phosphate 50%	140	R	NT	NT

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	Cor-Cote VEN FF		Cor-Cote VEN GF		Cor-Cote HCR FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Ammonium Polysulfide, Saturated	150	R	150	R	120	R
Ammonium Sulfamate 46%	NT	NT	NT	NT	NT	NT
Ammonium Sulfate Dry	150	R	150	R	120	R
Ammonium Sulfate 6%	150	R	150	R	120	R
Ammonium Sulfate 8%	150	R	150	R	120	R
Ammonium Sulfate 65%	150	R	150	R	120	R
Ammonium Sulfide (Bisulfide)	150	R	150	R	120	R
Ammonium Sulfide 24%	150	R	150	R	120	R
Ammonium Sulfide 45%	150	R	150	R	120	R
Ammonium Sulfite 50%	150	R	150	R	120	R
Ammonium Sulfite	150	R	150	R	120	R
Ammonium Sulfite, Saturated	150	R	150	R	120	R
Ammonium Thiocyanate 20%	150	R	150	R	100	R
Ammonium Thiocyanate 50%	120	R	120	R	100	R
Ammonium Thiocyanate 55%	120	R	120	R	100	R
Ammonium Thiosulfate 60%	100	R	100	R	100	R
Ammonium Xylene Sulfonate 40%	120	R	120	R	120	R
Ammonyx Cetoc (Stepan Co)	NT	NT	NT	NT	NT	NT
Amyl Acetate	120	R	120	R	NR	R
Amyl Alcohol	150	R	150	R	100	R
Amyl Chloride 100%	150	R	150	R	NT	NT
Aniline 100%	120	R	120	R	NR	R
Aniline Hydrochloride, All	150	R	150	R	120	R
Aniline Sulfate, All	150	R	150	R	NT	NT
Aniline Sulfate 25%	150	R	150	R	NT	NT
Animal Fat Solution 45%	150	R	150	R	NT	NT
Anodizing Chromic (10% Chromic Acid)	100	R	100	R	NR	R
Anodixing Sulfuric (50% Sulfuric Acid)	150	R	150	R	NR	NR
Anodize (15% Sulfuric)	150	R	150	R	NT	NT
Antimony Trichloride 100%	100	R	150	R	120	R
Antimony Trichloride 50%	100	R	150	R	120	R
Apple Butter	NT	NT	NT	NT	120	R
Apple Concentrate	NT	NT	NT	NT	NT	NT
Apple Juice	NT	NT	NT	NT	NT	NT
Aqua Ammonia up to 29.4%	NT	NT	NT	NT	NT	NT
Aqua Regia	NR	NR	NR	NR	NR	R
Arsenic Acid 50%	150	R	150	R	NT	NT
Arsenic Acid, All	150	R	150	R	NT	NT
Arsenious Acid 19 BE	150	R	150	R	NT	NT
Arsenous Acid	150	R	150	R	NT	NT
Aviation Fuel JP 4	150	R	150	R	NT	NT
Axle Grease Lubricant	NR	R	NR	R	NT	NT
Banvel Herbicide	NT	NT	NT	NT	NT	NT
Barium Acetate	150	R	150	R	NT	NT
Barium Bromide, All	150	R	150	R	NT	NT
Barium Carbonate, All	150	R	150	R	NT	NT
Barium Chloride, All	150	R	150	R	120	R
Barium Chloride 50%	150	R	150	R	120	R
Barium Cyanide, All	150	R	150	R	NT	NT
Barium Hydroxide, All	150	R	150	R	120	R
Barium Hydroxide 50%	150	R	150	R	120	R
Barium Nitrate 50%	NT	NT	NT	NT	NT	NT
Barium Sulfate, All	150	R	150	R	120	R
Barium Sulfide, All	150	R	150	R	120	R
Beer	NR	NR	NR	NR	NT	NT
Belgard EV Concentrate	NT	NT	NT	NT	NT	NT
Bentonite	150	R	150	R	120	R
Benzal Chloride	NR	R	NR	R	NR	R
Benzaldehyde 100%	NR	R	NR	R	NT	NT
Benzene (Benzol)	100	R	100	R	100	R
Benzene Hydrochloric Acid, Wet	NT	NT	NT	NT	NT	NT
Benzene Sulfonic Acid 100%	150	R	150	R	NT	NT
Benzene Sulfonic Acid 25%	150	R	150	R	NT	NT
Benzene Sulfonic Acid 50%	150	R	150	R	NT	NT
Benzene Sulfonyl Chloride	NT	NT	NT	NT	NT	NT

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	Cor-Cote HP		Cor-Cote HP FF		Cor-Cote SC	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Ammonium Polysulfide, Saturated	NR	R	120	R	120	R
Ammonium Sulfamate 46%	NT	NT	NT	NT	NT	NT
Ammonium Sulfate Dry	NR	R	NR	R	120	R
Ammonium Sulfate 6%	NR	R	NR	R	120	R
Ammonium Sulfate 8%	NR	R	NR	R	120	R
Ammonium Sulfate 65%	NR	R	NR	R	120	R
Ammonium Sulfide (Bisulfide)	NR	R	NR	R	120	R
Ammonium Sulfide 24%	NR	R	NR	R	120	R
Ammonium Sulfide 45%	NR	R	NR	R	120	R
Ammonium Sulfite 50%	NR	R	120	R	120	R
Ammonium Sulfite	NR	R	120	R	120	R
Ammonium Sulfite, Saturated	NR	R	NR	R	NR	R
Ammonium Thiocyanate 20%	NR	R	120	R	100	R
Ammonium Thiocyanate 50%	NR	R	120	R	100	R
Ammonium Thiocyanate 55%	NR	R	120	R	100	R
Ammonium Thiosulfate 60%	NR	R	120	R	100	R
Ammonium Xylene Sulfonate 40%	NR	R	120	R	120	R
Ammonyx Cetoc (Stepan Co)	NT	NT	NT	NT	NT	NT
Amyl Acetate	NR	R	NR	R	NR	R
Amyl Alcohol	NR	R	120	R	100	R
Amyl Chloride 100%	NT	NT	NT	NT	NT	NT
Aniline 100%	NR	NR	NR	NR	NR	NR
Aniline Hydrochloride, All	NR	R	120	R	100	R
Aniline Sulfate, All	NT	NT	NT	NT	NT	NT
Aniline Sulfate 25%	NT	NT	NT	NT	NT	NT
Animal Fat Solution 45%	NT	NT	NT	NT	NT	NT
Anodizing Chromic (10% Chromic Acid)	NR	NR	NR	NR	NR	NR
Anodixing Sulfuric (50% Sulfuric Acid)	NR	NR	NR	NR	NR	NR
Anodize (15% Sulfuric)	NT	NT	NT	NT	NT	NT
Antimony Trichloride 100%	NR	R	120	R	100	R
Antimony Trichloride 50%	NR	R	120	R	100	R
Apple Butter	NR	R	120	R	100	R
Apple Concentrate	NR	R	120	R	100	R
Apple Juice	NT	NT	NT	NT	NT	NT
Aqua Ammonia up to 29.4%	NT	NT	NT	NT	NT	NT
Aqua Regia	NR	NR	NR	NR	NR	NR
Arsenic Acid 50%	NR	NR	NR	NR	NR	NR
Arsenic Acid, All	NR	NR	NR	NR	NR	NR
Arsenious Acid 19 BE	NR	NR	NR	NR	NR	NR
Arsenous Acid	NR	NR	NR	NR	NR	NR
Aviation Fuel JP 4	NT	NT	NT	NT	NT	NT
Axle Grease Lubricant	NT	NT	NT	NT	NT	NT
Banvel Herbicide	NR	R	120	R	100	R
Barium Acetate	NT	NT	NT	NT	NT	NT
Barium Bromide, All	NT	NT	NT	NT	NT	NT
Barium Carbonate, All	NT	NT	NT	NT	NT	NT
Barium Chloride, All	NR	R	120	R	120	R
Barium Chloride 50%	NR	R	120	R	120	R
Barium Cyanide, All	NT	NT	NT	NT	NT	NT
Barium Hydroxide, All	NR	R	120	R	120	R
Barium Hydroxide 50%	NR	R	120	R	120	R
Barium Nitrate 50%	NT	NT	NT	NT	NT	NT
Barium Sulfate, All	NR	R	120	R	120	R
Barium Sulfide, All	NR	R	120	R	120	R
Beer	NT	NT	NT	NT	NT	NT
Belgard EV Concentrate	NT	NT	NT	NT	NT	NT
Bentonite	NR	R	100	R	100	R
Benzal Chloride	NT	NT	NT	NT	NR	NR
Benzaldehyde 100%	NT	NT	NT	NT	NT	NT
Benzene (Benzol)	NR	R	120	R	NR	R
Benzene Hydrochloric Acid, Wet	NT	NT	NT	NT	NT	NT
Benzene Sulfonic Acid 100%	NR	NR	NR	NR	NR	NR
Benzene Sulfonic Acid 25%	NT	NT	NT	NT	NT	NT
Benzene Sulfonic Acid 50%	NR	NR	NR	NR	NR	NR
Benzene Sulfonyl Chloride	NT	NT	NT	NT	NT	NT

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Ammonium Polysulfide, Saturated	NR	R	NT	NT
Ammonium Sulfamate 46%	NR	R	NT	NT
Ammonium Sulfate Dry	NR	R	NT	NT
Ammonium Sulfate 6%	NR	R	NT	NT
Ammonium Sulfate 8%	NR	R	140	R
Ammonium Sulfate 65%	NR	R	140	R
Ammonium Sulfide (Bisulfide)	NT	NT	NT	NT
Ammonium Sulfide 24%	NT	NT	100	R
Ammonium Sulfide 45%	NT	NT	100	R
Ammonium Sulfite 50%	NT	NT	100	R
Ammonium Sulfite	NT	NT	NT	NT
Ammonium Sulfite, Saturated	NT	NT	NT	NT
Ammonium Thiocyanate 20%	NT	NT	NT	NT
Ammonium Thiocyanate 50%	NT	NT	100	R
Ammonium Thiocyanate 55%	NT	NT	NT	NT
Ammonium Thiosulfate 60%	NT	NT	NT	NT
Ammonium Xylene Sulfonate 40%	NT	NT	140	R
Ammonyx Cetoc (Stepan Co)	NT	NT	NT	NT
Amyl Acetate	NT	NT	NT	100
Amyl Alcohol	NT	NT	NT	NT
Amyl Chloride 100%	NT	NT	NT	NT
Aniline 100%	NT	NT	NR	NR
Aniline Hydrochloride, All	NT	NT	NT	NT
Aniline Sulfate, All	NT	NT	NT	NT
Aniline Sulfate 25%	NT	NT	NT	NT
Animal Fat Solution 45%	NT	NT	NT	R
Anodizing Chromic (10% Chromic Acid)	NT	NT	NT	NT
Anodixing Sulfuric (50% Sulfuric Acid)	NT	NT	NT	NT
Anodize (15% Sulfuric)	NT	NT	NT	NT
Antimony Trichloride 100%	NT	NT	NT	NT
Antimony Trichloride 50%	NT	NT	NT	NT
Apple Butter	NT	NT	NT	NT
Apple Concentrate	NT	NT	100	R
Apple Juice	NT	NT	NT	NT
Aqua Ammonia up to 29.4%	NT	NT	NT	NT
Aqua Regia	NT	NT	NT	NT
Arsenic Acid 50%	NT	NT	NT	NT
Arsenic Acid, All	NT	NT	NT	NT
Arsenious Acid 19 BE	NT	NT	NT	NT
Arsenous Acid	NT	NT	NT	NT
Aviation Fuel JP 4	NT	NT	80	R
Axle Grease Lubricant	NT	NT	NT	NT
Banvel Herbicide	NT	NT	100	R
Barium Acetate	NT	NT	NT	NT
Barium Bromide, All	NT	NT	NT	NT
Barium Carbonate, All	NT	NT	NT	NT
Barium Chloride, All	NT	NT	NT	NT
Barium Chloride 50%	NT	NT	NT	NT
Barium Cyanide, All	NT	NT	NT	NT
Barium Hydroxide, All	NT	NT	NT	NT
Barium Hydroxide 50%	NT	NT	NT	NT
Barium Nitrate 50%	NT	NT	NT	NT
Barium Sulfate, All	NT	NT	NT	NT
Barium Sulfide, All	NT	NT	NT	NT
Beer	NT	NT	NT	NT
Belgard EV Concentrate	NT	NT	NT	NT
Bentonite	NT	NT	NT	NT
Benzal Chloride	NT	NT	NT	NT
Benzaldehyde 100%	NT	NT	NR	NR
Benzene (Benzol)	NR	NR	80	R
Benzene Hydrochloric Acid, Wet	NT	NT	NT	NT
Benzene Sulfonic Acid 100%	NT	NT	NT	NT
Benzene Sulfonic Acid 25%	NT	NT	NT	NT
Benzene Sulfonic Acid 50%	NT	NT	NT	NT
Benzene Sulfonyl Chloride	NT	NT	NR	NR

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Chemical Environment and Concentration (%)	Magnalux 304 Vinyl Ester		Sher-Glass FF	
	Immersion	Secondary Containment	Immersion	Secondary Containment
Ammonium Polysulfide, Saturated	140	R	NT	NT
Ammonium Sulfamate 46%	NT	NT	NT	NT
Ammonium Sulfate Dry	140	R	NT	NT
Ammonium Sulfate 6%	140	R	NT	NT
Ammonium Sulfate 8%	140	R	NT	NT
Ammonium Sulfate 65%	140	R	NT	NT
Ammonium Sulfide (Bisulfide)	140	R	NT	NT
Ammonium Sulfide 24%	140	R	NT	NT
Ammonium Sulfide 45%	140	R	NT	NT
Ammonium Sulfite 50%	140	R	NT	NT
Ammonium Sulfite	140	R	NT	NT
Ammonium Sulfite, Saturated	140	R	NT	NT
Ammonium Thiocyanate 20%	140	R	NT	NT
Ammonium Thiocyanate 50%	140	R	NT	NT
Ammonium Thiocyanate 55%	140	R	NT	NT
Ammonium Thiosulfate 60%	100	R	NT	NT
Ammonium Xylene Sulfonate 40%	120	R	NT	NT
Ammonyx Cetoc (Stepan Co)	NT	NT	NT	NT
Amyl Acetate	R	NT	NT	
Amyl Alcohol	120	R	NT	NT
Amyl Chloride 100%	140	R	NT	NT
Aniline 100%	NR	NR	NT	NT
Aniline Hydrochloride, All	120	R	NT	NT
Aniline Sulfate, All	140	R	NT	NT
Aniline Sulfate 25%	140	R	NT	NT
Animal Fat Solution 45%	140	R	NT	NT
Anodizing Chromic (10% Chromic Acid)	NR	NR	NT	NT
Anodixing Sulfuric (50% Sulfuric Acid)	140	R	NT	NT
Anodize (15% Sulfuric)	140	R	NT	NT
Antimony Trichloride 100%	100	R	NT	NT
Antimony Trichloride 50%	100	R	NT	NT
Apple Butter	NT	NT	NT	NT
Apple Concentrate	NT	NT	NT	NT
Apple Juice	NT	NT	NT	NT
Aqua Ammonia up to 29.4%	NT	NT	NT	NT
Aqua Regia	NR	NR	NT	NT
Arsenic Acid 50%	100	R	NT	NT
Arsenic Acid, All	100	R	NT	NT
Arsenious Acid 19 BE	100	R	NT	NT
Arsenous Acid	120	R	NT	NT
Aviation Fuel JP 4	100	R	NT	NT
Axle Grease Lubricant	NR	R	NT	NT
Banvel Herbicide	NT	NT	NT	NT
Barium Acetate	140	R	NT	NT
Barium Bromide, All	140	R	NT	NT
Barium Carbonate, All	140	R	NT	NT
Barium Chloride, All	140	R	NT	NT
Barium Chloride 50%	140	R	NT	NT
Barium Cyanide, All	140	R	NT	NT
Barium Hydroxide, All	120	R	NT	NT
Barium Hydroxide 50%	120	R	NT	NT
Barium Nitrate 50%	NT	NT	NT	NT
Barium Sulfate, All	120	R	NT	NT
Barium Sulfide, All	120	R	NT	NT
Beer	NR	NR	NT	NT
Belgard EV Concentrate	NT	NT	NT	NT
Bentonite	140	R	NT	NT
Benzal Chloride	NR	NR	NT	NT
Benzaldehyde 100%	NR	NR	NT	NT
Benzene (Benzol)	NR	NR	NT	NT
Benzene Hydrochloric Acid, Wet	NT	NT	NT	NT
Benzene Sulfonic Acid 100%	140	R	NT	NT
Benzene Sulfonic Acid 25%	140	R	NT	NT
Benzene Sulfonic Acid 50%	140	R	NT	NT
Benzene Sulfonyl Chloride	NT	NT	NT	NT

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	Cor-Cote VEN FF		Cor-Cote VEN GF		Cor-Cote HCR FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Benzene Sulfonyl Chloride 98.5%; Methanol 1.5%	NT	NT	NT	NT	NR	NR
Benzene:Ethylbenzene 1/3 - 2/3	100	R	100	R	NT	NT
Benzene Thiol	NR	NR	NR	NR	NR	NR
Benzoic Acid, Saturated	150	R	150	R	120	R
Benzoyl Benzoic Acid	150	R	150	R	120	R
Benzoyl Chloride	NR	R	NR	R	100	R
Benzyl Alcohol 20%	120	R	120	R	100	R
Benzyl Alcohol 100%	120	R	120	R	100	R
Benzyl Chloride 100%	80	R	80	R	80	R
Benzyl Peroxide	NT	NT	NT	NT	NT	NT
Benzyl Peroxide 10%; Sodium Hydroxide 5%	NT	NT	NT	NT	NT	NT
Benzyltrimethylam. Chloride 60%	100	R	100	R	NT	NT
Bisulfite in Scrubber, Gases	NT	NT	NT	NT	NT	NT
Black Liquor Recovery, Furnace Gases	150	R	150	R	NT	NT
Black Liquor, Pulp Mill (4, 9)	150	R	150	R	120	R
Bleach (see Sodium Hypochlorite)	NT	NT	NT	NT	NT	NT
Blood Sugar, All	150	R	150	R	NT	NT
Blow Down (non-condensing gases from pulp						
digester, i.e. dimethyl sulfide and mercaptanes) (5)	150	R	150	R	NT	NT
Borax 100%	150	R	150	R	120	R
Boric Acid, All	150	R	150	R	120	R
Boric Acid, Saturated	150	R	150	R	120	R
Brake Fluid HD 557	120	R	120	R	NT	NT
Brass Plating Solution (4)	150	R	150	R	NT	NT
Brine Mixture	150	R	150	R	120	R
Brine, Saturated	150	R	150	R	120	R
Brominated Phosphoric Ester, All	120	R	120	R	NT	NT
Bromine, Dry Gas (not condensing)	100	R	100	R	NR	NR
Bromine, Liquid 100%	NR	NR	NR	NR	NR	NR
Bromine, Wet Gas	120	R	120	R	NR	NR
Bromine Water 5%	120	R	120	R	NR	NR
Bromochloromethane	NT	NT	NT	NT	NT	NT
Brown Stock	150	R	150	R	120	R
Bunker C Fuel Oil	150	R	150	R	NT	NT
Butadiene Gas (9)	100	R	100	R	NT	NT
Butanediol	140	R	140	R	NT	NT
Butanol	120	R	120	R	120	R
Butoxyethanol	100	R	100	R	NT	NT
Butoxyethoxyethanol	100	R	100	R	NT	NT
Butterscotch Topping	NT	NT	NT	NT	NT	NT
Butyl Acetate	NR	R	NR	R	NR	R
Butyl Acrylate	80	R	80	R	NT	NT
Butyl Alcohol (Butanol)	120	R	120	R	120	R
Butyl Acid Levulinic	120	R	120	R	100	R
Butyl Amine	NR	R	NR	R	NT	NT
Butyl Benzoate 70%	100	R	100	R	NT	NT
Butyl Benzyl Phthalate 100%	150	R	150	R	NT	NT
Butyl Carbitol	120	R	120	R	100	R
Butyl Carbitol Acetate	100	R	100	R	100	R
Butyl Carbitol Diethyl Glycol 100%	100	R	100	R	NT	NT
Butyl Cellosolve	100	R	100	R	100	R
Butyl Cellosolve Acetate	100	R	100	R	100	R
Butyl Ether	150	R	150	R	NT	NT
Butyl Formcel	NT	NT	NT	NT	NT	NT
Butyl Glycidyl Ether	NT	NT	NT	NT	NT	NT
Butyl Hypochlorite 98%	NR	NR	NR	NR	NT	NT
Butyl Oxitol	NT	NT	NT	NT	NT	NT
Butylamine 50%	NT	NT	NT	NT	NT	NT
Butylene	NT	NT	NT	NT	NT	NT
Butylene Glycol	150	R	150	R	NT	NT
Butylene Oxide	NR	NR	NR	NR	NT	NT
Butyraldehyde	100	R	100	R	NT	NT
Butyric Acid 100%	120	R	120	R	80	NR
Butyric Acid 5%	150	R	150	R	80	NR
Butyric Acid 25%	150	R	150	R	80	NR

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	Cor-Cote HP		Cor-Cote HP FF		Cor-Cote SC	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Benzene Sulfonyl Chloride 98.5%; Methanol 1.5%	NR	NR	NR	NR	NR	NR
Benzene:Ethylbenzene 1/3 - 2/3	NT	NT	NT	NT	NT	NT
Benzene Thiol	NR	NR	NR	NR	NR	NR
Benzoic Acid, Saturated	NR	R	120	R	120	R
Benzoyl Benzoic Acid	NR	R	120	R	120	R
Benzoyl Chloride	NR	R	100	R	100	R
Benzyl Alcohol 20%	NR	R	NR	R	100	R
Benzyl Alcohol 100%	NR	R	NR	R	100	R
Benzyl Chloride 100%	NR	R	NR	R	NR	R
Benzyl Peroxide	NT	NT	NT	NT	NT	NT
Benzyl Peroxide 10%; Sodium Hydroxide 5%	NT	NT	NT	NT	NT	NT
Benzyltrimethylam. Chloride 60%	NT	NT	NT	NT	NT	NT
Bisulfite in Scrubber, Gases	NT	NT	NT	NT	NT	NT
Black Liquor Recovery, Furnace Gases	NT	NT	NT	NT	NT	NT
Black Liquor, Pulp Mill (4, 9)	NR	R	NR	R	120	R
Bleach (see Sodium Hypochlorite)	NT	NT	NT	NT	NT	NT
Blood Sugar, All	NT	NT	NT	NT	NT	NT
Blow Down (non-condensing gases from pulp digester, i.e. dimethyl sulfide and mercaptanes) (5)	NT	NT	NT	NT	NT	NT
Borax 100%	NR	R	120	R	120	R
Boric Acid, All	NR	R	120	R	120	R
Boric Acid, Saturated	NR	R	120	R	120	R
Brake Fluid HD 557	NT	NT	NT	NT	NT	NT
Brass Plating Solution (4)	NT	NT	NT	NT	NT	NT
Brine Mixture	NR	R	100	R	100	R
Brine, Saturated	NR	R	100	R	100	R
Brominated Phosphoric Ester, All	NT	NT	NT	NT	NT	NT
Bromine, Dry Gas (not condensing)	NR	NR	NR	NR	NR	NR
Bromine, Liquid 100%	NR	NR	NR	NR	NR	NR
Bromine, Wet Gas	NR	NR	NR	NR	NR	NR
Bromine Water 5%	NR	NR	NR	NR	NR	NR
Bromochloromethane	NT	NT	NT	NT	NT	NT
Brown Stock	NR	R	NR	R	NR	R
Bunker C Fuel Oil	NT	NT	NT	NT	NT	NT
Butadiene Gas (9)	NT	NT	NT	NT	NT	NT
Butanediol	NR	R	120	R	120	R
Butanol	NR	R	120	R	120	R
Butoxyethanol	NT	NT	NT	NT	NT	NT
Butoxyethoxyethanol	NT	NT	NT	NT	NT	NT
Butterscotch Topping	NT	NT	NT	NT	NT	NT
Butyl Acetate	NR	R	NR	R	NR	R
Butyl Acrylate	NR	NR	NR	NR	NR	NR
Butyl Alcohol (Butanol)	NR	R	120	R	120	R
Butyl Acid Levulinic	NR	R	NR	R	NR	R
Butyl Amine	NR	NR	NR	NR	NR	NR
Butyl Benzoate 70%	NT	NT	NT	NT	NT	NT
Butyl Benzyl Phthalate 100%	NT	NT	NT	NT	NT	NT
Butyl Carbitol	NR	R	100	R	100	R
Butyl Carbitol Acetate	NR	R	NR	R	NR	R
Butyl Carbitol Diethyl Glycol 100%	NT	NT	NT	NT	NT	NT
Butyl Cellosolve	NR	R	100	R	100	R
Butyl Cellosolve Acetate	NR	R	NR	R	NR	R
Butyl Ether	NT	NT	NT	NT	NT	NT
Butyl Formcel	NT	NT	NT	NT	NT	NT
Butyl Glycidyl Ether	NT	NT	NT	NT	NT	NT
Butyl Hypochlorite 98%	NT	NT	NT	NT	NT	NT
Butyl Oxitol	NT	NT	NT	NT	NT	NT
Butylamine 50%	NT	NT	NT	NT	NT	NT
Butylene	NT	NT	NT	NT	NT	NT
Butylene Glycol	NT	NT	NT	NT	NT	NT
Butylene Oxide	NT	NT	NT	NT	NT	NT
Butyraldehyde	NR	R	NR	R	NR	R
Butyric Acid 100%	NR	NR	NR	NR	NR	NR
Butyric Acid 5%	NR	NR	NR	NR	NR	NR
Butyric Acid 25%	NR	NR	NR	NR	NR	NR

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Benzene Sulfonyl Chloride 98.5%; Methanol 1.5%	NT	NT	NT	NT
Benzene:Ethylbenzene 1/3 - 2/3	NT	NT	80	R
Benzene Thiol	NT	NT	NT	NT
Benzoic Acid, Saturated	NT	NT	NT	NT
Benzoyl Benzoic Acid	NT	NT	NT	NT
Benzoyl Chloride	NT	NT	NT	NT
Benzyl Alcohol 20%	NT	NT	NT	NT
Benzyl Alcohol 100%	NT	NT	NT	NT
Benzyl Chloride 100%	NT	NT	NT	NT
Benzyl Peroxide	NT	NT	NT	NT
Benzyl Peroxide 10%; Sodium Hydroxide 5%	NT	NT	NT	NT
Benzyltrimethylam. Chloride 60%	NT	NT	NT	NT
Bisulfite in Scrubber, Gases	NT	NT	NT	NT
Black Liquor Recovery, Furnace Gases	NT	NT	NT	NT
Black Liquor, Pulp Mill (4, 9)	NT	NT	NT	NT
Bleach (see Sodium Hypochlorite)	NT	NT	NT	NT
Blood Sugar, All	NT	NT	NT	NT
Blow Down (non-condensing gases from pulp digester, i.e. dimethyl sulfide and mercaptanes) (5)	NT	NT	NT	NT
Borax 100%	NR	NR	NT	NT
Boric Acid, All	NT	NT	NT	NT
Boric Acid, Saturated	NT	NT	100	R
Brake Fluid HD 557	NR	R	NT	NT
Brass Plating Solution (4)	NT	NT	NT	NT
Brine Mixture	NR	R	NT	NT
Brine, Saturated	NR	R	NT	NT
Brominated Phosphoric Ester, All	NT	NT	NT	NT
Bromine, Dry Gas (not condensing)	NR	NR	NT	NT
Bromine, Liquid 100%	NR	NR	NT	NT
Bromine, Wet Gas	NR	NR	NT	NT
Bromine Water 5%	NR	NR	NT	NT
Bromochloromethane	NT	NT	NT	NT
Brown Stock	NR	R	NT	NT
Bunker C Fuel Oil	NT	NT	120	R
Butadiene Gas (9)	NT	NT	NT	NT
Butanediol	NT	NT	NT	NT
Butanol	NT	NT	80	R
Butoxyethanol	NT	NT	NT	NT
Butoxyethoxyethanol	NT	NT	NT	NT
Butterscotch Topping	NT	NT	NT	NT
Butyl Acetate	NT	NT	NT	NT
Butyl Acrylate	NT	NT	NR	R
Butyl Alcohol (Butanol)	NT	NT	80	R
Butyl Acid Levulinic	NT	NT	NT	NT
Butyl Amine	NT	NT	NT	NT
Butyl Benzoate 70%	NT	NT	NT	NT
Butyl Benzyl Phthalate 100%	NT	NT	NT	NT
Butyl Carbitol	NT	NT	NT	NT
Butyl Carbitol Acetate	NT	NT	NT	NT
Butyl Carbitol Diethyl Glycol 100%	NT	NT	NT	NT
Butyl Cellosolve	NT	NT	NR	NR
Butyl Cellosolve Acetate	NT	NT	NT	NT
Butyl Ether	NT	NT	NT	NT
Butyl Formcel	NT	NT	NT	NT
Butyl Glycidyl Ether	NT	NT	NT	NT
Butyl Hypochlorite 98%	NT	NT	NT	NT
Butyl Oxitol	NT	NT	NR	R
Butylamine 50%	NT	NT	NR	NR
Butylene	NT	NT	NT	NT
Butylene Glycol	NT	NT	80	R
Butylene Oxide	NT	NT	NT	NT
Butyraldehyde	NT	NT	NR	NR
Butyric Acid 100%	NT	NT	NT	NT
Butyric Acid 5%	NT	NT	NR	R
Butyric Acid 25%	NT	NT	NT	NT

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	Magnalux 304 Vinyl Ester		Sher-Glass FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Benzene Sulfonyl Chloride 98.5%; Methanol 1.5%	NT	NT	NT	NT
Benzene:Ethylbenzene 1/3 - 2/3	NR	NR	NT	NT
Benzene Thiol	NR	NR	NT	NT
Benzoic Acid, Saturated	140	R	NT	NT
Benzoyl Benzoic Acid	140	R	NT	NT
Benzoyl Chloride	NR	NR	NT	NT
Benzyl Alcohol 20%	120	NR	NT	NT
Benzyl Alcohol 100%	120	NR	NT	NT
Benzyl Chloride 100%	NR	NR	NT	NT
Benzyl Peroxide	NT	NT	NT	NT
Benzyl Peroxide 10%; Sodium Hydroxide 5%	NT	NT	NT	NT
Benzyltrimethylam. Chloride 60%	100	R	NT	NT
Bisulfite in Scrubber, Gases	NT	NT	NT	NT
Black Liquor Recovery, Furnace Gases	120	R	NT	NT
Black Liquor, Pulp Mill (4, 9)	120	R	NT	NT
Bleach (see Sodium Hypochlorite)	NT	NT	NT	NT
Blood Sugar, All	140	R	NT	NT
Blow Down (non-condensing gases from pulp digester, i.e. dimethyl sulfide and mercaptanes) (5)	140	R	NT	NT
Borax 100%	140	R	NT	NT
Boric Acid, All	140	R	NT	NT
Boric Acid, Saturated	140	R	NT	NT
Brake Fluid HD 557	140	R	NT	NT
Brass Plating Solution (4)	140	R	NT	NT
Brine Mixture	140	R	NT	NT
Brine, Saturated	140	R	NT	NT
Brominated Phosphoric Ester, All	140	R	NT	NT
Bromine, Dry Gas (not condensing)	100	R	NT	NT
Bromine, Liquid 100%	NR	NR	NT	NT
Bromine, Wet Gas	120	R	NT	NT
Bromine Water 5%	140	R	NT	NT
Bromochloromethane	NT	NT	NT	NT
Brown Stock	140	R	NT	NT
Bunker C Fuel Oil	140	R	NT	NT
Butadiene Gas (9)	100	R	NT	NT
Butanediol	120	R	NT	NT
Butanol	100	R	NT	NT
Butoxyethanol	100	R	NT	NT
Butoxyethoxyethanol	100	R	NT	NT
Butterscotch Topping	NT	NT	NT	NT
Butyl Acetate	NR	NR	NT	NT
Butyl Acrylate	NR	NR	NT	NT
Butyl Alcohol (Butanol)	100	R	NT	NT
Butyl Acid Levulinic	120	R	NT	NT
Butyl Amine	NR	NR	NT	NT
Butyl Benzoate 70%	NR	NR	NT	NT
Butyl Benzyl Phthalate 100%	140	R	NT	NT
Butyl Carbitol	120	R	NT	NT
Butyl Carbitol Acetate	NR	NR	NT	NT
Butyl Carbitol Diethyl Glycol 100%	100	R	NT	NT
Butyl Cellosolve	120	R	NT	NT
Butyl Cellosolve Acetate	100	R	NT	NT
Butyl Ether	120	R	NT	NT
Butyl Formcel	NT	NT	NT	NT
Butyl Glycidyl Ether	NT	NT	NT	NT
Butyl Hypochlorite 98%	NR	NR	NT	NT
Butyl Oxitol	NT	NT	NT	NT
Butylamine 50%	NT	NT	NT	NT
Butylene	NT	NT	NT	NT
Butylene Glycol	140	R	NT	NT
Butylene Oxide	NR	NR	NT	NT
Butyraldehyde	NR	NR	NT	NT
Butyric Acid 100%	120	R	NT	NT
Butyric Acid 5%	120	R	NT	NT
Butyric Acid 25%	120	R	NT	NT

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Chemical Environment and Concentration (%)	Cor-Cote VEN FF Immersion	Cor-Cote VEN FF Secondary Containment	Cor-Cote VEN GF Immersion	Cor-Cote VEN GF Secondary Containment	Cor-Cote HCR FF Immersion	Cor-Cote HCR FF Secondary Containment
Butyric Acid 50%	150	R	150	R	80	NR
Butyrolactone	NT	NT	NT	NT	NT	NT
Cadmium Chloride, All	150	R	150	R	NR	R
Cadmium Cyanide Plating Bath (4)	150	R	150	R	120	R
Calcium Bisulfite, All	150	R	150	R	120	R
Calcium Bromide 10%	150	R	150	R	NT	NT
Calcium Carbonate, All	150	R	150	R	100	R
Calcium Carbonate, Dry	150	R	150	R	120	R
Calcium Carbonate, Saturated	150	R	150	R	100	R
Calcium Chlorate, All	150	R	150	R	NT	NT
Calcium Chloride	150	R	150	R	120	R
Calcium Chloride, Saturated	150	R	150	R	120	R
Calcium Chloride 40%	150	R	150	R	120	R
Calcium Chloride 50%	150	R	150	R	120	R
Calcium Hydroxide (1, 2, 4, 7)	150	R	150	R	120	R
Calcium Hydroxide 5% (1, 2, 4, 7)	150	R	150	R	120	R
Calcium Hydroxide 10% (1, 2, 4, 7)	150	R	150	R	120	R
Calcium Hydroxide 15% (1, 2, 4, 7)	150	R	150	R	120	R
Calcium Hydroxide 25% (1, 2, 4, 7)	150	R	150	R	120	R
Calcium Hydroxide 50% (1, 2, 4, 7)	150	R	150	R	120	R
Calcium Hypochlorite (1, 2, 4, 7, 8)	NR	R	NR	R	NR	NR
Calcium Hypochlorite 1% (1, 2, 4, 7, 8)	NR	R	NR	R	NR	R
Calcium Hypochlorite 5% (1, 2, 4, 7, 8)	NR	R	NR	R	NR	R
Calcium Hypochlorite 15% (1, 2, 4, 7, 8)	NR	R	NR	R	NR	NR
Calcium Lignosulfonate	120	R	120	R	120	R
Calcium Nitrate, All	150	R	150	R	120	R
Calcium Oxide	150	R	150	R	NT	NT
Calcium Sulfate, Slurry	150	R	150	R	80	R
Calcium Sulfite, All	150	R	150	R	80	R
Calgon 25	NT	NT	NT	NT	NT	NT
Calignin Sulfate	NT	NT	NT	NT	NT	NT
Canola Oil (Canbra Foods)	120	R	120	R	100	R
Canola Oil, Crude (Canbra Foods)	120	R	120	R	100	R
Capric Acid, All	150	R	150	R	NR	NR
Caproic Acid 100%	120	R	120	R	120	R
Caprolactam	120	R	100	R	NT	NT
Caprylic Acid (Octanoic Acid)	150	R	150	R	NR	NR
Carbolic Acid (Phenol) 88%	100	R	100	R	NR	NR
Carbon Bisulfide (Di) Fumes, Wet	150	R	150	R	100	R
Carbon Dioxide Gas 75%	210	R	210	R	120	R
Carbon Disulfide 100%	NR	R	NR	R	NR	R
Carbon Monoxide Gas	150	R	150	R	120	R
Carbon Powder Activated	150	R	150	R	NT	NT
Carbon Tetrachloride	150	R	150	R	100	R
90% Carbon Tetrachloride; 10% Chloroform	NT	NT	NT	NT	NT	NT
Carbonic Acid (see Carbon Dioxide)	NT	NT	NT	NT	NT	NT
Carbowax Polyether Glycol	150	R	150	R	NT	NT
Carboxyethyl Cellulose 10%	150	R	150	R	NT	NT
Cascade Detergent in Solution	150	R	150	R	NT	NT
Castor Oil	150	R	150	R	120	R
Cation Exchange Water (see dimineralized)	NT	NT	NT	NT	NT	NT
Cationic Polyacrylamide	NT	NT	NT	NT	100	R
Caustic Soda (see Sodium Hydroxide)	NT	NT	NT	NT	NT	NT
Caustic Liquor	NT	NT	NT	NT	NT	NT
Cellosolve	150	R	150	R	100	R
Cellosolve Acetate	120	R	120	R	100	R
Cherry Soda Concentrate 70%	NT	NT	NT	NT	NT	NT
Chlorobenzene	150	R	150	R	100	R
Chlor-Hydrocl Acid, Wet 8-10%	NT	NT	NT	NT	NT	NT
Chloro Nitrotoluene	NT	NT	NT	NT	NT	NT
Chlorinated Pulp	150	R	150	R	NT	NT
Chlorinated Wax, All	150	R	150	R	NT	NT
Chlorination Washer	150	R	150	R	NT	NT
Chlorinated Brine pH <2.5	150	R	150	R	NT	NT
Chlorinated Brine pH 2.5 - 9.0	NR	R	NR	R	NT	NT

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Chemical Environment and Concentration (%)	Cor-Cote HP Immersion	Cor-Cote HP Secondary Containment	Cor-Cote HP FF Immersion	Cor-Cote HP FF Secondary Containment	Cor-Cote SC Immersion	Cor-Cote SC Secondary Containment
Butyric Acid 50%	NR	NR	NR	NR	NR	NR
Butyrolactone	NT	NT	NT	NT	NT	NT
Cadmium Chloride, All	NR	R	NR	R	NR	R
Cadmium Cyanide Plating Bath (4)	NR	R	120	R	120	R
Calcium Bisulfite, All	NR	R	120	R	120	R
Calcium Bromide 10%	NT	NT	NT	NT	NT	NT
Calcium Carbonate, All	NR	R	100	R	100	R
Calcium Carbonate, Dry	NR	R	120	R	120	R
Calcium Carbonate, Saturated	NR	R	100	R	100	R
Calcium Chlorate, All	NT	NT	NT	NT	NT	NT
Calcium Chloride	NR	R	120	R	120	R
Calcium Chloride, Saturated	NR	R	120	R	120	R
Calcium Chloride 40%	NR	R	120	R	120	R
Calcium Chloride 50%	NR	R	120	R	120	R
Calcium Hydroxide (1, 2, 4, 7)	NR	R	120	R	120	R
Calcium Hydroxide 5% (1, 2, 4, 7)	NR	R	120	R	120	R
Calcium Hydroxide 10% (1, 2, 4, 7)	NR	R	120	R	120	R
Calcium Hydroxide 15% (1, 2, 4, 7)	NR	R	120	R	120	R
Calcium Hydroxide 25% (1, 2, 4, 7)	NR	R	120	R	120	R
Calcium Hydroxide 50% (1, 2, 4, 7)	NR	R	120	R	120	R
Calcium Hypochlorite (1, 2, 4, 7, 8)	NR	NR	NR	NR	NR	NR
Calcium Hypochlorite 1% (1, 2, 4, 7, 8)	NR	R	NR	R	NR	R
Calcium Hypochlorite 5% (1, 2, 4, 7, 8)	NR	R	NR	R	NR	R
Calcium Hypochlorite 15% (1, 2, 4, 7, 8)	NR	NR	NR	NR	NR	NR
Calcium Lignosulfonate	NR	R	100	R	100	R
Calcium Nitrate, All	NR	R	120	R	NR	R
Calcium Oxide	NT	NT	NT	NT	NT	NT
Calcium Sulfate, Slurry	NR	R	80	R	NR	R
Calcium Sulfite, All	NR	R	NR	R	NR	R
Calgon 25	NT	NT	NT	NT	NT	NT
Calignin Sulfate	NT	NT	NT	NT	NT	NT
Canola Oil (Canbra Foods)	NR	R	120	R	100	R
Canola Oil, Crude (Canbra Foods)	NR	R	120	R	100	R
Capric Acid, All	NR	NR	NR	NR	NR	NR
Caproic Acid 100%	NR	R	120	R	NR	R
Caprolactam	NT	NT	NT	NT	NT	NT
Caprylic Acid (Octanoic Acid)	NR	NR	NR	NR	NR	NR
Carbolic Acid (Phenol) 88%	NR	NR	NR	NR	NR	NR
Carbon Bisulfide (Di) Fumes, Wet	NR	R	100	R	100	R
Carbon Dioxide Gas 75%	NR	R	120	R	120	R
Carbon Disulfide 100%	NR	NR	NR	NR	NR	R
Carbon Monoxide Gas	NR	R	120	R	120	R
Carbon Powder Activated	NT	NT	NT	NT	NT	NT
Carbon Tetrachloride	NR	R	100	R	100	R
90% Carbon Tetrachloride; 10% Chloroform	NT	NT	NT	NT	NT	NT
Carbonic Acid (see Carbon Dioxide)	NT	NT	NT	NT	NT	NT
Carbowax Polyether Glycol	NT	NT	NT	NT	NT	NT
Carboxyethyl Cellulose 10%	NT	NT	NT	NT	NT	NT
Cascade Detergent in Solution	NT	NT	NT	NT	NT	NT
Castor Oil	NR	R	100	R	100	R
Cation Exchange Water (see dimineralized)	NT	NT	NT	NT	NT	NT
Cationic Polyacrylamide	NR	R	100	R	100	R
Caustic Soda (see Sodium Hydroxide)	NT	NT	NT	NT	NT	NT
Caustic Liquor	NT	NT	NT	NT	NT	NT
Cellosolve	NR	R	NR	R	100	R
Cellosolve Acetate	NR	NR	NR	NR	NR	R
Cherry Soda Concentrate 70%	NT	NT	NT	NT	NT	NT
Chlorobenzene	NR	R	NR	R	NR	R
Chlor-Hydrocl Acid, Wet 8-10%	NT	NT	NT	NT	NT	NT
Chloro Nitrotoluene	NT	NT	NT	NT	NT	NT
Chlorinated Pulp	NT	NT	NT	NT	NT	NT
Chlorinated Wax, All	NT	NT	NT	NT	NT	NT
Chlorination Washer	NT	NT	NT	NT	NT	NT
Chlorinated Brine pH <2.5	NT	NT	NT	NT	NT	NT
Chlorinated Brine pH 2.5 - 9.0	NT	NT	NT	NT	NT	NT

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Butyric Acid 50%	NT	NT	NT	NT
Butyrolactone	NT	NT	NT	NT
Cadmium Chloride, All	NT	NT	NT	NT
Cadmium Cyanide Plating Bath (4)	NT	NT	NT	NT
Calcium Bisulfite, All	NT	NT	NT	NT
Calcium Bromide 10%	NT	NT	NT	NT
Calcium Carbonate, All	NT	NT	100	R
Calcium Carbonate, Dry	NT	NT	100	R
Calcium Carbonate, Saturated	NT	NT	100	R
Calcium Chlorate, All	NT	NT	NT	NT
Calcium Chloride	NT	NT	NT	NT
Calcium Chloride, Saturated	NT	NT	80	R
Calcium Chloride 40%	NT	NT	100	R
Calcium Chloride 50%	NT	NT	100	R
Calcium Hydroxide (1, 2, 4, 7)	NT	NT	100	R
Calcium Hydroxide 5% (1, 2, 4, 7)	NT	NT	100	R
Calcium Hydroxide 10% (1, 2, 4, 7)	NT	NT	100	R
Calcium Hydroxide 15% (1, 2, 4, 7)	NT	NT	100	R
Calcium Hydroxide 25% (1, 2, 4, 7)	NT	NT	100	R
Calcium Hydroxide 50% (1, 2, 4, 7)	NT	NT	100	R
Calcium Hypochlorite (1, 2, 4, 7, 8)	NT	NT	NT	NT
Calcium Hypochlorite 1% (1, 2, 4, 7, 8)	NT	NT	NT	NT
Calcium Hypochlorite 5% (1, 2, 4, 7, 8)	NT	NT	NT	NT
Calcium Hypochlorite 15% (1, 2, 4, 7, 8)	NT	NT	NR	NR
Calcium Lignosulfonate	NT	NT	100	R
Calcium Nitrate, All	NT	NT	NT	NT
Calcium Oxide	NT	NT	NT	NT
Calcium Sulfate, Slurry	80	R	NT	NT
Calcium Sulfite, All	NT	NT	NT	NT
Calgon 25	NT	NT	80	R
Calignin Sulfate	NT	NT	NT	NT
Canola Oil (Canbra Foods)	80	R	100	R
Canola Oil, Crude (Canbra Foods)	80	R	100	R
Capric Acid, All	NR	NR	NT	NT
Caproic Acid 100%	NT	NT	NT	NT
Caprolactam	NT	NT	NT	NT
Caprylic Acid (Octanoic Acid)	NT	NT	NT	NT
Carbolic Acid (Phenol) 88%	NT	NT	NT	NT
Carbon Bisulfide (Di) Fumes, Wet	NT	NT	NT	NT
Carbon Dioxide Gas 75%	150	R	NT	NT
Carbon Disulfide 100%	NR	R	NR	NR
Carbon Monoxide Gas	150	R	NT	NT
Carbon Powder Activated	80	R	NT	NT
Carbon Tetrachloride	NR	NR	NT	NT
90% Carbon Tetrachloride; 10% Chloroform	NT	NT	NT	NT
Carbonic Acid (see Carbon Dioxide)	NT	NT	NT	NT
Carbowax Polyether Glycol	NT	NT	NT	NT
Carboxyethyl Cellulose 10%	NT	NT	NT	NT
Cascade Detergent in Solution	NT	NT	NT	NT
Castor Oil	120	R	80	R
Cation Exchange Water (see dimineralized)	NT	NT	NT	NT
Cationic Polyacrylamide	NT	NT	NT	NT
Caustic Soda (see Sodium Hydroxide)	NT	NT	100	R
Caustic Liquor	NT	NT	NT	NT
Cellosolve	NR	NR	NT	NT
Cellosolve Acetate	NR	NR	NT	NT
Cherry Soda Concentrate 70%	NT	NT	NT	NT
Chlorobenzene	NR	NR	NT	NT
Chlor-Hydrocl Acid, Wet 8-10%	NT	NT	NT	NT
Chloro Nitrotoluene	NT	NT	NT	NT
Chlorinated Pulp	NT	NT	NT	NT
Chlorinated Wax, All	NT	NT	NT	NT
Chlorination Washer	NT	NT	NT	NT
Chlorinated Brine pH <2.5	NT	NT	NT	NT
Chlorinated Brine pH 2.5 - 9.0	NT	NT	NT	NT

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	Magnalux 304 Vinyl Ester		Sher-Glass FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Butyric Acid 50%	120	R	NT	NT
Butyrolactone	NT	NT	NT	NT
Cadmium Chloride, All	140	R	NT	NT
Cadmium Cyanide Plating Bath (4)	140	R	NT	NT
Calcium Bisulfite, All	140	R	NT	NT
Calcium Bromide 10%	140	R	NT	NT
Calcium Carbonate, All	140	R	NT	NT
Calcium Carbonate, Dry	140	R	NT	NT
Calcium Carbonate, Saturated	140	R	NT	NT
Calcium Chlorate, All	140	R	NT	NT
Calcium Chloride	140	R	NT	NT
Calcium Chloride, Saturated	140	R	NT	NT
Calcium Chloride 40%	140	R	NT	NT
Calcium Chloride 50%	140	R	NT	NT
Calcium Hydroxide (1, 2, 4, 7)	140	R	NT	NT
Calcium Hydroxide 5% (1, 2, 4, 7)	140	R	NT	NT
Calcium Hydroxide 10% (1, 2, 4, 7)	140	R	NT	NT
Calcium Hydroxide 15% (1, 2, 4, 7)	140	R	NT	NT
Calcium Hydroxide 25% (1, 2, 4, 7)	140	R	NT	NT
Calcium Hydroxide 50% (1, 2, 4, 7)	140	R	NT	NT
Calcium Hypochlorite (1, 2, 4, 7, 8)	120	R	NT	NT
Calcium Hypochlorite 1% (1, 2, 4, 7, 8)	120	R	NT	NT
Calcium Hypochlorite 5% (1, 2, 4, 7, 8)	120	R	NT	NT
Calcium Hypochlorite 15% (1, 2, 4, 7, 8)	120	R	NT	NT
Calcium Lignosulfonate	120	R	NT	NT
Calcium Nitrate, All	140	R	NT	NT
Calcium Oxide	140	R	NT	NT
Calcium Sulfate, Slurry	140	R	NT	NT
Calcium Sulfite, All	140	R	NT	NT
Calgon 25	140	R	NT	NT
Calignin Sulfate	NT	NT	NT	NT
Canola Oil (Canbra Foods)	120	R	NT	NT
Canola Oil, Crude (Canbra Foods)	120	R	NT	NT
Capric Acid, All	140	R	NT	NT
Caproic Acid 100%	80	R	NT	NT
Caprolactam	100	R	NT	NT
Caprylic Acid (Octanoic Acid)	120	R	NT	NT
Carbolic Acid (Phenol) 88%	100	R	NT	NT
Carbon Bisulfide (Di) Fumes, Wet	NR	R	NT	NT
Carbon Dioxide Gas 75%	140	R	NT	NT
Carbon Disulfide 100%	NR	NR	NT	NT
Carbon Monoxide Gas	140	R	NT	NT
Carbon Powder Activated	140	NT	NT	NT
Carbon Tetrachloride	120	R	NT	NT
90% Carbon Tetrachloride; 10% Chloroform	NT	NT	NT	NT
Carbonic Acid (see Carbon Dioxide)	NT	NT	NT	NT
Carbowax Polyether Glycol	140	R	NT	NT
Carboxyethyl Cellulose 10%	140	R	NT	NT
Cascade Detergent in Solution	140	R	NT	NT
Castor Oil	120	R	NT	NT
Cation Exchange Water (see dimineralized)	NT	NT	NT	NT
Cationic Polyacrylamide	NT	NT	NT	NT
Caustic Soda (see Sodium Hydroxide)	NT	NT	NT	NT
Caustic Liquor	NT	NT	NT	NT
Cellosolve	120	R	NT	NT
Cellosolve Acetate	NR	NR	NT	NT
Cherry Soda Concentrate 70%	NT	NT	NT	NT
Chlorobenzene	140	NR	NT	NT
Chlor-Hydrocl Acid, Wet 8-10%	NT	NT	NT	NT
Chloro Nitrotoluene	NT	NT	NT	NT
Chlorinated Pulp	140	R	NT	NT
Chlorinated Wax, All	140	R	NT	NT
Chlorination Washer	140	R	NT	NT
Chlorinated Brine pH <2.5	140	R	NT	NT
Chlorinated Brine pH 2.5 - 9.0	NR	R	NT	NT

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Chemical Environment and Concentration (%)	Cor-Cote VEN FF Immersion	Cor-Cote VEN FF Secondary Containment	Cor-Cote VEN GF Immersion	Cor-Cote VEN GF Secondary Containment	Cor-Cote HCR FF Immersion	Cor-Cote HCR FF Secondary Containment
Chlorinated Brine pH >9.0 (4, 8, 9)	120	R	120	R	NT	NT
Chlorine Dioxide, Chlorine Bleach	150	R	150	R	NT	NT
Chlorine Dioxide Generator	150	R	150	R	NR	R
Chlorine Dioxide Scrubber (4, 8, 9)	NR	NR	NR	NR	NT	NT
Chlorine Dioxide, Wet, Saturated	150	R	150	R	NT	NT
Chlorine Dioxide (solution storage)	70	R	70	R	NR	NR
Chlorine Water pH <2.5	150	R	150	R	80	R
Chlorine Water pH 2.5 - 9.0	NR	R	NR	R	80	R
Chlorine Water pH >9.0 (4, 8, 9)	120	R	120	R	80	R
Chlorine, Dry Gas (fumes only) (5, 9)	150	R	150	R	NR	NR
Chlorine, Wet Gas (fumes only) (5, 9)	150	R	150	R	NR	NR
Chloroacetic Acid 25%	120	R	120	R	NR	R
Chloroacetic Acid 26% - 50%	120	R	120	R	NR	R
Chloroacetic Acid 51% - 85%	NR	R	NR	R	NR	NR
Chloroacetic Acid 86% - 100%	NR	R	NR	R	NR	NR
Chlorobenzene	100	R	100	R	100	R
Chlorobenzene (Mono)	120	R	120	R	100	R
Chlorobutane	120	R	120	R	100	R
Chloroethene SM 111-Tri	120	R	120	R	100	R
Chloroform	100	R	100	R	NR	R
Chlorophenol	NR	NR	NR	NR	NR	R
3-Chloropropene	NT	NT	NT	NT	NT	NT
2-Chloro 4-Nitrotoluene	100	R	100	R	NR	R
Chloropyridine (tetra)	120	R	120	R	NT	NT
Chlorosulfonic Acid 10%	NR	NR	NR	NR	NR	R
Chlorothene (see 1,1,1 Trichlorethane)	NT	NT	NT	NT	NT	NT
Chlorotoluene	120	R	120	R	NR	R
Chlorotoluene 10%	NT	NT	NT	NT	NR	R
Chloro-o-Tolyl 10%	120	R	120	R	NT	NT
Chromated Copper Arsenate 3%	80	R	80	R	100	R
Chromated Copper Arsenate 4%	80	R	80	R	100	R
Chromated Copper Arsenate 10%	80	R	80	R	100	R
Chromated Copper Arsenate 50%	80	R	80	R	100	R
Chrome Bath, 19% Chromic Acid with Sodium Fluosilica	150	R	150	R	NT	NT
Chrome Plating 20-48 oz/gal (1, 2, 4, 7)	NR	R	NR	R	NR	NR
Chromic Acid 5%	100	R	100	R	NR	R
Chromic Acid 10%	100	R	100	R	NR	R
Chromic Acid 20%	100	R	100	R	NR	NR
Chromic Acid 25%	NR	R	NR	R	NR	NR
Chromic Acid 30%	NR	R	NR	R	NR	NR
Chromic Acid 40%	NR	R	NR	R	NR	NR
Chromic Acid 41% - 75%	NR	NR	NR	NR	NR	NR
Chromic Chloride	150	R	150	R	120	R
Chromium Plate	120	R	120	R	NT	NT
Chromium Sulfate, All	150	R	150	R	NT	NT
Chromium Acid/Sulfuric Acid Mix 10%	150	R	150	R	NT	NT
Chromium Trioxide, Dry	NT	NT	NT	NT	NT	NT
Citric Acid, All	150	R	150	R	120	R
Citric Acid 5%	150	R	150	R	120	R
Citric Acid 10%	150	R	150	R	120	R
Citric Acid 25%	150	R	150	R	120	R
Citric Acid 35%	150	R	150	R	120	R
Citric Acid 40%	150	R	150	R	120	R
Citric Acid 50%	150	R	150	R	120	R
Clay, Saturated	150	R	150	R	120	R
Clopidol (Coydenô), All	80	R	80	R	NT	NT
Cobalt Acetate 40%	NT	R	NT	R	NT	R
Cobalt Chloride, All	150	R	150	R	NT	NT
Cobalt Citrate 12%	150	R	150	R	NT	NT
Cobalt Nitrate 15%	150	R	150	R	NT	NT
Coconut Oil, All	150	R	150	R	NT	NT
Cod Liver Oil	NR	R	NR	R	NT	NT
Coffee, Instant Freeze Dried 26%	NR	R	NR	R	NR	R
Cola Concentrate, Coke	NR	R	NR	R	NR	R
Cola Concentrate, RC	NR	R	NR	R	NR	R

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	Cor-Cote HP		Cor-Cote HP FF		Cor-Cote SC	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Chlorinated Brine pH >9.0 (4, 8, 9)	NT	NT	NT	NT	NT	NT
Chlorine Dioxide, Chlorine Bleach	NT	NT	NT	NT	NT	NT
Chlorine Dioxide Generator	NR	NR	NR	NR	NR	NR
Chlorine Dioxide Scrubber (4, 8, 9)	NT	NT	NT	NT	NT	NT
Chlorine Dioxide, Wet, Saturated	NT	NT	NT	NT	NT	NT
Chlorine Dioxide (solution storage)	NR	NR	NR	NR	NR	NR
Chlorine Water pH <2.5	NR	NR	NR	NR	NR	NR
Chlorine Water pH 2.5 - 9.0	NR	NR	NR	NR	NR	NR
Chlorine Water pH >9.0 (4, 8, 9)	NR	NR	NR	NR	NR	NR
Chlorine, Dry Gas (fumes only) (5, 9)	NR	NR	NR	NR	NR	NR
Chlorine, Wet Gas (fumes only) (5, 9)	NR	NR	NR	NR	NR	NR
Chloroacetic Acid 25%	NR	NR	NR	NR	NR	NR
Chloroacetic Acid 26% - 50%	NR	NR	NR	NR	NR	NR
Chloroacetic Acid 51% - 85%	NR	NR	NR	NR	NR	NR
Chloroacetic Acid 86% - 100%	NR	NR	NR	NR	NR	NR
Chlorobenzene	NR	R	100	R	100	R
Chlorobenzene (Mono)	NR	R	100	R	100	R
Chlorobutane	NR	R	NR	R	NR	R
Chloroethene SM 111-Tri	NR	R	NR	R	NR	R
Chloroform	NR	R	NR	R	NR	R
Chlorophenol	NR	R	NR	R	NR	NR
3-Chloropropene	NT	NT	NT	NT	NT	NT
2-Chloro 4-Nitrotoluene	NR	NR	NR	NR	NR	R
Chloropyridine (tetra)	NT	NT	NT	NT	NT	NT
Chlorosulfonic Acid 10%	NR	NR	NR	NR	NR	NR
Chlorothene (see 1,1,1 Trichlorethane)	NT	NT	NT	NT	NT	NT
Chlorotoluene	NR	NR	NR	NR	NR	R
Chlorotoluene 10%	NR	NR	NR	NR	NR	R
Chloro-o-Tolyl 10%	NT	NT	NT	NT	NT	NT
Chromated Copper Arsenate 3%	NR	R	NR	R	NR	R
Chromated Copper Arsenate 4%	NR	R	NR	R	NR	R
Chromated Copper Arsenate 10%	NR	R	NR	R	NR	R
Chromated Copper Arsenate 50%	NR	R	NR	R	NR	R
Chrome Bath, 19% Chromic Acid with Sodium Fluosilica	NT	NT	NT	NT	NT	NT
Chrome Plating 20-48 oz/gal (1, 2, 4, 7)	NR	NR	NR	NR	NR	NR
Chromic Acid 5%	NR	R	NR	R	NR	R
Chromic Acid 10%	NR	R	NR	R	NR	R
Chromic Acid 20%	NR	NR	NR	NR	NR	NR
Chromic Acid 25%	NR	NR	NR	NR	NR	NR
Chromic Acid 30%	NR	NR	NR	NR	NR	NR
Chromic Acid 40%	NR	NR	NR	NR	NR	NR
Chromic Acid 41% - 75%	NR	NR	NR	NR	NR	NR
Chromic Chloride	NR	R	120	R	120	R
Chromium Plate	NT	NT	NT	NT	NT	NT
Chromium Sulfate, All	NT	NT	NT	NT	NT	NT
Chromium Acid/Sulfuric Acid Mix 10%	NT	NT	NT	NT	NT	NT
Chromium Trioxide, Dry	NT	NT	NT	NT	NT	NT
Citric Acid, All	NR	R	120	R	120	R
Citric Acid 5%	NR	R	120	R	120	R
Citric Acid 10%	NR	R	120	R	120	R
Citric Acid 25%	NR	R	120	R	120	R
Citric Acid 35%	NR	R	120	R	120	R
Citric Acid 40%	NR	R	120	R	120	R
Citric Acid 50%	NR	R	120	R	120	R
Clay, Saturated	NR	R	120	R	120	R
Clopidol (Coydenō), All	NT	NT	NT	NT	NT	NT
Cobalt Acetate 40%	NR	R	NT	R	NR	R
Cobalt Chloride, All	NT	NT	NT	NT	NT	NT
Cobalt Citrate 12%	NT	NT	NT	NT	NT	NT
Cobalt Nitrate 15%	NT	NT	NT	NT	NT	NT
Coconut Oil, All	NT	NT	NT	NT	NT	NT
Cod Liver Oil	NT	NT	NT	NT	NT	NT
Coffee, Instant Freeze Dried 26%	NR	R	NR	R	NR	R
Cola Concentrate, Coke	NR	R	NR	R	NR	R
Cola Concentrate, RC	NR	R	NR	R	NR	R

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Chlorinated Brine pH >9.0 (4, 8, 9)	NT	NT	NT	NT
Chlorine Dioxide, Chlorine Bleach	NT	NT	NT	NT
Chlorine Dioxide Generator	NT	NT	NT	NT
Chlorine Dioxide Scrubber (4, 8, 9)	NT	NT	NT	NT
Chlorine Dioxide, Wet, Saturated	NT	NT	NT	NT
Chlorine Dioxide (solution storage)	NT	NT	NT	NT
Chlorine Water pH <2.5	80	R	NT	NT
Chlorine Water pH 2.5 - 9.0	NR	NR	NT	NT
Chlorine Water pH >9.0 (4, 8, 9)	NR	NR	NT	NT
Chlorine, Dry Gas (fumes only) (5, 9)	NT	NT	NT	NT
Chlorine, Wet Gas (fumes only) (5, 9)	NT	NT	NT	NT
Chloroacetic Acid 25%	NR	NR	NT	NT
Chloroacetic Acid 26% - 50%	NR	NR	NT	NT
Chloroacetic Acid 51% - 85%	NT	NT	NT	NT
Chloroacetic Acid 86% - 100%	NR	NR	NT	NT
Chlorobenzene	NR	NR	NR	R
Chlorobenzene (Mono)	NR	NR	NT	NT
Chlorobutane	NR	NR	NT	NT
Chloroethene SM 111-Tri	NR	NR	NT	NT
Chloroform	NR	NR	NT	NT
Chlorophenol	NR	NR	NT	NT
3-Chloropropene	NT	NT	NT	NT
2-Chloro 4-Nitrotoluene	NR	NR	NT	NT
Chloropyridine (tetra)	NT	NT	NT	NT
Chlorosulfonic Acid 10%	NR	NR	NT	NT
Chlorothene (see 1,1,1 Trichlorethane)	NT	NT	NT	NT
Chlorotoluene	NR	NR	NT	NT
Chlorotoluene 10%	NR	NR	NT	NT
Chloro-o-Tolyl 10%	NT	NT	NT	NT
Chromated Copper Arsenate 3%	NT	NT	NT	NT
Chromated Copper Arsenate 4%	NT	NT	NT	NT
Chromated Copper Arsenate 10%	NT	NT	NT	NT
Chromated Copper Arsenate 50%	NT	NT	NT	NT
Chrome Bath, 19% Chromic Acid with Sodium Fluosilica	NT	NT	NT	NT
Chrome Plating 20-48 oz/gal (1, 2, 4, 7)	NT	NT	NT	NT
Chromic Acid 5%	NR	NR	NT	NT
Chromic Acid 10%	NR	NR	NR	R
Chromic Acid 20%	NR	NR	NT	NT
Chromic Acid 25%	NR	NR	NT	NT
Chromic Acid 30%	NR	NR	NT	NT
Chromic Acid 40%	NR	NR	NT	NT
Chromic Acid 41% - 75%	NR	NR	NT	NT
Chromic Chloride	NR	NR	NT	NT
Chromium Plate	NR	NR	NT	NT
Chromium Sulfate, All	NT	NT	NT	NT
Chromium Acid/Sulfuric Acid Mix 10%	NT	NT	NT	NT
Chromium Trioxide, Dry	NT	NT	NT	NT
Citric Acid, All	NT	R	NT	NT
Citric Acid 5%	NT	R	100	R
Citric Acid 10%	NT	R	100	R
Citric Acid 25%	NT	R	100	R
Citric Acid 35%	NT	R	100	R
Citric Acid 40%	NT	R	100	R
Citric Acid 50%	NT	R	100	R
Clay, Saturated	NT	NT	100	R
Clopidol (Coydenô), All	NT	NT	NT	NT
Cobalt Acetate 40%	NT	NT	NT	NT
Cobalt Chloride, All	NT	NT	NT	NT
Cobalt Citrate 12%	NT	NT	NT	NT
Cobalt Nitrate 15%	NT	NT	NT	NT
Coconut Oil, All	NT	NT	80	R
Cod Liver Oil	NT	NT	NT	NT
Coffee, Instant Freeze Dried 26%	NR	NT	NT	NT
Cola Concentrate, Coke	NR	NT	NT	NT
Cola Concentrate, RC	NR	NT	NT	NT

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	Magnalux 304 Vinyl Ester		Sher-Glass FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Chlorinated Brine pH >9.0 (4, 8, 9)	140	R	NT	NT
Chlorine Dioxide, Chlorine Bleach	140	R	NT	NT
Chlorine Dioxide Generator	140	R	NT	NT
Chlorine Dioxide Scrubber (4, 8, 9)	140	R	NT	NT
Chlorine Dioxide, Wet, Saturated	140	R	NT	NT
Chlorine Dioxide (solution storage)	70	R	NT	NT
Chlorine Water pH <2.5	140	R	NT	NT
Chlorine Water pH 2.5 - 9.0	NR	R	NT	NT
Chlorine Water pH >9.0 (4, 8, 9)	140	R	NT	NT
Chlorine, Dry Gas (fumes only) (5, 9)	140	R	NT	NT
Chlorine, Wet Gas (fumes only) (5, 9)	140	R	NT	NT
Chloroacetic Acid 25%	120	R	NT	NT
Chloroacetic Acid 26% - 50%	100	R	NT	NT
Chloroacetic Acid 51% - 85%	NR	R	NT	NT
Chloroacetic Acid 86% - 100%	NR	NR	NT	NT
Chlorobenzene	NR	NR	NT	NT
Chlorobenzene (Mono)	NR	NR	NT	NT
Chlorobutane	120	NR	NT	NT
Chloroethene SM 111-Tri	NR	NR	NT	NT
Chloroform	NR	NR	NT	NT
Chlorophenol	NR	NR	NT	NT
3-Chloropropene	NT	NT	NT	NT
2-Chloro 4-Nitrotoluene	80	R	NT	NT
Chloropyridine (tetra)	80	R	NT	NT
Chlorosulfonic Acid 10%	NR	NR	NT	NT
Chlorothene (see 1,1,1 Trichlorethane)	NT	NT	NT	NT
Chlorotoluene	NR	R	NT	NT
Chlorotoluene 10%	NT	NT	NT	NT
Chloro-o-Tolyl 10%	140	R	NT	NT
Chromated Copper Arsenate 3%	80	R	NT	NT
Chromated Copper Arsenate 4%	80	R	NT	NT
Chromated Copper Arsenate 10%	80	R	NT	NT
Chromated Copper Arsenate 50%	80	R	NT	NT
Chrome Bath, 19% Chromic Acid with Sodium Fluosilica	140	R	NT	NT
Chrome Plating 20-48 oz/gal (1, 2, 4, 7)	NR	NR	NT	NT
Chromic Acid 5%	NR	NR	NT	NT
Chromic Acid 10%	NR	NR	NT	NT
Chromic Acid 20%	NR	NR	NT	NT
Chromic Acid 25%	NR	R	NT	NT
Chromic Acid 30%	NR	R	NT	NT
Chromic Acid 40%	NR	NR	NT	NT
Chromic Acid 41% - 75%	NR	NR	NT	NT
Chromic Chloride	140	R	NT	NT
Chromium Plate	140	R	NT	NT
Chromium Sulfate, All	140	R	NT	NT
Chromium Acid/Sulfuric Acid Mix 10%	140	R	NT	NT
Chromium Trioxide, Dry	NT	NT	NT	NT
Citric Acid, All	140	R	NT	NT
Citric Acid 5%	140	R	NT	NT
Citric Acid 10%	140	R	NT	NT
Citric Acid 25%	140	R	NT	NT
Citric Acid 35%	140	R	NT	NT
Citric Acid 40%	140	R	NT	NT
Citric Acid 50%	140	R	NT	NT
Clay, Saturated	140	R	NT	NT
Clopidol (Coydenô), All	NR	R	NT	NT
Cobalt Acetate 40%	NT	R	NT	NT
Cobalt Chloride, All	140	R	NT	NT
Cobalt Citrate 12%	140	R	NT	NT
Cobalt Nitrate 15%	140	R	NT	NT
Coconut Oil, All	140	R	NT	NT
Cod Liver Oil	80	R	NT	NT
Coffee, Instant Freeze Dried 26%	NR	R	NT	NT
Cola Concentrate, Coke	NR	R	NT	NT
Cola Concentrate, RC	NR	R	NT	NT

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	Cor-Cote VEN FF		Cor-Cote VEN GF		Cor-Cote HCR FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Condensed Milk	NR	R	NR	R	NR	R
Continue Etch Solvent	NT	NT	NT	NT	NT	NT
Conveyor Lube	NT	NT	NT	NT	NT	NT
Copper Acetate 50%	NT	NT	NT	NT	NT	NT
Copper Chloride, All	150	R	150	R	80	R
Copper Chloride 50%	150	R	150	R	80	R
Copper Chromate Arsenic 4%	80	R	80	R	100	R
Copper Cyanide, All	150	R	150	R	120	R
Copper Cyanide, Potassium	80	R	80	R	120	R
Copper Liquor	NT	NT	NT	NT	NT	NT
Copper Matte, 30% FeCl3, 19% HCL (3, 5, 6)	150	R	150	R	NT	NT
Copper Nitrate, All	150	R	150	R	80	R
Copper Plating, Cyanide	120	R	120	R	120	R
Copper Plating, Acid (4)	150	R	150	R	100	R
Copper Sulfate, All	150	R	150	R	80	R
Corn Oil	150	R	150	R	100	R
Corn Steep Liquor	NR	R	NR	R	100	R
Corn Starch	NR	R	NR	R	100	R
Corn Syrup	NR	R	NR	R	100	R
Cottonseed Oil	150	R	150	R	100	R
Cresol (Cresylic Acid)	NR	NR	NR	NR	NR	NR
Crude Oil, Sour	150	R	150	R	120	R
Crude Oil, Sweet	150	R	150	R	120	R
Crude Oil/Sea Water, 50/50	150	R	150	R	120	R
Cumene	120	R	120	R	100	R
Cupric and Cuprous Acetate	NT	NT	NT	NT	NT	NT
Cupric and Cuprous Chloride	150	R	150	R	NT	NT
Cupric and Cuprous Cyanide	120	R	120	R	120	R
Cupric and Cuprous Nitrate	150	R	150	R	NT	NT
Cupric and Cuprous Sulphate	150	R	150	R	NT	NT
Cyanide	80	R	80	R	NR	R
Cyanide Disposal (Hypo) (see Sodium Thiosulfite)	NT	NT	NT	NT	NT	NT
Cyclohexane	150	R	150	R	100	R
Cyclohexanone	120	R	120	R	NR	R
Cyclohexene	NT	NT	NT	NT	NT	NT
Cyclohexylamine	100	R	100	R	NT	NT
Cymene	120	R	120	R	100	R
Dalapon Grass Killer	100	R	100	R	NT	NT
Dash Herbicide	100	R	100	R	100	R
Diacetone Alcohol	80	R	80	R	80	R
Decanoic Acid, All	150	R	150	R	NT	NT
Decanol 100%	150	R	150	R	80	R
Decyl Alcohol (1-Decanol)	150	R	150	R	80	R
Demon EC Insecticide	NT	NT	NT	NT	NT	NT
Desmophen 670-90	NT	NT	NT	NT	NT	NT
Desmophen 800	NT	NT	NT	NT	NT	NT
Detergents, Sulfonated 100%	150	R	150	R	NT	NT
Detergents, Organic pH 12 100%	150	R	150	R	NT	NT
Detergents, Organic pH 9,11, All	150	R	150	R	NT	NT
Detergents, Paste	150	R	150	R	NT	NT
Detergents 1%	150	R	150	R	NT	NT
Dextrose	150	R	150	R	120	R
Diallyl Phthalate	150	R	150	R	NT	NT
Diaminopropane	NT	NT	NT	NT	NT	NT
Diammonium Phosphate 65%	150	R	150	R	NT	NT
Diatomaceous Earth	NT	NT	NT	NT	NT	NT
Dibromo Dichloroethane	NT	NT	NT	NT	NT	NT
Dibromoethane	NT	NT	NT	NT	NT	NT
Dibromophenol	100	R	100	R	NT	NT
Dibromopropane	100	R	100	R	NT	NT
Dibromopropane Phosphate	100	R	100	R	80	R
Dibromopropanol	100	R	100	R	NT	NT
Dibutyl Carbitol	100	R	100	R	NT	NT
Dibutyl Ether	150	R	150	R	NT	NT
Dibutyl Phthalate	150	R	150	R	120	R

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	Cor-Cote HP		Cor-Cote HP FF		Cor-Cote SC	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Condensed Milk	NR	R	NR	R	NR	R
Continue Etch Solvent	NT	NT	NT	NT	NT	NT
Conveyor Lube	NT	NT	NT	NT	NT	NT
Copper Acetate 50%	NT	NT	NT	NT	NT	NT
Copper Chloride, All	NR	R	80	R	NR	R
Copper Chloride 50%	NR	R	80	R	NR	R
Copper Chromate Arsenic 4%	NR	R	NR	R	NR	R
Copper Cyanide, All	NR	R	100	R	100	R
Copper Cyanide, Potassium	NR	R	100	R	100	R
Copper Liquor	NT	NT	NT	NT	NT	NT
Copper Matte, 30% FeCl3, 19% HCL (3, 5, 6)	NT	NT	NT	NT	NT	NT
Copper Nitrate, All	NR	R	NR	R	NR	R
Copper Plating, Cyanide	NR	R	100	R	100	R
Copper Plating, Acid (4)	NR	R	100	R	100	R
Copper Sulfate, All	NR	R	80	R	NR	R
Corn Oil	NR	R	100	R	100	R
Corn Steep Liquor	NR	R	NR	R	NR	R
Corn Starch	NR	R	100	R	100	R
Corn Syrup	NR	R	100	R	100	R
Cottonseed Oil	NR	R	100	R	100	R
Cresol (Cresylic Acid)	NR	NR	NR	NR	NR	NR
Crude Oil, Sour	NR	NR	NR	NR	NR	NR
Crude Oil, Sweet	NR	NR	NR	NR	NR	NR
Crude Oil/Sea Water, 50/50	NR	NR	NR	NR	NR	NR
Cumene	NR	R	120	R	120	R
Cupric and Cuprous Acetate	NT	NT	NT	NT	NT	NT
Cupric and Cuprous Chloride	NT	NT	NT	NT	NT	NT
Cupric and Cuprous Cyanide	NR	R	100	R	100	R
Cupric and Cuprous Nitrate	NT	NT	NT	NT	NT	NT
Cupric and Cuprous Sulphate	NT	NT	NT	NT	NT	NT
Cyanide	NR	R	NR	R	NR	R
Cyanide Disposal (Hypo) (see Sodium Thiosulfite)	NT	NT	NT	NT	NT	NT
Cyclohexane	NR	R	NR	R	NR	R
Cyclohexanone	NR	R	NR	R	NR	R
Cyclohexene	NT	NT	NT	NT	NT	NT
Cyclohexylamine	NT	NT	NT	NT	NT	NT
Cymene	NR	R	NR	R	NR	R
Dalapon Grass Killer	NT	NT	NT	NT	NT	NT
Dash Herbicide	NR	R	100	R	100	R
Diacetone Alcohol	NR	R	80	R	NR	R
Decanoic Acid, All	NT	NT	NT	NT	NT	NT
Decanol 100%	NR	R	80	R	80	R
Decyl Alcohol (1-Decanol)	NR	R	80	R	80	R
Demon EC Insecticide	NR	R	100	R	100	R
Desmophen 670-90	NT	NT	NT	NT	NT	NT
Desmophen 800	NT	NT	NT	NT	NT	NT
Detergents, Sulfonated 100%	NT	NT	NT	NT	NT	NT
Detergents, Organic pH 12 100%	NT	NT	NT	NT	NT	NT
Detergents, Organic pH 9,11, All	NT	NT	NT	NT	NT	NT
Detergents, Paste	NT	NT	NT	NT	NT	NT
Detergents 1%	NT	NT	NT	NT	NT	NT
Dextrose	NR	R	120	R	120	R
Diallyl Phthalate	NT	NT	NT	NT	NT	NT
Diaminopropane	NT	NT	NT	NT	NT	NT
Diammonium Phosphate 65%	NT	NT	NT	NT	NT	NT
Diatomaceous Earth	NT	NT	NT	NT	NT	NT
Dibromo Dichloroethane	NT	NT	NT	NT	NT	NT
Dibromoethane	NT	NT	NT	NT	NT	NT
Dibromophenol	NT	NT	NT	NT	NT	NT
Dibromopropane	NT	NT	NT	NT	NT	NT
Dibromopropane Phosphate	NR	R	80	R	80	R
Dibromopropanol	NT	NT	NT	NT	NT	NT
Dibutyl Carbitol	NT	NT	NT	NT	NT	NT
Dibutyl Ether	NT	NT	NT	NT	NT	NT
Dibutyl Phthalate	NR	R	120	R	NR	R

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Condensed Milk	NR	NT	NT	NT
Continue Etch Solvent	NT	NT	NT	NT
Conveyor Lube	NT	NT	NT	NT
Copper Acetate 50%	NT	NT	NT	NT
Copper Chloride, All	NT	NT	NT	NT
Copper Chloride 50%	NT	NT	NT	NT
Copper Chromate Arsenic 4%	NT	NT	NT	NT
Copper Cyanide, All	NT	NT	NT	NT
Copper Cyanide, Potassium	NT	NT	NT	NT
Copper Liquor	NT	NT	NT	NT
Copper Matte, 30% FeCl3, 19% HCL (3, 5, 6)	NT	NT	NT	NT
Copper Nitrate, All	NT	NT	NT	NT
Copper Plating, Cyanide	NT	NT	NT	NT
Copper Plating, Acid (4)	NT	NT	NT	NT
Copper Sulfate, All	NT	NT	NT	NT
Corn Oil	NT	NT	140	R
Corn Steep Liquor	NT	NT	NT	NT
Corn Starch	NT	NT	NT	NT
Corn Syrup	NT	NT	140	R
Cottonseed Oil	NT	NT	80	R
Cresol (Cresylic Acid)	NT	NT	NT	NT
Crude Oil, Sour	NT	NT	120	R
Crude Oil, Sweet	NT	NT	120	R
Crude Oil/Sea Water, 50/50	NT	NT	120	R
Cumene	NT	NT	80	R
Cupric and Cuprous Acetate	NT	NT	NT	NT
Cupric and Cuprous Chloride	NT	NT	NT	R
Cupric and Cuprous Cyanide	NT	NT	NT	NT
Cupric and Cuprous Nitrate	NT	NT	NT	NT
Cupric and Cuprous Sulphate	NT	NT	NT	NT
Cyanide	NT	NT	NT	NT
Cyanide Disposal (Hypo) (see Sodium Thiosulfite)	NT	NT	NT	NT
Cyclohexane	NT	NT	100	R
Cyclohexanone	NT	NT	NT	NT
Cyclohexene	NT	NT	NR	R
Cyclohexylamine	NT	NT	NR	NR
Cymene	NT	NT	NT	NT
Dalapon Grass Killer	NT	NT	NT	NT
Dash Herbicide	NT	NT	100	R
Diacetone Alcohol	NT	NT	NT	NT
Decanoic Acid, All	NT	NT	NT	NT
Decanol 100%	NT	NT	NT	NT
Decyl Alcohol (1-Decanol)	NT	NT	NT	NT
Demon EC Insecticide	NT	NT	100	R
Desmophen 670-90	NT	NT	120	R
Desmophen 800	NT	NT	120	R
Detergents, Sulfonated 100%	NT	NT	NT	NT
Detergents, Organic pH 12 100%	NT	NT	NT	NT
Detergents, Organic pH 9,11, All	NT	NT	NT	NT
Detergents, Paste	NT	NT	NT	NT
Detergents 1%	NT	NT	NT	NT
Dextrose	80	R	NT	NT
Diallyl Phthalate	NT	NT	NT	NT
Diaminopropane	NT	NT	NT	NT
Diammonium Phosphate 65%	NT	NT	NT	NT
Diatomaceous Earth	NT	NT	NT	NT
Dibromo Dichloroethane	NT	NT	NT	NT
Dibromoethane	NT	NT	NT	NT
Dibromophenol	NT	NT	NT	NT
Dibromopropane	NT	NT	NT	NT
Dibromopropane Phosphate	NT	NT	NT	NT
Dibromopropanol	NT	NT	NT	NT
Dibutyl Carbitol	NT	NT	NT	NT
Dibutyl Ether	NR	NT	NT	NT
Dibutyl Phthalate	NR	NR	NT	NT.

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	Magnalux 304 Vinyl Ester		Sher-Glass FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Condensed Milk	NR	R	NT	NT
Continue Etch Solvent	NT	NT	NT	NT
Conveyor Lube	NT	NT	NT	NT
Copper Acetate 50%	NT	NT	NT	NT
Copper Chloride, All	140	R	NT	NT
Copper Chloride 50%	140	R	NT	NT
Copper Chromate Arsenic 4%	80	R	NT	NT
Copper Cyanide, All	140	R	NT	NT
Copper Cyanide, Potassium	140	R	NT	NT
Copper Liquor	NT	NT	NT	NT
Copper Matte, 30% FeCl3, 19% HCL (3, 5, 6)	140	R	NT	NT
Copper Nitrate, All	140	R	NT	NT
Copper Plating, Cyanide	120	R	NT	NT
Copper Plating, Acid (4)	120	R	NT	NT
Copper Sulfate, All	140	R	NT	NT
Corn Oil	140	R	NT	NT
Corn Steep Liquor	140	R	NT	NT
Corn Starch	140	R	NT	NT
Corn Syrup	140	R	NT	NT
Cottonseed Oil	140	R	NT	NT
Cresol (Cresylic Acid)	NR	NR	NT	NT
Crude Oil, Sour	140	R	120	R
Crude Oil, Sweet	140	R	120	R
Crude Oil/Sea Water, 50/50	140	R	NT	NT
Cumene	120	R	NT	NT
Cupric and Cuprous Acetate	NT	NT	NT	NT
Cupric and Cuprous Chloride	140	R	NT	NT
Cupric and Cuprous Cyanide	140	R	NT	NT
Cupric and Cuprous Nitrate	140	R	NT	NT
Cupric and Cuprous Sulphate	140	R	NT	NT
Cyanide	80	R	NT	NT
Cyanide Disposal (Hypo) (see Sodium Thiosulfite)	NT	NT	NT	NT
Cyclohexane	120	R	NT	NT
Cyclohexanone	100	R	NT	NT
Cyclohexene	NT	NT	NT	NT
Cyclohexylamine	NR	NR	NT	NT
Cymene	120	R	NT	NT
Dalapon Grass Killer	NR	NR	NT	NT
Dash Herbicide	80	R	NT	NT
Diacetone Alcohol	NR	R	NT	NT
Decanoic Acid, All	140	R	NT	NT
Decanol 100%	140	R	NT	NT
Decyl Alcohol (1-Decanol)	140	R	NT	NT
Demon EC Insecticide	NT	NT	NT	NT
Desmophen 670-90	NT	NT	NT	NT
Desmophen 800	NT	NT	NT	NT
Detergents, Sulfonated 100%	140	R	NT	NT
Detergents, Organic pH 12 100%	140	R	NT	NT
Detergents, Organic pH 9,11, All	140	R	NT	NT
Detergents, Paste	140	R	NT	NT
Detergents 1%	140	R	NT	NT
Dextrose	140	R	NT	NT
Diallyl Phthalate	140	R	NT	NT
Diaminopropane	NT	NT	NT	NT
Diammonium Phosphate 65%	140	R	NT	NT
Diatomaceous Earth	NT	NT	NT	NT
Dibromo Dichloroethane	NT	NT	NT	NT
Dibromoethane	NT	NT	NT	NT
Dibromophenol	NR	NR	NT	NT
Dibromopropane	NR	NR	NT	NT
Dibromopropane Phosphate	100	R	NT	NT
Dibromopropanol	NR	NR	NT	NT
Dibutyl Carbitol	80	R	NT	NT
Dibutyl Ether	140	R	NT	NT
Dibutyl Phthalate	120	R	NT	NT

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Chemical Environment and Concentration (%)	Cor-Cote VEN FF		Cor-Cote VEN GF		Cor-Cote HCR FF	
	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Dibutyl Sebacate, All	150	R	150	R	NT	NT
Dichloro Acetic Acid (see Chloroacetic Acid)	NT	NT	NT	NT	NT	NT
Dichlorobenzene	120	R	120	R	NT	NT
Dichlorobutane	NT	NT	NT	NT	NT	NT
Dichlorodintene	NT	NT	NT	NT	NT	NT
Dichloroethane	80	R	80	R	80	R
Dichloroethylene	NR	R	NR	R	NT	NT
Dichloromethane	NR	R	NR	R	NT	NT
Dichlorophenoxyacet Acid	NT	NT	NT	NT	NT	NT
Dichloropropane	100	R	100	R	NT	NT
Dichloropropene	80	R	80	R	NT	NT
Dichloropropionic Acid	100	R	100	R	NT	NT
Dichlorotoluene	120	R	120	R	NT	NT
Diesel Fuel	150	R	150	R	NT	NT
Diesel Fuel/Water 50:50 V/V	150	R	150	R	NT	NT
Diesel Oil, #2, #3	80	R	80	R	NT	NT
Diethanolamine	120	R	120	R	NR	R
Diethyl Carbonate	100	R	100	R	NT	NT
Diethyl Ether	NR	NR	NR	NR	NT	NT
Diethyl Formamide	100	R	100	R	NT	NT
Diethyl Glycol	NT	NT	NT	NT	NT	NT
Diethyl Ketone	80	R	80	R	NT	NT
Diethyl Sulfate	120	R	120	R	NT	NT
Diethylbenzene	150	R	150	R	NT	NT
Diethylene Chloroformate	NR	NR	NR	NR	NR	R
Diethylene Glycol	150	R	150	R	NT	NT
Diethylene Glycol Monobutyl Ether	NT	NT	NT	NT	NT	NT
Diethylenetriamine	NT	NT	NT	NT	NT	NT
Diethylhexyl Phosphoric Acid 20%	150	R	150	R	NT	NT
Diethylketone	100	R	100	R	NR	R
Difluorophosphoric Acid	NT	NT	NT	NT	NT	NT
Digestor Liquor, Low MEA	NT	NT	NT	NT	NT	NT
Digester Liquor, High MEA	NT	NT	NT	NT	NT	NT
Diglycoamine	NR	R	NR	R	NT	NT
Diisobutyl Ketone	120	R	120	R	NT	NT
Diisobutyl Phthalate	150	R	150	R	NT	NT
Diisobutylene	100	R	100	R	NT	NT
Diisopropanolamine	150	R	150	R	NT	NT
Dilute Caustic	NT	NT	NT	NT	NT	NT
Dimethyl Aniline	100	R	100	R	NR	NR
Dimethylacetamide	NR	NR	NR	NR	NT	NT
Dimethylamine 1%	100	R	100	R	NT	NT
Dimethylamine 25%	100	R	100	R	NT	NT
Dimethylaminamethyl Phenol	NT	NT	NT	NT	NT	NT
Dimethylaminopropylamine	NR	NR	NR	NR	NR	R
Dimethyl Carbamoyl Chloride	100	100	100	100	NR	R
Dimethyl Carbonyl Chloride	NT	NT	NT	NT	NR	R
Dimethylethanolamine	NT	NT	NT	NT	NT	NT
Dimethyl Dissulfide	NT	NT	NT	NT	NT	NT
Dimethyl Formamide	NR	R	NR	R	NR	R
Dimethyl Morpholine	120	R	120	R	NT	NT
Dimethyl Phenol	NT	NT	NT	NT	NT	NT
Dimethylphenol	NT	NT	NT	NT	NT	NT
Dimethyl Phthalate	150	R	150	R	NT	NT
Dimethyl Sulfide	80	R	80	R	NT	NT
Dimethyl Sulfoxide	NR	R	NR	R	NT	NT
Dimethyl Thiazolidine	150	R	150	R	NT	NT
Dinitro Benzene	NR	NR	NR	NR	NR	R
Dinitro Toluene	NT	NT	NT	NT	NR	R
Dioctyl Phthalate	150	R	150	R	80	R
Dioxin	NT	NT	NT	NT	NT	NT
Diphenyl Oxide	120	R	120	R	NT	NT
Dipotassium Phosphate 50%	150	R	150	R	NT	NT
Dipropylene Glycol	150	R	150	R	NT	NT
Disodium Phosphate	NT	NT	NT	NT	NT	NT

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Chemical Environment and Concentration (%)	Cor-Cote HP Immersion	Cor-Cote HP Secondary Containment	Cor-Cote HP FF Immersion	Cor-Cote HP FF Secondary Containment	Cor-Cote SC Immersion	Cor-Cote SC Secondary Containment
Dibutyl Sebacate, All	NT	NT	NT	NT	NT	NT
Dichloro Acetic Acid (see Chloroacetic Acid)	NT	NT	NT	NT	NT	NT
Dichlorobenzene	NT	NT	NT	NT	NT	NT
Dichlorobutane	NT	NT	NT	NT	NT	NT
Dichlorodintene	NT	NT	NT	NT	NT	NT
Dichloroethane	NR	NR	NR	NR	NR	NR
Dichloroethylene	NT	NT	NT	NT	NT	NT
Dichloromethane	NT	NT	NT	NT	NT	NT
Dichlorophenoxyacet Acid	NT	NT	NT	NT	NT	NT
Dichloropropane	NT	NT	NT	NT	NT	NT
Dichloropropene	NT	NT	NT	NT	NT	NT
Dichloropropionic Acid	NT	NT	NT	NT	NT	NT
Dichlorotoluene	NT	NT	NT	NT	NT	NT
Diesel Fuel	NR	R	120	R	100	R
Diesel Fuel/Water 50:50 V/V	NR	R	120	R	100	R
Diesel Oil, #2, #3	NT	NT	NT	NT	NT	NT
Diethanolamine	NR	NR	NR	NR	NR	R
Diethyl Carbonate	NT	NT	NT	NT	NT	NT
Diethyl Ether	NT	NT	NT	NT	NT	NT
Diethyl Formamide	NT	NT	NT	NT	NT	NT
Diethyl Glycol	NT	NT	NT	NT	NT	NT
Diethyl Ketone	NT	NT	NT	NT	NT	NT
Diethyl Sulfate	NT	NT	NT	NT	NT	NT
Diethylbenzene	NT	NT	NT	NT	NT	NT
Diethylene Chloroformate	NR	NR	NR	NR	NR	NR
Diethylene Glycol	NR	R	120	R	100	R
Diethylene Glycol Monobutyl Ether	NT	NT	NT	NT	NT	NT
Diethylenetriamine	NR	NT	NR	NT	NR	NT
Diethylhexyl Phosphoric Acid 20%	NT	NT	NT	NT	NT	NT
Diethylketone	NR	NR	NR	NR	NR	NR
Difluorophosphoric Acid	NT	NT	NT	NT	NT	NT
Digestor Liquor, Low MEA	NT	NT	NT	NT	NT	NT
Digester Liquor, High MEA	NT	NT	NT	NT	NT	NT
Diglycoamine	NT	NT	NT	NT	NT	NT
Diisobutyl Ketone	NT	NT	NT	NT	NT	NT
Diisobutyl Phthalate	NT	NT	NT	NT	NT	NT
Diisobutylene	NT	NT	NT	NT	NT	NT
Diisopropanolamine	NT	NT	NT	NT	NT	NT
Dilute Caustic	NT	NT	NT	NT	NT	NT
Dimethyl Aniline	NR	NR	NR	NR	NR	NR
Dimethylacetamide	NT	NT	NT	NT	NT	NT
Dimethylamine 1%	NT	NT	NT	NT	NT	NT
Dimethylamine 25%	NT	NT	NT	NT	NT	NT
Dimethylaminamethyl Phenol	NT	NT	NT	NT	NT	NT
Dimethylaminopropylamine	NR	NR	NR	NR	NR	NR
Dimethyl Carbamoyl Chloride	NR	NR	NR	NR	NR	NR
Dimethyl Carbonyl Chloride	NR	NR	NR	NR	NR	NR
Dimethylethanolamine	NT	NT	NT	NT	NT	NT
Dimethyl Dissulfide	NR	NT	NR	NT	NR	NT
Dimethyl Formamide	NR	NR	NR	NR	NR	NR
Dimethyl Morpholine	NT	NT	NT	NT	NT	NT
Dimethyl Phenol	NT	NT	NT	NT	NT	NT
Dimethylphenol	NT	NT	NT	NT	NT	NT
Dimethyl Phthalate	NT	NT	NT	NT	NT	NT
Dimethyl Sulfide	NT	NT	NT	NT	NT	NT
Dimethyl Sulfoxide	NT	NT	NT	NT	NT	NT
Dimethyl Thiazolidine	NT	NT	NT	NT	NT	NT
Dinitro Benzene	NR	NR	NR	NR	NR	NR
Dinitro Toluene	NR	NR	NR	NR	NR	R
Dioctyl Phthalate	NR	R	120	R	100	R
Dioxin	NT	NT	NT	NT	NT	NT
Diphenyl Oxide	NT	NT	NT	NT	NT	NT
Dipotassium Phosphate 50%	NT	NT	NT	NT	NT	NT
Dipropylene Glycol	NR	R	NR	R	NR	R
Disodium Phosphate	NT	NT	NT	NT	NT	NT

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Dibutyl Sebacate, All	NT	NT	NT	NT
Dichloro Acetic Acid (see Chloroacetic Acid)	NT	NT	NT	NT
Dichlorobenzene	NT	NT	NT	NT
Dichlorobutane	NT	NT	NT	NT
Dichlorodintene	NT	NT	NT	NT
Dichloroethane	NT	NT	NT	NT
Dichloroethylene	NT	NT	NT	NT
Dichloromethane	NT	NT	NT	NT
Dichlorophenoxyacet Acid	NT	NT	NT	NT
Dichloropropane	NT	NT	NT	NT
Dichloropropene	NT	NT	NT	NT
Dichloropropionic Acid	NT	NT	NT	NT
Dichlorotoluene	NT	NT	NT	NT
Diesel Fuel	80	R	120	R
Diesel Fuel/Water 50:50 V/V	80	R	120	R
Diesel Oil, #2, #3	80	R	120	R
Diethanolamine	NT	NT	80	R
Diethyl Carbonate	NT	NT	100	R
Diethyl Ether	NT	NT	NT	NT
Diethyl Formamide	NT	NT	NT	NT
Diethyl Glycol	NT	NT	NT	R
Diethyl Ketone	NT	NT	NT	NT
Diethyl Sulfate	NT	NT	NT	NT
Diethylbenzene	NT	NT	80	R
Diethylene Chloroformate	NT	NT	NT	NT
Diethylene Glycol	NT	NT	NR	R
Diethylene Glycol Monobutyl Ether	NT	NT	NR	NR
Diethylenetriamine	NT	NT	NR	NR
Diethylhexyl Phosphoric Acid 20%	NT	NT	NT	NT
Diethylketone	NT	NT	NT	NT
Difluorophosphoric Acid	NT	NT	NT	NT
Digestor Liquor, Low MEA	NT	NT	NT	NT
Digester Liquor, High MEA	NT	NT	NT	NT
Diglycoamine	NT	NT	NT	NT
Diisobutyl Ketone	NT	NT	NT	NT
Diisobutyl Phthalate	NT	NT	NT	NT
Diisobutylene	NT	NT	NT	NT
Diisopropanolamine	NT	NT	NT	NT
Dilute Caustic	NT	NT	80	R
Dimethyl Aniline	NT	NT	NT	NT
Dimethylacetamide	NT	NT	NT	NT
Dimethylamine 1%	NT	NT	100	R
Dimethylamine 25%	NT	NT	NT	NT
Dimethylaminamethyl Phenol	NT	NT	NT	NT
Dimethylaminopropylamine	NT	NT	NT	NT
Dimethyl Carbamoyl Chloride	NT	NT	NT	NT
Dimethyl Carbonyl Chloride	NT	NT	NT	NT
Dimethylethanolamine	NT	NT	NT	NT
Dimethyl Dissulfide	NT	NT	NR	NR
Dimethyl Formamide	NT	NT	NT	NT
Dimethyl Morpholine	NT	NT	NT	NT
Dimethyl Phenol	NT	NT	NT	NT
Dimethylphenol	NT	NT	NT	NT
Dimethyl Phthalate	NT	NT	NT	NT
Dimethyl Sulfide	NT	NT	NT	NT
Dimethyl Sulfoxide	NT	NT	NT	NT
Dimethyl Thiazolidine	NT	NT	NT	NT
Dinitro Benzene	NT	NT	NT	NT
Dinitro Toluene	NT	NT	NT	NT
Dioctyl Phthalate	NT	NT	NT	NT
Dioxin	NT	NT	NT	NT
Diphenyl Oxide	NT	NT	NT	NT
Dipotassium Phosphate 50%	NT	NT	NT	NT
Dipropylene Glycol	NT	NT	NT	NT
Disodium Phosphate	NT	NT	NT	NT

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	Magnalux 304 Vinyl Ester		Sher-Glass FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Dibutyl Sebacate, All	140	R	NT	NT
Dichloro Acetic Acid (see Chloroacetic Acid)	NT	NT	NT	NT
Dichlorobenzene	NR	NR	NT	NT
Dichlorobutane	NT	NT	NT	NT
Dichlorodintene	NT	NT	NT	NT
Dichloroethane	NR	NR	NT	NT
Dichloroethylene	NR	NR	NT	NT
Dichloromethane	NR	R	NT	NT
Dichlorophenoxyacet Acid	NT	NT	NT	NT
Dichloropropane	NR	NR	NT	NT
Dichloropropene	NR	NR	NT	NT
Dichloropropionic Acid	NR	NR	NT	NT
Dichlorotoluene	80	R	NT	NT
Diesel Fuel	140	R	80	R
Diesel Fuel/Water 50:50 V/V	140	R	80	R
Diesel Oil, #2, #3	80	R	80	R
Diethanolamine	120	R	NT	NT
Diethyl Carbonate	NR	NR	NT	NT
Diethyl Ether	NR	NR	NT	NT
Diethyl Formamide	NR	NR	NT	NT
Diethyl Glycol	NT	NT	NT	NT
Diethyl Ketone	NR	NR	NT	NT
Diethyl Sulfate	100	R	NT	NT
Diethylbenzene	100	R	NT	NT
Diethylene Chloroformate	NR	NR	NT	NT
Diethylene Glycol	140	R	NT	NT
Diethylene Glycol Monobutyl Ether	NT	NT	NT	NT
Diethylenetriamine	NT	NT	NT	NT
Diethylhexyl Phosphoric Acid 20%	140	R	NT	NT
Diethylketone	NR	NR	NT	NT
Difluorophosphoric Acid	NT	NT	NT	NT
Digestor Liquor, Low MEA	NT	NT	NT	NT
Digester Liquor, High MEA	NT	NT	NT	NT
Diglycoamine	NR	NR	NT	NT
Diisobutyl Ketone	NR	NR	NT	NT
Diisobutyl Phthalate	140	R	NT	NT
Diisobutylene	100	R	NT	NT
Diisopropanolamine	140	R	NT	NT
Dilute Caustic	NT	NT	NT	NT
Dimethyl Aniline	120	R	NT	NT
Dimethylacetamide	NR	NR	NT	NT
Dimethylamine 1%	100	R	NT	NT
Dimethylamine 25%	100	R	NT	NT
Dimethylaminamethyl Phenol	NT	NT	NT	NT
Dimethylaminopropylamine	NR	NR	NT	NT
Dimethyl Carbamoyl Chloride	100	100	NT	NT
Dimethyl Carbonyl Chloride	NT	NT	NT	NT
Dimethylethanolamine	NT	NT	NT	NT
Dimethyl Dissulfide	NT	NT	NT	NT
Dimethyl Formamide	NR	R	NT	NT
Dimethyl Morpholine	NR	NR	NT	NT
Dimethyl Phenol	NT	NT	NT	NT
Dimethylphenol	NT	NT	NT	NT
Dimethyl Phthalate	140	R	NT	NT
Dimethyl Sulfide	NR	NR	NT	NT
Dimethyl Sulfoxide	NR	R	NT	NT
Dimethyl Thiazolidine	140	R	NT	NT
Dinitro Benzene	NR	NR	NT	NT
Dinitro Toluene	NT	NT	NT	NT
Dioctyl Phthalate	140	R	NT	NT
Dioxin	NT	NT	NT	NT
Diphenyl Oxide	80	R	NT	NT
Dipotassium Phosphate 50%	140	R	NT	NT
Dipropylene Glycol	140	R	NT	NT
Disodium Phosphate	NT	NT	NT	NT

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	Cor-Cote VEN FF		Cor-Cote VEN GF		Cor-Cote HCR FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Divinylbenezene	120	R	120	R	NT	NT
D-Limonene	NT	NT	NT	NT	NT	NT
DMA 4 Weed Kill 2, 4-D	120	R	120	R	NT	NT
DMA 6 Weed Killer	120	R	120	R	NT	NT
Dodecanol (Lauryl Alco)	150	R	150	R	NT	NT
Dodecene	150	R	150	R	NT	NT
Dodecyl Alcohol (Lauryl)	150	R	150	R	100	R
Dodecylbenzene	150	R	150	R	NT	NT
Dodecyl Benzene Sulfonic Acid	150	R	150	R	NR	R
Dolomitic Lime	NT	NT	NT	NT	NT	NT
Dolomitic Hydrated Lime	NT	NT	NT	NT	NT	NT
Dowanol DB Diethylene Glycol	100	R	100	R	NT	NT
Dowanol DB Glycol Ether	100	R	100	R	NT	NT
Dowanol EB Glycol Ether	100	R	100	R	NT	NT
Dowanol PM Glycol Ether	80	R	80	R	NT	NT
Dowclene EC Solvent	120	R	120	R	NT	NT
Dowclene Solvent	120	R	120	R	NT	NT
Dowex 50WX4 Ion Exch Resin	150	R	150	R	NT	NT
Dowfax 2A0 Sol Surf 40% Sol	120	R	120	R	NT	NT
Dowfax 2A1 Surfactant 45% Sol	120	R	120	R	NT	NT
Dowicide Antimicrobial	120	R	120	R	NT	NT
Dowtherm Heat Trans	150	R	150	R	NT	NT
Dricon (fire retardant)	NT	NT	NT	NT	NT	NT
Dyes	NT	NT	NT	NT	NT	NT
ECR-34	NT	NT	NT	NT	NT	NT
Effluent Glycol	NT	NT	NT	NT	NT	NT
Electrosol Antistatic Agent 5%	150	R	150	R	NT	NT
Emery 3004	NT	NT	NT	NT	NT	NT
Endura-etch Solution	NT	NT	NT	NT	NT	NT
Epichlorohydrin	80	R	80	R	NT	NT
Epoxidized Soybean Oil	150	R	150	R	NT	NT
Esteron 245 Herbicide	NT	NT	NT	NT	NT	NT
Esteron Herbicide	NT	NT	NT	NT	NT	NT
Esters, Fatty Acid	150	R	150	R	NT	NT
Ethanol 10%	150	R	150	R	100	R
Ethanol 20%	150	R	150	R	100	R
Ethanol 50%	150	R	150	R	100	R
Ethanol 95%	100	R	100	R	100	R
Ethanol 100% (Ethyl Alcohol)	150	R	150	R	100	R
Ethanolamine	100	R	100	R	NT	NT
Ethoxyl Ethanol	100	R	100	R	NR	R
Ethoxylated Nonyl Phenol	NR	R	NR	R	100	R
Ethyl Acetate (4, 9)	80	R	80	R	NR	R
Ethyl Acrylate	80	R	80	R	NR	R
Ethyl Alcohol, Liquor (see Ethanol)	NT	NT	NT	NT	NT	NT
Ethyl Amine 20%	80	R	80	R	NR	R
Ethyl Amine 70%	NR	R	NR	R	NR	R
Ethyl Bromide	NR	NR	NR	NR	NR	R
Ethyl Chloride	80	R	80	R	NR	R
Ethyl Chloroformate	NR	NR	NR	NR	NR	R
Ethyl Ether	NR	R	NR	R	NR	R
Ethyl Ether (Diethylether)	NT	NT	NT	NT	NR	R
Ethyl Hexyl Acrylate	NT	NT	NT	NT	NR	R
Ethyl Hexyl Chloroformate	NT	NT	NT	NT	NT	NT
Ethyl Silicate	NT	NT	NT	NT	NT	NT
Ethyl Sulfate	100	R	100	R	NR	R
Ethyl Thiochloroformate	NT	NT	NT	NT	NT	NT
Ethylbenzene	100	R	100	R	NT	NT
Ethylbenzene: Benzene 2/3:1/3	100	R	100	R	NT	NT
Ethylene Glycol Monobutyl Ether	100	R	100	R	NT	NT
Ethylene Chloride	80	R	80	R	NT	NT
Ethylene Chlorohydrin	150	R	150	R	NT	NT
Ethylene Diamine	NR	NR	NR	NR	NT	NT
Ethylene Dibromide	NR	NR	NR	NR	NT	NT
Ethylene Dichloride	80	R	80	R	NR	R

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Chemical Environment and Concentration (%)	Cor-Cote HP Immersion	Cor-Cote HP Secondary Containment	Cor-Cote HP FF Immersion	Cor-Cote HP FF Secondary Containment	Cor-Cote SC Immersion	Cor-Cote SC Secondary Containment
Divinylbenzene	NT	NT	NT	NT	NT	NT
D-Limonene	NT	NT	NT	NT	NT	NT
DMA 4 Weed Kill 2, 4-D	NT	NT	NT	NT	NT	NT
DMA 6 Weed Killer	NT	NT	NT	NT	NT	NT
Dodecanol (Lauryl Alco)	NT	NT	NT	NT	NT	NT
Dodecene	NT	NT	NT	NT	NT	NT
Dodecyl Alcohol (Lauryl)	NR	R	NR	R	NR	R
Dodecylbenzene	NT	NT	NT	NT	NT	NT
Dodecyl Benzene Sulfonic Acid	NR	R	NR	R	NR	R
Dolomitic Lime	NT	NT	NT	NT	NT	NT
Dolomitic Hydrated Lime	NT	NT	NT	NT	NT	NT
Dowanol DB Diethylene Glycol	NT	NT	NT	NT	NT	NT
Dowanol DB Glycol Ether	NT	NT	NT	NT	NT	NT
Dowanol EB Glycol Ether	NT	NT	NT	NT	NT	NT
Dowanol PM Glycol Ether	NT	NT	NT	NT	NT	NT
Dowclene EC Solvent	NT	NT	NT	NT	NT	NT
Dowclene Solvent	NT	NT	NT	NT	NT	NT
Dowex 50WX4 Ion Exch Resin	NT	NT	NT	NT	NT	NT
Dowfax 2A0 Sol Surf 40% Sol	NT	NT	NT	NT	NT	NT
Dowfax 2A1 Surfactant 45% Sol	NT	NT	NT	NT	NT	NT
Dowicide Antimicrobial	NT	NT	NT	NT	NT	NT
Dowtherm Heat Trans	NT	NT	NT	NT	NT	NT
Dricon (fire retardant)	NT	NT	NT	NT	NT	NT
Dyes	NT	NT	NT	NT	NT	NT
ECR-34	NT	NT	NT	NT	NT	NT
Effluent Glycol	NT	NT	NT	NT	NT	NT
Electrosol Antistatic Agent 5%	NT	NT	NT	NT	NT	NT
Emery 3004	NR	R	120	R	120	R
Endura-etch Solution	NT	NT	NT	NT	NT	NT
Epichlorohydrin	NT	NT	NT	NT	NT	NT
Epoxidized Soybean Oil	NT	NT	NT	NT	NT	NT
Esteron 245 Herbicide	NT	NT	NT	NT	NT	NT
Esteron Herbicide	NT	NT	NT	NT	NT	NT
Esters, Fatty Acid	NT	NT	NT	NT	NT	NT
Ethanol 10%	NR	R	NR	R	NR	R
Ethanol 20%	NR	R	NR	R	NR	R
Ethanol 50%	NR	R	NR	R	NR	R
Ethanol 95%	NR	R	NR	R	NR	R
Ethanol 100% (Ethyl Alcohol)	NR	R	NR	R	NR	R
Ethanolamine	NR	R	NR	R	NR	R
Ethoxyl Ethanol	NR	R	NR	R	NR	R
Ethoxylated Nonyl Phenol	NR	R	NR	R	NR	R
Ethyl Acetate (4, 9)	NR	NR	NR	NR	NR	NR
Ethyl Acrylate	NR	NR	NR	NR	NR	R
Ethyl Alcohol, Liquor (see Ethanol)	NT	NT	NT	NT	NT	NT
Ethyl Amine 20%	NR	NR	NR	NR	NR	NR
Ethyl Amine 70%	NR	NR	NR	NR	NR	NR
Ethyl Bromide	NR	NR	NR	NR	NR	NR
Ethyl Chloride	NR	NR	NR	NR	NR	NR
Ethyl Chloroformate	NR	NR	NR	NR	NR	R
Ethyl Ether	NR	NR	NR	NR	NR	NR
Ethyl Ether (Diethylether)	NR	NR	NR	NR	NR	NR
Ethyl Hexyl Acrylate	NR	R	NR	R	NR	R
Ethyl Hexyl Chloroformate	NT	NT	NT	NT	NT	NT
Ethyl Silicate	NT	NT	NT	NT	NT	NT
Ethyl Sulfate	NT	NT	NT	NT	NT	NT
Ethyl Thiochloroformate	NR	R	NR	R	NR	R
Ethylbenzene	NT	NT	NT	NT	NT	NT
Ethylbenzene: Benzene 2/3:1/3	NT	NT	NT	NT	NT	NT
Ethylene Glycol Monobutyl Ether	NT	NT	NT	NT	NT	NT
Ethylene Chloride	NT	NT	NT	NT	NT	NT
Ethylene Chlorohydrin	NT	NT	NT	NT	NT	NT
Ethylene Diamine	NT	NT	NT	NT	NT	NT
Ethylene Dibromide	NT	NT	NT	NT	NT	NT
Ethylene Dichloride	NR	NR	NR	NR	NR	NR

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Divinylbenezene	NT	NT	NT	NT
D-Limonene	NT	NT	NT	NT
DMA 4 Weed Kill 2, 4-D	NT	NT	NT	NT
DMA 6 Weed Killer	NT	NT	NT	NT
Dodecanol (Lauryl Alco)	NT	NT	NT	NT
Dodecene	NT	NT	NT	NT
Dodecyl Alcohol (Lauryl)	NT	NT	NT	NT
Dodecylbenzene	NT	NT	NT	NT
Dodecyl Benzene Sulfonic Acid	NT	NT	NT	NT
Dolomitic Lime	NT	NT	NT	NT
Dolomitic Hydrated Lime	NT	NT	NT	NT
Dowanol DB Diethylene Glycol	NT	NT	NT	NT
Dowanol DB Glycol Ether	NT	NT	NT	NT
Dowanol EB Glycol Ether	NT	NT	NT	NT
Dowanol PM Glycol Ether	NT	NT	NT	NT
Dowclene EC Solvent	NT	NT	NT	NT
Dowclene Solvent	NT	NT	NT	NT
Dowex 50WX4 Ion Exch Resin	NT	NT	NT	NT
Dowfax 2A0 Sol Surf 40% Sol	NT	NT	NT	NT
Dowfax 2A1 Surfactant 45% Sol	NT	NT	NT	NT
Dowicide Antimicrobial	NT	NT	NT	NT
Dowtherm Heat Trans	NT	NT	NT	NT
Dricon (fire retardant)	NT	NT	NT	NT
Dyes	NT	NT	NT	NT
ECR-34	NT	NT	NT	NT
Effluent Glycol	NT	NT	NT	NT
Electrosol Antistatic Agent 5%	NT	NT	NT	NT
Emery 3004	NT	NT	140	R
Endura-etch Solution	NT	NT	NT	NT
Epichlorohydrin	NT	NT	NT	NT
Epoxidized Soybean Oil	NT	NT	NT	NT
Esteron 245 Herbicide	NT	NT	NT	NT
Esteron Herbicide	NT	NT	NT	NT
Esters, Fatty Acid	NT	NT	NT	NT
Ethanol 10%	NT	NT	NT	R
Ethanol 20%	NT	NT	NT	R
Ethanol 50%	NT	NT	NT	R
Ethanol 95%	NT	NT	NR	R
Ethanol 100% (Ethyl Alcohol)	NT	NT	NR	R
Ethanolamine	NT	NT	NR	NR
Ethoxyl Ethanol	NT	NT	NT	NT
Ethoxylated Nonyl Phenol	NT	NT	NT	NT
Ethyl Acetate (4, 9)	NT	NT	NR	NR
Ethyl Acrylate	NT	NT	NT	NT
Ethyl Alcohol, Liquor (see Ethanol)	NT	NT	NT	NT
Ethyl Amine 20%	NT	NT	NT	NT
Ethyl Amine 70%	NT	NT	NT	NT
Ethyl Bromide	NT	NT	NT	NT
Ethyl Chloride	NT	NT	NT	NT
Ethyl Chloroformate	NT	NT	NT	NT
Ethyl Ether	NT	NT	NT	NT
Ethyl Ether (Diethylether)	NT	NT	NT	NT
Ethyl Hexyl Acrylate	NT	NT	NT	NT
Ethyl Hexyl Chloroformate	NT	NT	NT	NT
Ethyl Silicate	NT	NT	NT	NT
Ethyl Sulfate	NT	NT	NT	NT
Ethyl Thiochloroformate	NT	NT	NR	NR
Ethylbenzene	NT	NT	80	R
Ethylbenzene: Benzene 2/3:1/3	NT	NT	80	R
Ethylene Glycol Monobutyl Ether	NT	NT	NT	NT
Ethylene Chloride	NT	NT	NT	NT
Ethylene Chlorohydrin	NT	NT	NT	NT
Ethylene Diamine	NT	NT	NR	NR
Ethylene Dibromide	NT	NT	NT	NT
Ethylene Dichloride	NR	NR	NT	NT

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	Magnalux 304 Vinyl Ester		Sher-Glass FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Divinylbenezene	100	R	NT	NT
D-Limonene	NT	NT	NT	NT
DMA 4 Weed Kill 2, 4-D	140	R	NT	NT
DMA 6 Weed Killer	140	R	NT	NT
Dodecanol (Lauryl Alco)	140	R	NT	NT
Dodecene	140	R	NT	NT
Dodecyl Alcohol (Lauryl)	120	R	NT	NT
Dodecylbenzene	140	R	NT	NT
Dodecyl Benzene Sulfonic Acid	140	R	NT	NT
Dolomitic Lime	NT	NT	NT	NT
Dolomitic Hydrated Lime	NT	NT	NT	NT
Dowanol DB Diethylene Glycol	100	R	NT	NT
Dowanol DB Glycol Ether	100	R	NT	NT
Dowanol EB Glycol Ether	100	R	NT	NT
Dowanol PM Glycol Ether	NR	NR	NT	NT
Dowclene EC Solvent	100	R	NT	NT
Dowclene Solvent	140	R	NT	NT
Dowex 50WX4 Ion Exch Resin	140	R	NT	NT
Dowfax 2A0 Sol Surf 40% Sol	140	R	NT	NT
Dowfax 2A1 Surfactant 45% Sol	140	R	NT	NT
Dowicide Antimicrobial	140	R	NT	NT
Dowtherm Heat Trans	140	R	NT	NT
Dricon (fire retardant)	NT	NT	NT	NT
Dyes	NT	NT	NT	NT
ECR-34	NT	NT	NT	NT
Effluent Glycol	NT	NT	NT	NT
Electrosol Antistatic Agent 5%	140	R	NT	NT
Emery 3004	NT	NT	NT	NT
Endura-etch Solution	NT	NT	NT	NT
Epichlorohydrin	NR	R	NT	NT
Epoxidized Soybean Oil	140	R	NT	NT
Esteron 245 Herbicide	NT	NT	NT	NT
Esteron Herbicide	NT	NT	NT	NT
Esters, Fatty Acid	140	R	NT	NT
Ethanol 10%	140	R	120	R
Ethanol 20%	140	R	120	R
Ethanol 50%	100	R	120	R
Ethanol 95%	80	R	120	R
Ethanol 100% (Ethyl Alcohol)	120	R	120	R
Ethanolamine	80	R	NT	NT
Ethoxyl Ethanol	80	R	NT	NT
Ethoxylated Nonyl Phenol	NR	NR	NT	NT
Ethyl Acetate (4, 9)	NR	NR	NT	NT
Ethyl Acrylate	NR	NR	NT	NT
Ethyl Alcohol, Liquor (see Ethanol)	NT	NT	NT	NT
Ethyl Amine 20%	80	R	NT	NT
Ethyl Amine 70%	NR	NR	NT	NT
Ethyl Bromide	NR	NR	NT	NT
Ethyl Chloride	NR	NR	NT	NT
Ethyl Chloroformate	NR	NR	NT	NT
Ethyl Ether	NR	R	NT	NT
Ethyl Ether (Diethylether)	NT	NT	NT	NT
Ethyl Hexyl Acrylate	NT	NT	NT	NT
Ethyl Hexyl Chloroformate	NT	NT	NT	NT
Ethyl Silicate	NT	NT	NT	NT
Ethyl Sulfate	100	R	NT	NT
Ethyl Thiochloroformate	NT	NT	NT	NT
Ethylbenzene	80	R	NT	NT
Ethylbenzene: Benzene 2/3:1/3	NR	NR	NT	NT
Ethylene Glycol Monobutyl Ether	100	R	NT	NT
Ethylene Chloride	NR	NR	NT	NT
Ethylene Chlorohydrin	100	R	NT	NT
Ethylene Diamine	NR	NR	NT	NT
Ethylene Dibromide	NR	NR	NT	NT
Ethylene Dichloride	NR	NR	NT	NT

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	Cor-Cote VEN FF		Cor-Cote VEN GF		Cor-Cote HCR FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Ethylene Glycol	150	R	150	R	120	R
Ethylene Oxide	NR	NR	NR	NR	NR	NR
Ethylene Oxide (Dilute)	NR	NR	NR	NR	NR	NR
Ethylene Sulfate	NR	NR	NR	NR	NR	R
Ethylenediaminetetraacetic Acid	150	R	150	R	NT	NT
Eucalyptus Oil	120	R	120	R	NT	NT
Fatty Acids, Saturated	150	R	150	R	NT	NT
Fatty Acids, Unsaturated	150	R	150	R	NT	NT
Fatty Ester	NT	NT	NT	NT	NT	NT
Felt Cleaning Solution (acidic)	NT	NT	NT	NT	NT	NT
Ferric Acetate, Saturated	150	R	150	R	NT	NT
Ferric Ammoniom Citrate Solution	NT	NT	NT	NT	NR	R
Ferric Chloride 38%	150	R	150	R	120	R
Ferric Chloride 45%	150	R	150	R	120	R
Ferric Chloride 50%	150	R	150	R	120	R
Ferric Nitrate	150	R	150	R	120	R
Ferric Sulfate 12%	150	R	150	R	120	R
Ferric Sulfate 50%	150	R	150	R	120	R
Ferrous Chloride, All	150	R	150	R	120	R
Ferrous Nitrate, All	150	R	150	R	NT	NT
Ferrous Sulfate 7%	NT	NT	NT	NT	NT	NT
Ferrous Sulfate 19%	150	R	150	R	NT	NT
Ferrous Sulfate 50%; Hydrochloric Acid 2%	NT	NT	NT	NT	NT	NT
Ferrous Sulfate, All	150	R	150	R	NT	NT
Fertilizer, URAN	150	R	150	R	120	R
Fertilizer Composition 888	150	R	150	R	120	R
Fertilizer (Liquid Nitrogen 28-0-0)	NT	NT	NT	NT	NT	NT
Fertilizer (Liquid Urea)	NT	NT	NT	NT	NT	NT
Fire Retardant (Dricon)	NT	NT	NT	NT	NT	NT
Fish Oil	NT	NT	NT	NT	NT	NT
Flue Gas, Wet, All	150	R	150	R	NT	NT
Fluoboric Acid, All (1, 2, 4, 7, 9)	150	R	150	R	NR	R
Fluoride Salt+Hydrochloric Acid 30:10 (2, 4, 7, 9)	120	R	120	R	NT	NT
Fluorine Gas (1)	150	R	150	R	NT	NT
Fluosilicic Acid 10% (1, 2, 4, 7, 9)	NR	R	80	R	NR	R
Fluosilicic Acid 25% (1, 2, 4, 7, 9)	NR	R	80	R	NR	R
Fluosilicic Acid 35% (1, 2, 4, 7, 9)	NR	R	80	R	NR	NR
Fly Ash, Slurry	150	R	150	R	120	R
Forane 1413 Refrigerant	NT	NT	NT	NT	80	R
Formaldehyde, All	150	R	150	R	100	R
Formaldehyde 44%	150	R	150	R	100	R
Formalin	NT	NT	NT	NT	NT	NT
Formic Acid 10%	120	R	120	R	120	R
Formic Acid 98%	120	R	120	R	120	R
Fosterge Products	NT	NT	NT	NT	NT	NT
Freon 11	100	R	100	R	NT	NT
Freon 113 Solvent	100	R	100	R	NT	NT
Freon 12	100	R	100	R	NT	NT
Fresh Water	150	R	150	R	120	R
Fuel Oil, Heating Oil	150	R	150	R	120	R
Fuel Oil - No. 1	150	R	150	R	NT	NT
Fuel Oil - No. 2	150	R	150	R	NT	NT
Furfural to 10%	100	R	100	R	80	R
Furfural 100%	NR	R	NR	R	80	R
Furfural in Organic Solvent 0-20	80	R	80	R	NT	NT
Fufural/Acetic Acid/Methanol 30/10/5	NR	R	NR	R	NR	NR
Furfuryl Alcohol 20% (9)	100	R	100	R	NR	R
Furfuryl Alcohol 100% (9)	NR	R	NR	R	NR	R
Fusilade 2000 Herbicide	NT	NT	NT	NT	NT	NT
Galecron 4EC Insecticide	120	R	120	R	NT	NT
Gallic Acid, Saturated	150	R	150	R	NT	NT
Gasohol (up to 10% Alcohol)	120	R	120	R	120	R
Gasoline Reference Fuel C	150	R	150	R	120	R
Gasoline, Aviation	150	R	150	R	120	R
Gasoline, Commercial	120	R	120	R	120	R

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	Cor-Cote HP		Cor-Cote HP FF		Cor-Cote SC	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Ethylene Glycol	NR	R	120	R	120	R
Ethylene Oxide	NR	NR	NR	NR	NR	NR
Ethylene Oxide (Dilute)	NR	NR	NR	NR	NR	NR
Ethylene Sulfate	NR	NR	NR	NR	NR	NR
Ethylenediaminetetraacetic Acid	NT	NT	NT	NT	NT	NT
Eucalyptus Oil	NT	NT	NT	NT	NT	NT
Fatty Acids, Saturated	NT	NT	NT	NT	NT	NT
Fatty Acids, Unsaturated	NT	NT	NT	NT	NT	NT
Fatty Ester	NR	R	80	R	80	R
Felt Cleaning Solution (acidic)	NT	NT	NT	NT	NT	NT
Ferric Acetate, Saturated	NT	NT	NT	NT	NT	NT
Ferric Ammonium Citrate Solution	NR	R	NR	R	NR	R
Ferric Chloride 38%	NR	R	NR	R	120	R
Ferric Chloride 45%	NR	R	NR	R	120	R
Ferric Chloride 50%	NR	R	120	R	120	R
Ferric Nitrate	NR	R	NR	R	NR	R
Ferric Sulfate 12%	NR	R	120	R	120	R
Ferric Sulfate 50%	NR	R	120	R	120	R
Ferrous Chloride, All	NR	R	120	R	120	R
Ferrous Nitrate, All	NT	NT	NT	NT	NT	NT
Ferrous Sulfate 7%	NT	NT	NT	NT	NT	NT
Ferrous Sulfate 19%	NT	NT	NT	NT	NT	NT
Ferrous Sulfate 50%; Hydrochloric Acid 2%	NT	NT	NT	NT	NT	NT
Ferrous Sulfate, All	NT	NT	NT	NT	NT	NT
Fertilizer, URAN	NT	NT	NT	NT	NT	NT
Fertilizer Composition 888	NT	NT	NT	NT	NT	NT
Fertilizer (Liquid Nitrogen 28-0-0)	NT	NT	NT	NT	NT	NT
Fertilizer (Liquid Urea)	NT	NT	NT	NT	NT	NT
Fire Retardant (Dricon)	NT	NT	NT	NT	NT	NT
Fish Oil	NT	NT	NT	NT	NT	NT
Flue Gas, Wet, All	NT	NT	NT	NT	NT	NT
Fluoboric Acid, All (1, 2, 4, 7, 9)	NR	R	NR	R	NR	R
Fluoride Salt+Hydrochloric Acid 30:10 (2, 4, 7, 9)	NT	NT	NT	NT	NT	NT
Fluorine Gas (1)	NT	NT	NT	NT	NT	NT
Fluosilicic Acid 10% (1, 2, 4, 7, 9)	NR	NR	NR	NR	NR	NR
Fluosilicic Acid 25% (1, 2, 4, 7, 9)	NR	NR	NR	NR	NR	NR
Fluosilicic Acid 35% (1, 2, 4, 7, 9)	NR	NR	NR	NR	NR	NR
Fly Ash, Slurry	NR	R	NR	R	NR	R
Forane 1413 Refrigerant	NR	R	80	R	80	R
Formaldehyde, All	NR	R	NR	R	NR	R
Formaldehyde 44%	NR	R	NR	R	NR	R
Formalin	NT	NT	NT	NT	NT	NT
Formic Acid 10%	NR	R	NR	R	NR	R
Formic Acid 98%	NR	R	NR	R	NR	R
Fosterga Products	NT	NT	NT	NT	NT	NT
Freon 11	NT	NT	NT	NT	NT	NT
Freon 113 Solvent	NT	NT	NT	NT	NT	NT
Freon 12	NT	NT	NT	NT	NT	NT
Fresh Water	NR	R	120	R	120	R
Fuel Oil, Heating Oil	NR	R	120	R	120	R
Fuel Oil - No. 1	NR	R	120	R	120	R
Fuel Oil - No. 2	NR	R	120	R	120	R
Furfural to 10%	NR	R	NR	R	NR	R
Furfural 100%	NR	R	NR	R	NR	R
Furfural in Organic Solvent 0-20	NT	NT	NT	NT	NT	NT
Furfural/Acetic Acid/Methanol 30/10/5	NR	NR	NR	NR	NR	NR
Furfuryl Alcohol 20% (9)	NR	R	NR	R	NR	R
Furfuryl Alcohol 100% (9)	NR	R	NR	R	NR	R
Fusilade 2000 Herbicide	NR	R	100	R	100	R
Galecron 4EC Insecticide	NT	NT	NT	NT	NT	NT
Gallic Acid, Saturated	NT	NT	NT	NT	NT	NT
Gasohol (up to 10% Alcohol)	NR	R	NR	R	120	R
Gasoline Reference Fuel C	NR	R	NR	R	120	R
Gasoline, Aviation	NR	R	NR	R	120	R
Gasoline, Commercial	NR	R	NR	R	120	R

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Ethylene Glycol	80	R	NT	R
Ethylene Oxide	NT	NT	NT	NT
Ethylene Oxide (Dilute)	NT	NT	NT	NT
Ethylene Sulfate	NT	NT	NT	NT
Ethylenediaminetetraacetic Acid	NT	NT	NT	NT
Eucalyptus Oil	NT	NT	NT	NT
Fatty Acids, Saturated	NT	NT	NT	NT
Fatty Acids, Unsaturated	NT	NT	NT	NT
Fatty Ester	NT	NT	100	R
Felt Cleaning Solution (acidic)	NT	NT	NT	NT
Ferric Acetate, Saturated	NT	NT	NT	NT
Ferric Ammoniom Citrate Solution	NT	NT	NT	NT
Ferric Chloride 38%	80	R	80	R
Ferric Chloride 45%	NT	NT	80	R
Ferric Chloride 50%	NT	NT	NT	NT
Ferric Nitrate	NT	NT	NT	NT
Ferric Sulfate 12%	NT	NT	80	R
Ferric Sulfate 50%	NT	NT	NT	NT
Ferrous Chloride, All	80	R	80	R
Ferrous Nitrate, All	NT	NT	NT	NT
Ferrous Sulfate 7%	NT	NT	80	R
Ferrous Sulfate 19%	NT	NT	NT	NT
Ferrous Sulfate 50%; Hydrochloric Acid 2%	NT	NT	NT	NT
Ferrous Sulfate, All	NT	NT	NT	NT
Fertilizer, URAN	NT	NT	NT	NT
Fertilizer Composition 888	NT	NT	NT	NT
Fertilizer (Liquid Nitrogen 28-0-0)	NR	R	NT	NT
Fertilizer (Liquid Urea)	NR	R	NT	NT
Fire Retardant (Dricon)	NT	NT	NT	NT
Fish Oil	NT	NT	NT	NT
Flue Gas, Wet, All	NT	NT	NT	NT
Fluoboric Acid, All (1, 2, 4, 7, 9)	NT	NT	NR	R
Fluoride Salt+Hydrochloric Acid 30:10 (2, 4, 7, 9)	NT	NT	NT	NT
Fluorine Gas (1)	NT	NT	NT	NT
Fluosilicic Acid 10% (1, 2, 4, 7, 9)	NT	NT	NT	NT
Fluosilicic Acid 25% (1, 2, 4, 7, 9)	NT	NT	NT	NT
Fluosilicic Acid 35% (1, 2, 4, 7, 9)	NT	NT	NT	NT
Fly Ash, Slurry	NT	NT	NR	R
Forane 1413 Refrigerant	NT	NT	80	R
Formaldehyde, All	NT	NT	NT	NT
Formaldehyde 44%	NT	NT	NR	R
Formalin	NT	NT	NT	NT
Formic Acid 10%	NT	NT	NT	NT
Formic Acid 98%	NT	NT	NT	NT
Fosterge Products	NT	NT	NT	NT
Freon 11	NT	NT	NT	NT
Freon 113 Solvent	NT	NT	NT	NT
Freon 12	NT	NT	NT	NT
Fresh Water	NT	NT	80	R
Fuel Oil, Heating Oil	NT	NT	120	R
Fuel Oil - No. 1	NT	NT	120	R
Fuel Oil - No. 2	NT	NT	120	R
Furfural to 10%	NR	NR	NT	NT
Furfural 100%	NR	NR	NT	NT
Furfural in Organic Solvent 0-20	NT	NT	NT	NT
Fufural/Acetic Acid/Methanol 30/10/5	NR	NR	NT	NT
Furfuryl Alcohol 20% (9)	NT	NT	NT	NT
Furfuryl Alcohol 100% (9)	NT	NT	NT	NT
Fusilade 2000 Herbicide	NT	NT	100	R
Galecron 4EC Insecticide	NT	NT	NT	NT
Gallic Acid, Saturated	NT	NT	NT	NT
Gasohol (up to 10% Alcohol)	NR	NR	NT	NT
Gasoline Reference Fuel C	NR	NR	80	R
Gasoline, Aviation	NR	NR	80	R
Gasoline, Commercial	NR	R	80	R

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	Magnalux 304 Vinyl Ester		Sher-Glass FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Ethylene Glycol	140	R	NT	NT
Ethylene Oxide	NR	NR	NT	NT
Ethylene Oxide (Dilute)	NR	NR	NT	NT
Ethylene Sulfate	NR	NR	NT	NT
Ethylenediaminetetraacetic Acid	140	R	NT	NT
Eucalyptus Oil	140	R	NT	NT
Fatty Acids, Saturated	140	R	NT	NT
Fatty Acids, Unsaturated	140	R	NT	NT
Fatty Ester	NT	NT	NT	NT
Felt Cleaning Solution (acidic)	NT	NT	NT	NT
Ferric Acetate, Saturated	140	R	NT	NT
Ferric Ammoniom Citrate Solution	NT	NT	NT	NT
Ferric Chloride 38%	140	R	NT	NT
Ferric Chloride 45%	140	R	NT	NT
Ferric Chloride 50%	140	R	NT	NT
Ferric Nitrate	140	R	NT	NT
Ferric Sulfate 12%	140	R	NT	NT
Ferric Sulfate 50%	140	R	NT	NT
Ferrous Chloride, All	140	R	NT	NT
Ferrous Nitrate, All	140	R	NT	NT
Ferrous Sulfate 7%	NT	NT	NT	NT
Ferrous Sulfate 19%	140	R	NT	NT
Ferrous Sulfate 50%; Hydrochloric Acid 2%	NT	NT	NT	NT
Ferrous Sulfate, All	140	R	NT	NT
Fertilizer, URAN	140	R	NT	NT
Fertilizer Composition 888	140	R	NT	NT
Fertilizer (Liquid Nitrogen 28-0-0)	140	R	NT	NT
Fertilizer (Liquid Urea)	NT	NT	NT	NT
Fire Retardant (Dricon)	NT	NT	NT	NT
Fish Oil	140	R	NT	NT
Flue Gas, Wet, All	140	R	NT	NT
Fluoboric Acid, All (1, 2, 4, 7, 9)	NR	R	NT	NT
Fluoride Salt+Hydrochloric Acid 30:10 (2, 4, 7, 9)	140	R	NT	NT
Fluorine Gas (1)	140	R	NT	NT
Fluosilicic Acid 10% (1, 2, 4, 7, 9)	NR	NR	NT	NT
Fluosilicic Acid 25% (1, 2, 4, 7, 9)	NR	NR	NT	NT
Fluosilicic Acid 35% (1, 2, 4, 7, 9)	NR	NR	NT	NT
Fly Ash, Slurry	140	R	NT	NT
Forane 1413 Refrigerant	NT	NT	NT	NT
Formaldehyde, All	140	R	NT	NT
Formaldehyde 44%	140	R	NT	NT
Formalin	NT	NT	NT	NT
Formic Acid 10%	140	R	NT	NT
Formic Acid 98%	140	R	NT	NT
Fosterge Products	NT	NT	NT	NT
Freon 11	80	R	NT	NT
Freon 113 Solvent	100	R	NT	NT
Freon 12	80	R	NT	NT
Fresh Water	140	R	NT	NT
Fuel Oil, Heating Oil	140	R	NT	NT
Fuel Oil - No. 1	140	R	NT	NT
Fuel Oil - No. 2	140	R	NT	NT
Furfural to 10%	100	R	NT	NT
Furfural 100%	NR	NR	NT	NT
Furfural in Organic Solvent 0-20	NR	R	NT	NT
Fufural/Acetic Acid/Methanol 30/10/5	NR	NR	NT	NT
Furfuryl Alcohol 20% (9)	NR	NR	NT	NT
Furfuryl Alcohol 100% (9)	NR	NR	NT	NT
Fusilade 2000 Herbicide	NT	NT	NT	NT
Galecron 4EC Insecticide	80	R	NT	NT
Gallic Acid, Saturated	140	R	NT	NT
Gasohol (up to 10% Alcohol)	100	R	NT	NT
Gasoline Reference Fuel C	140	R	100	R
Gasoline, Aviation	140	R	120	R
Gasoline, Commercial	100	R	120	R

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	Cor-Cote VEN FF		Cor-Cote VEN GF		Cor-Cote HCR FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Gasoline, Diesel	150	R	150	R	120	R
Gasoline, Jet Fuel JP4	120	R	120	R	120	R
Gasoline, Leaded	150	R	150	R	120	R
Gasoline, Premium Unleaded	150	R	150	R	120	R
Gasoline, Regular Unleaded	150	R	150	R	120	R
Gasoline (White)	150	R	150	R	120	R
Gasoline (White) 90% Unleaded, 10% Ethanol	100	R	100	R	120	R
Gasoline (White) 90% Unleaded, 10% MTBE	100	R	150	R	120	R
Gasoline (White) 90% Unleaded,10% Methanol	100	R	150	R	120	R
Gasoline (White) 80% Unleaded Metahnol 20%	100	R	100	R	120	R
Gin, 80 Proof (40% Ethanol)	150	R	150	R	100	R
Glacial Acetic Acid (see Acetic Acid 100%)	100	R	80	R	NR	NR
Glucose	150	R	150	R	120	R
Glutaraldehyde 50%	NT	NT	NT	NT	NT	NT
Glutaric Acid 50%	100	R	100	R	NT	NT
Glycerin	150	R	150	R	120	R
Glycerol	100	R	100	R	120	R
Glycol	150	R	150	R	NT	NT
Glycolic Acid 70%	120	R	120	R	NR	R
Glyconic Acid 50%	150	R	150	R	NT	NT
Glyoxal 40%	100	R	100	R	NT	NT
Gold Plating Solution (Cyanide)	120	R	120	R	120	R
Green Liquor, All (4, 9)	150	R	150	R	120	R
Grape Juice	150	R	NR	R	120	R
Grapefruit Juice	NT	NT	NT	NT	120	R
Halogenated Polyester Resin	NT	NT	NT	NT	NT	NT
Heat Transfer Agent	NT	NT	NT	NT	NT	NT
Heptane	150	R	150	R	120	R
Heptanoic Acid	NT	NT	NT	NT	NT	NT
Herbicides	120	R	120	R	NT	NT
Hexachloroethane	120	R	120	R	NT	NT
Hexachlorocyclopentadiene	NT	NT	NT	NT	NT	NT
Hexamethylenetetramine 40%	120	R	120	R	NT	NT
Hexane	150	R	150	R	120	R
Hexane Sulfonic Acid	120	R	120	R	NT	NT
Hexylene Glycol	NT	NT	NT	NT	NT	NT
Honey	NT	NT	NT	NT	NT	NT
Horseradish	NT	NT	NT	NT	NT	NT
Hydraulic Fluid	150	R	150	R	NT	NT
Hydrazine 35%	NR	R	NR	R	NR	R
Hydrazine	NR	R	NR	R	NR	R
Hydrazine Hydrate	NR	R	NR	R	NR	R
Hydriodic Acid 20%	150	R	150	R	80	R
Hydriodic Acid 40%	150	R	150	R	NR	NR
Hydrobromic Acid 20%	150	R	150	R	NR	R
Hydrobromic Acid 25%	150	R	150	R	NR	NR
Hydrobromic Acid 50%	150	R	150	R	NR	NR
Hydrobromic Acid 62%	100	R	100	R	NR	NR
Hydrochloric Acid 5% (6, 10)	150	R	150	R	100	R
Hydrochloric Acid 10% (5, 6, 10)	150	R	150	R	100	R
Hydrochloric Acid 15% (5, 6, 10)	150	R	150	R	NR	R
Hydrochloric Acid 20% (5, 6, 10)	150	R	150	R	NR	R
Hydrochloric Acid 30% (5, 6, 10)	100	R	100	R	NR	NR
Hydrochloric Acid 37% (3, 5, 6, 12)	100	R	100	R	NR	NR
Hydrocyanic Acid, All	150	R	150	R	NT	NT
Hydrofluoric Acid 10% (1, 2, 4, 7, 9)	NR	NR	120	R	NR	NR
Hydrofluoric Acid 20% (1, 2, 4, 7, 9)	NR	NR	80	R	NR	NR
Hydroflouric Acid 35% (1, 2, 4, 7, 9)	NR	NR	NR	R	NR	NR
Hydrofluoric Acid 50% (1, 2, 4, 7, 9)	NR	NR	NR	R	NR	NR
Hydrofluoric Acid 70% (1, 2, 4, 7, 9)	NR	NR	NR	R	NR	NR
Hydrofluosilicic Acid 10% (1, 2, 4, 7, 9)	NR	NR	150	R	NR	NR
Hydrofluosilicic Acid 25% (1, 2, 4, 7, 9)	NR	NR	80	R	NR	NR
Hydrofluosilicic Acid 30% (1, 2, 4, 7, 9)	NR	NR	80	R	NR	NR
Hydrofluosilicic Acid 35% (1, 2, 4, 7, 9)	NR	NR	80	R	NR	NR
Hydrogen Bromide, Dry Gas	150	R	150	R	NT	NT

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	Cor-Cote HP		Cor-Cote HP FF		Cor-Cote SC	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Gasoline, Diesel	NR	R	NR	R	120	R
Gasoline, Jet Fuel JP4	NR	R	NR	R	120	R
Gasoline, Leaded	NR	R	NR	R	120	R
Gasoline, Premium Unleaded	NR	R	NR	R	120	R
Gasoline, Regular Unleaded	NR	R	NR	R	120	R
Gasoline (White)	NR	R	NR	R	120	R
Gasoline (White) 90% Unleaded, 10% Ethanol	NR	R	NR	R	120	R
Gasoline (White) 90% Unleaded, 10% MTBE	NR	R	NR	R	120	R
Gasoline (White) 90% Unleaded,10% Methanol	NR	R	NR	R	120	R
Gasoline (White) 80% Unleaded Metahnol 20%	NR	R	NR	R	120	R
Gin, 80 Proof (40% Ethanol)	NR	R	NR	R	NR	R
Glacial Acetic Acid (see Acetic Acid 100%)	NR	NR	NR	NR	NR	NR
Glucose	NR	R	120	R	120	R
Glutaraldehyde 50%	NT	NT	NT	NT	NT	NT
Glutaric Acid 50%	NT	NT	NT	NT	NT	NT
Glycerin	NR	R	120	R	120	R
Glycerol	NR	R	120	R	120	R
Glycol	NT	NT	NT	NT	NT	NT
Glycolic Acid 70%	NR	R	NR	R	NR	R
Glyconic Acid 50%	NT	NT	NT	NT	NT	NT
Glyoxal 40%	NT	NT	NT	NT	NT	NT
Gold Plating Solution (Cyanide)	NR	R	NR	R	120	R
Green Liquor, All (4, 9)	NR	R	NR	R	NR	R
Grape Juice	NR	R	120	R	120	R
Grapefruit Juice	NR	R	80	R	80	R
Halogenated Polyester Resin	NT	NT	NT	NT	NT	NT
Heat Transfer Agent	NT	NT	NT	NT	NT	NT
Heptane	NR	R	120	R	120	R
Heptanoic Acid	NR	R	NR	R	NR	R
Herbicides	NT	NT	NT	NT	NT	NT
Hexachloroethane	NT	NT	NT	NT	NT	NT
Hexachlorocyclopentadiene	NT	NT	NT	NT	NT	NT
Hexamethylenetetramine 40%	NT	NT	NT	NT	NT	NT
Hexane	NR	R	120	R	120	R
Hexane Sulfonic Acid	NT	NT	NT	NT	NT	NT
Hexylene Glycol	NR	R	80	R	80	R
Honey	NT	NT	NT	NT	NT	NT
Horseradish	NT	NT	NT	NT	NT	NT
Hydraulic Fluid	NT	NT	NT	NT	NT	NT
Hydrazine 35%	NR	NR	NR	NR	NR	R
Hydrazine	NR	R	NR	R	NR	R
Hydrazine Hydrate	NR	R	NR	R	NR	R
Hydriodic Acid 20%	NR	NR	NR	NR	NR	NR
Hydriodic Acid 40%	NR	NR	NR	NR	NR	NR
Hydrobromic Acid 20%	NR	NR	NR	NR	NR	NR
Hydrobromic Acid 25%	NR	NR	NR	NR	NR	NR
Hydrobromic Acid 50%	NR	NR	NR	NR	NR	NR
Hydrobromic Acid 62%	NR	NR	NR	NR	NR	NR
Hydrochloric Acid 5% (6, 10)	NR	R	100	R	100	R
Hydrochloric Acid 10% (5, 6, 10)	NR	R	100	R	100	R
Hydrochloric Acid 15% (5, 6, 10)	NR	R	NR	R	NR	R
Hydrochloric Acid 20% (5, 6, 10)	NR	NR	NR	NR	NR	NR
Hydrochloric Acid 30% (5, 6, 10)	NR	NR	NR	NR	NR	NR
Hydrochloric Acid 37% (3, 5, 6, 12)	NR	NR	NR	NR	NR	NR
Hydrocyanic Acid, All	NT	NT	NT	NT	NT	NT
Hydrofluoric Acid 10% (1, 2, 4, 7, 9)	NR	NR	NR	NR	NR	NR
Hydrofluoric Acid 20% (1, 2, 4, 7, 9)	NR	NR	NR	NR	NR	NR
Hydroflouric Acid 35% (1, 2, 4, 7, 9)	NR	NR	NR	NR	NR	NR
Hydrofluoric Acid 50% (1, 2, 4, 7, 9)	NR	NR	NR	NR	NR	NR
Hydrofluoric Acid 70% (1, 2, 4, 7, 9)	NR	NR	NR	NR	NR	NR
Hydrofluosilicic Acid 10% (1, 2, 4, 7, 9)	NR	NR	NR	NR	NR	R
Hydrofluosilicic Acid 25% (1, 2, 4, 7, 9)	NR	NR	NR	NR	NR	NR
Hydrofluosilicic Acid 30% (1, 2, 4, 7, 9)	NR	NR	NR	NR	NR	NR
Hydrofluosilicic Acid 35% (1, 2, 4, 7, 9)	NR	NR	NR	NR	NR	NR
Hydrogen Bromide, Dry Gas	NT	NT	NT	NT	NT	NT

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Gasoline, Diesel	NR	R	80	R
Gasoline, Jet Fuel JP4	NR	NR	80	R
Gasoline, Leaded	NR	NR	80	R
Gasoline, Premium Unleaded	NR	NR	80	R
Gasoline, Regular Unleaded	NR	NR	80	R
Gasoline (White)	NR	NR	80	R
Gasoline (White) 90% Unleaded, 10% Ethanol	NR	NR	80	R
Gasoline (White) 90% Unleaded, 10% MTBE	NR	NR	80	R
Gasoline (White) 90% Unleaded,10% Methanol	NR	NR	80	NT
Gasoline (White) 80% Unleaded Metahnol 20%	NR	NR	80	NT
Gin, 80 Proof (40% Ethanol)	NR	R	NT	NT
Glacial Acetic Acid (see Acetic Acid 100%)	NR	NR	NR	NR
Glucose	NT	NT	NT	NT
Glutaraldehyde 50%	NT	NT	NT	NT
Glutaric Acid 50%	NT	NT	NT	NT
Glycerin	NT	NT	80	R
Glycerol	NT	NT	NT	NT
Glycol	NT	NT	NT	NT
Glycolic Acid 70%	NR	NR	NT	NT
Glyconic Acid 50%	NT	NT	NT	NT
Glyoxal 40%	NT	NT	NT	NT
Gold Plating Solution (Cyanide)	NT	NT	NT	NT
Green Liquor, All (4, 9)	NT	NT	NR	R
Grape Juice	NT	NT	NT	NT
Grapefruit Juice	NT	NT	100	R
Halogenated Polyester Resin	NT	NT	NT	NT
Heat Transfer Agent	NT	NT	NT	NT
Heptane	NT	NT	80	R
Heptanoic Acid	NT	NT	NR	R
Herbicides	NT	NT	NT	NT
Hexachloroethane	NT	NT	NT	NT
Hexachlorocyclopentadiene	NT	NT	NT	NT
Hexamethylenetetramine 40%	NT	NT	NT	NT
Hexane	NT	R	80	R
Hexane Sulfonic Acid	NT	NT	NT	NT
Hexylene Glycol	NT	NT	100	R
Honey	NT	NT	NT	NT
Horseradish	NT	NT	NT	NT
Hydraulic Fluid	NR	R	NR	R
Hydrazine 35%	NT	NT	NT	NT
Hydrazine	NT	NT	NT	NT
Hydrazine Hydrate	NT	NT	NT	NT
Hydriodic Acid 20%	NT	NT	NT	NT
Hydriodic Acid 40%	NT	NT	NT	NT
Hydrobromic Acid 20%	NT	NT	NT	NT
Hydrobromic Acid 25%	NT	NT	NT	NT
Hydrobromic Acid 50%	NT	NT	NT	NT
Hydrobromic Acid 62%	NT	NT	NT	NT
Hydrochloric Acid 5% (6, 10)	NR	R	NT	R
Hydrochloric Acid 10% (5, 6, 10)	NR	R	NT	R
Hydrochloric Acid 15% (5, 6, 10)	NR	R	NT	R
Hydrochloric Acid 20% (5, 6, 10)	NR	R	NT	NR
Hydrochloric Acid 30% (5, 6, 10)	NT	NT	NT	NT
Hydrochloric Acid 37% (3, 5, 6, 12)	NT	NT	NR	NR
Hydrocyanic Acid, All	NT	NT	NT	NT
Hydrofluoric Acid 10% (1, 2, 4, 7, 9)	NR	NR	NT	NT
Hydrofluoric Acid 20% (1, 2, 4, 7, 9)	NR	NR	NT	NT
Hydroflouric Acid 35% (1, 2, 4, 7, 9)	NR	NR	NT	NT
Hydrofluoric Acid 50% (1, 2, 4, 7, 9)	NR	NR	NT	NT
Hydrofluoric Acid 70% (1, 2, 4, 7, 9)	NR	NR	NT	NT
Hydrofluosilicic Acid 10% (1, 2, 4, 7, 9)	NR	R	NT	NT
Hydrofluosilicic Acid 25% (1, 2, 4, 7, 9)	NR	R	NT	NT
Hydrofluosilicic Acid 30% (1, 2, 4, 7, 9)	NR	R	NR	NR
Hydrofluosilicic Acid 35% (1, 2, 4, 7, 9)	NR	R	NT	NT
Hydrogen Bromide, Dry Gas	NT	NT	NT	NT

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	Magnalux 304 Vinyl Ester		Sher-Glass FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Gasoline, Diesel	140	R	80	R
Gasoline, Jet Fuel JP4	140	R	80	R
Gasoline, Leaded	140	R	100	R
Gasoline, Premium Unleaded	140	R	100	R
Gasoline, Regular Unleaded	140	R	100	R
Gasoline (White)	NT	NT	100	R
Gasoline (White) 90% Unleaded, 10% Ethanol	80	NR	130	R
Gasoline (White) 90% Unleaded, 10% MTBE	80	R	120	R
Gasoline (White) 90% Unleaded,10% Methanol	80	NR	NR	NR
Gasoline (White) 80% Unleaded Metahnol 20%	NR	NR	NR	NR
Gin, 80 Proof (40% Ethanol)	100	R	130	R
Glacial Acetic Acid (see Acetic Acid 100%)	NR	NR	NT	NT
Glucose	150	R	NT	NT
Glutaraldehyde 50%	140	R	NT	NT
Glutaric Acid 50%	100	R	NT	NT
Glycerin	140	R	NT	NT
Glycerol	100	R	NT	NT
Glycol	140	R	NT	NT
Glycolic Acid 70%	120	R	NT	NT
Glyconic Acid 50%	140	R	NT	NT
Glyoxal 40%	100	R	NT	NT
Gold Plating Solution (Cyanide)	120	R	NT	NT
Green Liquor, All (4, 9)	140	R	NT	NT
Grape Juice	140	R	NT	NT
Grapefruit Juice	NT	NT	NT	NT
Halogenated Polyester Resin	NT	NT	NT	NT
Heat Transfer Agent	NT	NT	NT	NT
Heptane	140	R	NT	NT
Heptanoic Acid	NT	NT	NT	NT
Herbicides	140	R	NT	NT
Hexachloroethane	NR	R	NT	NT
Hexachlorocyclopentadiene	NT	NT	NT	NT
Hexamethylenetetramine 40%	100	R	NT	NT
Hexane	140	R	NT	NT
Hexane Sulfonic Acid	80	R	NT	NT
Hexylene Glycol	NT	NT	NT	NT
Honey	NT	NT	NT	NT
Horseradish	NT	NT	NT	NT
Hydraulic Fluid	140	R	NT	NT
Hydrazine 35%	NR	NR	NT	NT
Hydrazine	NR	NR	NT	NT
Hydrazine Hydrate	NR	NR	NT	NT
Hydriodic Acid 20%	120	R	NT	NT
Hydriodic Acid 40%	120	R	NT	NT
Hydrobromic Acid 20%	140	R	NT	NT
Hydrobromic Acid 25%	140	R	NT	NT
Hydrobromic Acid 50%	140	R	NT	NT
Hydrobromic Acid 62%	100	R	NT	NT
Hydrochloric Acid 5% (6, 10)	120	R	NT	NT
Hydrochloric Acid 10% (5, 6, 10)	120	R	NT	NT
Hydrochloric Acid 15% (5, 6, 10)	120	R	NT	NT
Hydrochloric Acid 20% (5, 6, 10)	120	R	NT	NT
Hydrochloric Acid 30% (5, 6, 10)	NR	NR	NT	NT
Hydrochloric Acid 37% (3, 5, 6, 12)	NR	NR	NT	NT
Hydrocyanic Acid, All	140	R	NT	NT
Hydrofluoric Acid 10% (1, 2, 4, 7, 9)	120	R	NT	NT
Hydrofluoric Acid 20% (1, 2, 4, 7, 9)	80	R	NT	NT
Hydroflouric Acid 35% (1, 2, 4, 7, 9)	NR	NR	NT	NT
Hydrofluoric Acid 50% (1, 2, 4, 7, 9)	NR	NR	NT	NT
Hydrofluoric Acid 70% (1, 2, 4, 7, 9)	NR	NR	NT	NT
Hydrofluosilicic Acid 10% (1, 2, 4, 7, 9)	150	R	NT	NT
Hydrofluosilicic Acid 25% (1, 2, 4, 7, 9)	NR	R	NT	NT
Hydrofluosilicic Acid 30% (1, 2, 4, 7, 9)	NR	R	NT	NT
Hydrofluosilicic Acid 35% (1, 2, 4, 7, 9)	80	R	NT	NT
Hydrogen Bromide, Dry Gas	140	R	NT	NT

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	Cor-Cote VEN FF		Cor-Cote VEN GF		Cor-Cote HCR FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Hydrogen Bromide, Wet Gas	150	R	150	R	NT	NT
Hydrogen Chloride, Dry Gas	210	R	210	R	NT	NT
Hydrogen Chloride, Wet Gas	150	R	150	R	NT	NT
Hydrogen Chloride Anhydrous	150	R	150	R	NT	NT
Hydrogen Fluoride Dry Gas/Vapor (4, 9)	150	R	150	R	NT	NT
Hydrogen Peroxide 5% (8)	150	R	150	R	NR	R
Hydrogen Peroxide 10% (8)	150	R	150	R	NR	R
Hydrogen Peroxide 30% (8)	150	R	150	R	NR	R
Hydrogen Peroxide 50% (8)	NR	R	NR	R	NR	R
Hydrogen Sulfide 5%	150	R	150	R	140	R
Hydrogen Sulfide Gas	150	R	150	R	140	R
Hydrogen Sulfide, Wet	150	R	150	R	140	R
Hydroquinone	NT	NT	NT	NT	NT	NT
Hydrosulfite Bleach, Aqueous	150	R	150	R	NT	NT
Hydroxyacetic Acid 70% (see Glycolic Acid)	100	R	100	R	NT	NT
Hydroxylamine Sulfate	150	R	150	R	NT	NT
Hypo (Photographic Solution)	150	R	150	R	120	R
Hypochlorous Acid 10% (8)	NR	R	NR	R	NR	R
Hypophosphorous Acid 50%	120	R	120	R	NT	NT
Hyrochl Acid+Free Chlor, All	NT	NT	NT	NT	NT	NT
Ink Remover	NT	NT	NT	NT	NT	NT
Insecticide Emulsions	120	R	120	R	NT	NT
Intermediate Polyether	NT	NT	NT	NT	120	R
Iodine Vapor	150	R	150	R	NT	NT
Iodine, Crystals	140	R	140	R	NR	R
Iodophor	NT	NT	NT	NT	NT	NT
Iridate 10%	NT	NT	NT	NT	NT	NT
Iron Arsenic Sludge	NT	NT	NT	NT	NT	NT
Iron Plating Solution	150	R	150	R	NT	NT
Iron and Steel Cleaning Bath	150	R	150	R	NT	NT
Isobornyl Acetate	NT	NT	NT	NT	NT	NT
Iso Butane	120	R	120	R	NT	NT
Isoamyl Alcohol	150	R	150	R	NT	NT
Isobutyl Alcohol	150	R	150	R	NT	NT
Isobutyraldehyde	NT	NT	NT	NT	NT	NT
Isodecanol Alcohol	150	R	150	R	NT	NT
Isononyl Alcohol	150	R	150	R	NT	NT
Isooctyl Adipate	150	R	150	R	NT	NT
Isoocytl Alcohol	150	R	150	R	NT	NT
Isooctylthioglycolcolate	120	R	120	R	80	R
Isopar M	NT	NT	NT	NT	NT	NT
Isophorone	100	R	100	R	NR	R
Isopropanol Amine	120	R	120	R	120	R
Isopropyl Acetate	NR	NR	NR	NR	NR	R
Isopropyl Alcohol (Isopropanol)	150	R	150	R	120	R
Isopropyl Amine	NR	NR	NR	NR	NT	NT
Isopropyl Ether	NR	NR	NR	NR	NR	R
Isopropyl Myristate	150	R	150	R	NT	NT
Isopropyl Palmitate	150	R	150	R	NT	NT
Itaconic Acid 25%	120	R	120	R	NT	NT
Jet Fuel A	150	R	150	R	120	R
Jet Fuel JP (1, 3, 4, 5)	150	R	150	R	120	R
Jet Turbine Oil	150	R	150	R	NT	NT
Kaolin (Saturated China Clay)	NT	NT	NT	NT	100	R
Karate Insecticide	NT	NT	NT	NT	100	R
Kerosene	150	R	150	R	120	R
Ketchup	150	R	150	R	120	R
Keystone 1351	NT	NT	NT	NT	NT	NT
Kraft Rec Boiler Breeching	NT	NT	NT	NT	NT	NT
Kymene	NT	NT	NT	NT	NT	NT
Lactic Acid 5%	150	R	150	R	NR	NR
Lactic Acid 10%	150	R	150	R	NR	NR
Lactic Acid 20%	150	R	150	R	NR	NR
Lactic Acid, All	150	R	150	R	NR	NR
Lactic Acid Concentrated	150	R	150	R	NR	R

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	Cor-Cote HP		Cor-Cote HP FF		Cor-Cote SC	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Hydrogen Bromide, Wet Gas	NT	NT	NT	NT	NT	NT
Hydrogen Chloride, Dry Gas	NT	NT	NT	NT	NT	NT
Hydrogen Chloride, Wet Gas	NT	NT	NT	NT	NT	NT
Hydrogen Chloride Anhydrous	NT	NT	NT	NT	NT	NT
Hydrogen Fluoride Dry Gas/Vapor (4, 9)	NT	NT	NT	NT	NT	NT
Hydrogen Peroxide 5% (8)	NR	R	NR	R	NR	R
Hydrogen Peroxide 10% (8)	NR	R	NR	R	NR	R
Hydrogen Peroxide 30% (8)	NR	R	NR	R	NR	R
Hydrogen Peroxide 50% (8)	NR	R	NR	R	NR	R
Hydrogen Sulfide 5%	NR	R	80	R	80	R
Hydrogen Sulfide Gas	NR	R	80	R	80	R
Hydrogen Sulfide, Wet	NR	R	80	R	80	R
Hydroquinone	NT	NT	NT	NT	NT	NT
Hydrosulfite Bleach, Aqueous	NT	NT	NT	NT	NT	NT
Hydroxyacetic Acid 70% (see Glycolic Acid)	NT	NT	NT	NT	NT	NT
Hydroxylamine Sulfate	NR	NT	NR	NT	NR	NT
Hypo (Photographic Solution)	NR	R	NR	R	120	R
Hypochlorous Acid 10% (8)	NR	NR	NR	NR	NR	NR
Hypophosphorous Acid 50%	NT	NT	NT	NT	NT	NT
Hyrochl Acid+Free Chlor, All	NT	NT	NT	NT	NT	NT
Ink Remover	NT	NT	NT	NT	NT	NT
Insecticide Emulsions	NT	NT	NT	NT	NT	NT
Intermediate Polyether	NR	R	120	R	120	R
Iodine Vapor	NT	NT	NT	NT	NT	NT
Iodine, Crystals	NR	NR	NR	NR	NR	NR
Iodophor	NT	NT	NT	NT	NT	NT
Iridate 10%	NT	NT	NT	NT	NT	NT
Iron Arsenic Sludge	NR	R	80	R	80	R
Iron Plating Solution	NT	NT	NT	NT	NT	NT
Iron and Steel Cleaning Bath	NT	NT	NT	NT	NT	NT
Isobornyl Acetate	NT	NT	NT	NT	NT	NT
Iso Butane	NT	NT	NT	NT	NT	NT
Isoamyl Alcohol	NT	NT	NT	NT	NT	NT
Isobutyl Alcohol	NT	NT	NT	NT	NT	NT
Isobutyraldehyde	NT	NT	NT	NT	NT	NT
Isodecanol Alcohol	NT	NT	NT	NT	NT	NT
Isononyl Alcohol	NT	NT	NT	NT	NT	NT
Isooctyl Adipate	NT	NT	NT	NT	NT	NT
Isoocytl Alcohol	NT	NT	NT	NT	NT	NT
Isooctylthioglycolcolate	NR	R	NR	R	NR	R
Isopar M	NT	NT	NT	NT	NT	NT
Isophorone	NR	R	NR	R	NR	R
Isopropanol Amine	NR	R	NR	R	NR	R
Isopropyl Acetate	NR	NR	NR	NR	NR	NR
Isopropyl Alcohol (Isopropanol)	NR	R	NR	R	NR	R
Isopropyl Amine	NT	NT	NT	NT	NT	NT
Isopropyl Ether	NR	NR	NR	NR	NR	NR
Isopropyl Myristate	NT	NT	NT	NT	NT	NT
Isopropyl Palmitate	NT	NT	NT	NT	NT	NT
Itaconic Acid 25%	NT	NT	NT	NT	NT	NT
Jet Fuel A	NR	R	120	R	120	R
Jet Fuel JP (1, 3, 4, 5)	NR	R	120	R	120	R
Jet Turbine Oil	NT	NT	NT	NT	NT	NT
Kaolin (Saturated China Clay)	NR	R	100	R	100	R
Karate Insecticide	NR	R	100	R	100	R
Kerosene	NR	R	100	R	120	R
Ketchup	NR	R	120	R	120	R
Keystone 1351	NT	NT	NT	NT	NT	NT
Kraft Rec Boiler Breeching	NT	NT	NT	NT	NT	NT
Kymene	NT	NT	NT	NT	NT	NT
Lactic Acid 5%	NR	NR	NR	NR	NR	NR
Lactic Acid 10%	NR	NR	NR	NR	NR	NR
Lactic Acid 20%	NR	NR	NR	NR	NR	NR
Lactic Acid, All	NR	NR	NR	NR	NR	NR
Lactic Acid Concentrated	NR	NR	NR	NR	NR	R

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Hydrogen Bromide, Wet Gas	NT	NT	NT	NT
Hydrogen Chloride, Dry Gas	NT	NT	NT	NT
Hydrogen Chloride, Wet Gas	NT	NT	NT	NT
Hydrogen Chloride Anhydrous	NT	NT	NT	NT
Hydrogen Fluoride Dry Gas/Vapor (4, 9)	NT	NT	NT	NT
Hydrogen Peroxide 5% (8)	NR	NR	100	R
Hydrogen Peroxide 10% (8)	NR	NR	NT	NT
Hydrogen Peroxide 30% (8)	NR	NR	NR	NR
Hydrogen Peroxide 50% (8)	NR	NR	NT	NT
Hydrogen Sulfide 5%	80	R	NT	NT
Hydrogen Sulfide Gas	80	R	NT	NT
Hydrogen Sulfide, Wet	80	R	NT	NT
Hydroquinone	NT	NT	NT	NT
Hydrosulfite Bleach, Aqueous	NT	NT	NT	NT
Hydroxyacetic Acid 70% (see Glycolic Acid)	NT	NT	NT	NT
Hydroxylamine Sulfate	NT	NT	NR	R
Hypo (Photographic Solution)	NT	NT	NT	NT
Hypochlorous Acid 10% (8)	NT	NT	NT	NT
Hypophosphorous Acid 50%	NT	NT	NT	NT
Hyrochl Acid+Free Chlor, All	NT	NT	NT	NT
Ink Remover	NT	NT	NT	NT
Insecticide Emulsions	NT	NT	NT	NT
Intermediate Polyether	NT	NT	NT	NT
Iodine Vapor	NT	NT	NR	NR
Iodine, Crystals	NT	NT	NT	NT
Iodophor	NT	NT	NT	NT
Iridate 10%	NT	NT	NT	NT
Iron Arsenic Sludge	NT	NT	100	R
Iron Plating Solution	NT	NT	NT	NT
Iron and Steel Cleaning Bath	NT	NT	NT	NT
Isobornyl Acetate	NT	NT	NT	NT
Iso Butane	NT	NT	80	R
Isoamyl Alcohol	NT	NT	NT	R
Isobutyl Alcohol	NT	NT	NT	R
Isobutyraldehyde	NT	NT	NT	NT
Isodecanol Alcohol	NT	NT	NT	R
Isononyl Alcohol	NT	NT	NT	R
Isooctyl Adipate	NT	NT	NT	NT
Isoocytl Alcohol	NT	NT	NT	NT
Isooctylthioglycolcolate	NT	NT	NT	NT
Isopar M	NT	NT	NT	NT
Isophorone	NT	NT	NT	R
Isopropanol Amine	NT	NT	NT	NT
Isopropyl Acetate	NT	NT	NR	R
Isopropyl Alcohol (Isopropanol)	NR	NR	NT	R
Isopropyl Amine	NT	NT	NT	NT
Isopropyl Ether	NT	NT	NT	NT
Isopropyl Myristate	NT	NT	NT	NT
Isopropyl Palmitate	NT	NT	NT	NT
Itaconic Acid 25%	NT	NT	NT	NT
Jet Fuel A	NR	R	80	R
Jet Fuel JP (1, 3, 4, 5)	NT	NT	80	R
Jet Turbine Oil	NT	NT	NT	NT
Kaolin (Saturated China Clay)	80	R	NT	NT
Karate Insecticide	NT	NT	NT	NT
Kerosene	NR	R	80	R
Ketchup	NT	NT	NT	NT
Keystone 1351	NT	NT	NT	NT
Kraft Rec Boiler Breeching	NT	NT	NT	NT
Kymene	NT	NT	80	R
Lactic Acid 5%	NT	R	100	R
Lactic Acid 10%	NT	R	NT	NT
Lactic Acid 20%	NT	R	NT	NT
Lactic Acid, All	NT	R	NT	NT
Lactic Acid Concentrated	NT	R	NT	NT

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	Magnalux 304 Vinyl Ester		Sher-Glass FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Hydrogen Bromide, Wet Gas	140	R	NT	NT
Hydrogen Chloride, Dry Gas	160	R	NT	NT
Hydrogen Chloride, Wet Gas	140	R	NT	NT
Hydrogen Chloride Anhydrous	140	R	NT	NT
Hydrogen Fluoride Dry Gas/Vapor (4, 9)	140	R	NT	NT
Hydrogen Peroxide 5% (8)	140	R	NT	NT
Hydrogen Peroxide 10% (8)	140	R	NT	NT
Hydrogen Peroxide 30% (8)	120	R	NT	NT
Hydrogen Peroxide 50% (8)	NR	NR	NT	NT
Hydrogen Sulfide 5%	140	R	NT	NT
Hydrogen Sulfide Gas	140	R	NT	NT
Hydrogen Sulfide, Wet	140	R	NT	NT
Hydroquinone	NT	NT	NT	NT
Hydrosulfite Bleach, Aqueous	140	R	NT	NT
Hydroxyacetic Acid 70% (see Glycolic Acid)	100	R	NT	NT
Hydroxylamine Sulfate	140	NT	NT	NT
Hypo (Photographic Solution)	140	R	NT	NT
Hypochlorous Acid 10% (8)	NR	NR	NT	NT
Hypophosphorous Acid 50%	140	R	NT	NT
Hyrochl Acid+Free Chlor, All	NT	NT	NT	NT
Ink Remover	NT	NT	NT	NT
Insecticide Emulsions	140	R	NT	NT
Intermediate Polyether	NT	NT	NT	NT
Iodine Vapor	120	R	NT	NT
Iodine, Crystals	120	R	NT	NT
Iodophor	NT	NT	NT	NT
Iridate 10%	NT	NT	NT	NT
Iron Arsenic Sludge	NT	NT	NT	NT
Iron Plating Solution	140	R	NT	NT
Iron and Steel Cleaning Bath	140	R	NT	NT
Isobornyl Acetate	NT	NT	NT	NT
Iso Butane	140	R	NT	NT
Isoamyl Alcohol	140	R	NT	NT
Isobutyl Alcohol	140	R	NT	NT
Isobutyraldehyde	NT	NT	NT	NT
Isodecanol Alcohol	140	R	NT	NT
Isononyl Alcohol	140	R	NT	NT
Isooctyl Adipate	140	R	NT	NT
Isoocytl Alcohol	140	R	NT	NT
Isooctylthioglycolcolate	120	R	NT	NT
Isopar M	NT	NT	NT	NT
Isophorone	100	R	NT	NT
Isopropanol Amine	140	R	NT	NT
Isopropyl Acetate	NR	NR	NT	NT
Isopropyl Alcohol (Isopropanól)	120	R	NT	NT
Isopropyl Amine	NR	NR	NT	NT
Isopropyl Ether	NR	NR	NT	NT
Isopropyl Myristate	140	R	NT	NT
Isopropyl Palmitate	140	R	NT	NT
Itaconic Acid 25%	140	R	NT	NT
Jet Fuel A	140	R	80	R
Jet Fuel JP (1, 3, 4, 5)	120	R	80	R
Jet Turbine Oil	140	R	NT	NT
Kaolin (Saturated China Clay)	NT	NT	NT	NT
Karate Insecticide	NT	NT	NT	NT
Kerosene	140	R	NT	NT
Ketchup	140	R	NT	NT
Keystone 1351	NT	NT	NT	NT
Kraft Rec Boiler Breeching	NT	NT	NT	NT
Kymene	NT	NT	NT	NT
Lactic Acid 5%	140	R	NT	NT
Lactic Acid 10%	140	R	NT	NT
Lactic Acid 20%	140	R	NT	NT
Lactic Acid, All	140	R	NT	NT
Lactic Acid Concentrated	140	R	NT	NT

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	Cor-Cote VEN FF		Cor-Cote VEN GF		Cor-Cote HCR FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Lard	150	R	150	R	100	R
Lasso Herbicide	120	R	120	R	NT	NT
Latex	120	R	120	R	100	R
Lauric Acid	150	R	150	R	NR	R
Lauryl Alcohol	150	R	150	R	80	R
Lauryl Chloride	150	R	150	R	80	R
Lauryl Chloride, Acidic	NT	NT	NT	NT	NT	NT
Lauryldimethylamine	NT	NT	NT	NT	NT	NT
Lauryl Mercaptain, All	150	R	150	R	NT	NT
Lead Acetate, All	150	R	150	R	120	R
Lead Chloride	150	R	150	R	NT	NT
Lead Nitrate	150	R	150	R	NT	NT
Leachate (Landfill)	NT	NT	NT	NT	80	R
Lecithin	120	R	120	R	120	R
Lemon Juice	NT	NT	NT	NT	NT	NT
Levulinic Acid, All	150	R	150	R	120	R
Light Water	NT	NT	NT	NT	NT	NT
Lime Juice	NT	NT	NT	NT	NT	NT
Limestone, Saturated	150	R	150	R	NT	NT
Linseed Oil	150	R	150	R	120	R
Lithium Bromide, Saturated	150	R	150	R	NT	NT
Lithium Carbonate, Saturated (1, 2, 4, 7)	150	R	150	R	NT	NT
Lithium Chloride 40%	150	R	150	R	NT	NT
Lithium Chloride, Saturated	150	R	150	R	NT	NT
Lithium Hydroxide 10% (1, 2, 4, 7)	NR	R	80	R	120	R
Lithium Hydroxide, Saturated (1, 2, 4, 7)	NR	R	80	R	NR	R
Lithium Hypochlorite, All (1, 2, 4, 7, 8)	NR	R	80	R	NR	NR
LP Gas	120	R	120	R	NT	NT
Lube / Motor Oils, All	150	R	150	R	120	R
Ludox LS	NT	NT	NT	NT	NT	NT
Lusol	NT	NT	NT	NT	NT	NT
Magnesium Bisulfite, All	150	R	150	R	NT	NT
Magnesium Carbonate, All	150	R	150	R	NT	NT
Magnesium Chloride, All	150	R	150	R	NT	NT
Magnesium Fluosilicate, All (1, 2, 4, 7)	150	R	150	R	NT	NT
Magnesium Hydroxide, All	100	R	100	R	NT	NT
Magnesium Nitrate, All	150	R	150	R	NT	NT
Magnesium Sulfate, All	150	R	150	R	NT	NT
Magnifloc 500 Series Products, All	120	R	120	R	NT	NT
Magnifloc 837A Products, All	150	R	150	R	NT	NT
Maleic Acid	150	R	150	R	120	R
Maleic Anhydrite	150	R	150	R	NT	NT
Malic Acid	150	R	150	R	120	R
Manganese Ammonium Sulfate	NT	NT	NT	NT	NT	NT
Manganese Chloride, All	150	R	150	R	NT	NT
Manganese Sulfate, All	150	R	150	R	NT	NT
MeCl:Methanol:Water 1:4:95	NT	NT	NT	NT	NT	NT
Melamine Formalde Res, All	120	R	120	R	NT	NT
Mercaptoacetic Acid, All	100	R	100	R	NT	NT
Mercaptoethanol	150	R	150	R	NT	NT
Mercuric Chloride	150	R	150	R	NT	NT
Mercury	150	R	150	R	120	R
Mercury and Salts	150	R	150	R	120	R
Methacrylic Acid Crude	100	R	100	R	NT	NT
Methacrylic Acid Glacial	100	R	100	R	NT	NT
Methacrylic Acid	100	R	100	R	NT	NT
Methane Gas 20%						
Methane Sulfonic Acid	100	R	100	R	NT	NT
Methanesulfonic Acid Anhydrous	NT	NT	NT	NT	NT	NT
Methanesulfonic Chloride	NT	NT	NT	NT	NT	NT
Methanesulfonyl Chloride	NT	NT	NT	NT	NT	NT
Methanol 5%	100	R	100	R	NR	R
Methanol 20 - 100%	100	R	100	R	NR	R
Methanol 38 1%; Chloroform 1.2%; Water 60.7%	NT	NT	NT	NT	NR	R
Methanol 50%; Hydrochloric Acid 5%; Water 45%	NR	R	NT	R	NT	NT

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	Cor-Cote HP		Cor-Cote HP FF		Cor-Cote SC	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Lard	NR	R	120	R	100	R
Lasso Herbicide	NT	NT	NT	NT	NT	NT
Latex	NR	R	100	R	100	R
Lauric Acid	NR	NR	NR	NR	NR	NR
Lauryl Alcohol	NR	R	80	R	80	R
Lauryl Chloride	NR	R	NR	R	NR	R
Lauryl Chloride, Acidic	NT	NT	NT	NT	NT	NT
Lauryldimethylamine	NT	NT	NT	NT	NT	NT
Lauryl Mercaptain, All	NT	NT	NT	NT	NT	NT
Lead Acetate, All	NR	R	120	R	NR	R
Lead Chloride	NT	NT	NT	NT	NT	NT
Lead Nitrate	NT	NT	NT	NT	NT	NT
Leachate (Landfill)	NR	R	80	R	80	R
Lecithin	NR	R	100	R	100	R
Lemon Juice	NT	NT	NT	NT	NT	NT
Levulinic Acid, All	NR	NR	100	NR	NR	NR
Light Water	NT	R	NT	R	NT	R
Lime Juice	NT	NT	NT	NT	NT	NT
Limestone, Saturated	NT	NT	NT	NT	NT	NT
Linseed Oil	NR	R	100	R	NR	R
Lithium Bromide, Saturated	NT	NT	NT	NT	NT	NT
Lithium Carbonate, Saturated (1, 2, 4, 7)	NT	NT	NT	NT	NT	NT
Lithium Chloride 40%	NT	NT	NT	NT	NT	NT
Lithium Chloride, Saturated	NT	NT	NT	NT	NT	NT
Lithium Hydroxide 10% (1, 2, 4, 7)	NR	NR	120	R	120	R
Lithium Hydroxide, Saturated (1, 2, 4, 7)	NR	NR	NR	R	NR	R
Lithium Hypochlorite, All (1, 2, 4, 7, 8)	NR	NR	NR	NR	NR	NR
LP Gas	NT	NT	NT	NT	NT	NT
Lube / Motor Oils, All	NR	R	120	R	120	R
Ludox LS	NT	NT	NT	NT	NT	NT
Lusol	NT	NT	NT	NT	NT	NT
Magnesium Bisulfite, All	NT	NT	NT	NT	NT	NT
Magnesium Carbonate, All	NT	NT	NT	NT	NT	NT
Magnesium Chloride, All	NT	NT	NT	NT	NT	NT
Magnesium Fluosilicate, All (1, 2, 4, 7)	NT	NT	NT	NT	NT	NT
Magnesium Hydroxide, All	NT	NT	NT	NT	NT	NT
Magnesium Nitrate, All	NT	NT	NT	NT	NT	NT
Magnesium Sulfate, All	NT	NT	NT	NT	NT	NT
Magnifloc 500 Series Products, All	NT	NT	NT	NT	NT	NT
Magnifloc 837A Products, All	NT	NT	NT	NT	NT	NT
Maleic Acid	NR	NR	NR	NR	NR	NR
Maleic Anhydrite	NR	NR	NR	NR	NR	NR
Malic Acid	NR	NR	80	NR	NR	NR
Manganese Ammonium Sulfate	NT	NT	NT	NT	NT	NT
Manganese Chloride, All	NT	NT	NT	NT	NT	NT
Manganese Sulfate, All	NT	NT	NT	NT	NT	NT
MeCl:Methanol:Water 1:4:95	NT	NT	NT	NT	NT	NT
Melamine Formalde Res, All	NT	NT	NT	NT	NT	NT
Mercaptoacetic Acid, All	NT	NT	NT	NT	NT	NT
Mercaptoethanol	NR	R	NR	R	NR	R
Mercuric Chloride	NT	NT	NT	NT	NT	NT
Mercury	NR	R	80	R	80	R
Mercury and Salts	NR	R	80	R	80	R
Methacrylic Acid Crude	NT	NT	NT	NT	NT	NT
Methacrylic Acid Glacial	NR	R	NR	R	NR	R
Methacrylic Acid	NT	NT	NT	NT	NT	NT
Methane Gas 20%						
Methane Sulfonic Acid	NT	NT	NT	NT	NT	NT
Methanesulfonic Acid Anhydrous	NR	NR	NR	NR	NR	NR
Methanesulfonic Chloride	NT	NT	NT	NT	NT	NT
Methanesulfonyl Chloride	NR	NR	NR	NR	NR	NR
Methanol 5%	NR	NR	NR	NR	NR	NR
Methanol 20 - 100%	NR	NR	NR	NR	NR	NR
Methanol 38 1%; Chloroform 1.2%; Water 60.7%	NT	NT	NT	NT	NT	NT
Methanol 50%; Hydrochloric Acid 5%; Water 45%	NT	NT	NT	NT	NT	NT

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Lard	NT	NT	140	R
Lasso Herbicide	NT	NT	NT	NT
Latex	NT	NT	100	R
Lauric Acid	NT	NT	NT	R
Lauryl Alcohol	NT	NT	NT	NT
Lauryl Chloride	NT	NT	NT	NT
Lauryl Chloride, Acidic	NT	NT	NT	NT
Lauryldimethylamine	NT	NT	NT	NT
Lauryl Mercaptain, All	NT	NT	NT	NT
Lead Acetate, All	NT	NT	NT	NT
Lead Chloride	NT	NT	NT	NT
Lead Nitrate	NT	NT	NT	NT
Leachate (Landfill)	NT	NT	NT	NT
Lecithin	NT	NT	NT	NT
Lemon Juice	NT	NT	NT	NT
Levulinic Acid, All	NT	NT	NT	NT
Light Water	NT	NT	NT	R
Lime Juice	NT	NT	NT	NT
Limestone, Saturated	NT	NT	NT	NT
Linseed Oil	NT	NT	NT	NT
Lithium Bromide, Saturated	NT	NT	NT	NT
Lithium Carbonate, Saturated (1, 2, 4, 7)	NT	NT	NT	NT
Lithium Chloride 40%	NT	NT	NT	NT
Lithium Chloride, Saturated	NT	NT	NT	NT
Lithium Hydroxide 10% (1, 2, 4, 7)	NT	NT	NT	NT
Lithium Hydroxide, Saturated (1, 2, 4, 7)	NT	NT	NT	NT
Lithium Hypochlorite, All (1, 2, 4, 7, 8)	NT	NT	NT	NT
LP Gas	NT	NT	NT	NT
Lube / Motor Oils, All	NT	NT	80	R
Ludox LS	NT	NT	NT	NT
Lusol	NT	NT	NT	NT
Magnesium Bisulfite, All	NT	NT	NT	NT
Magnesium Carbonate, All	NT	NT	NT	NT
Magnesium Chloride, All	NT	NT	NT	NT
Magnesium Fluosilicate, All (1, 2, 4, 7)	NT	NT	NT	NT
Magnesium Hydroxide, All	NT	NT	100	R
Magnesium Nitrate, All	NT	NT	NT	NT
Magnesium Sulfate, All	NT	NT	NT	NT
Magnifloc 500 Series Products, All	NT	NT	NT	NT
Magnifloc 837A Products, All	NT	NT	NT	NT
Maleic Acid	NT	NT	NT	NT
Maleic Anhydrite	NT	NT	NT	NT
Malic Acid	NT	NT	NT	NT
Manganese Ammonium Sulfate	NT	NT	NT	NT
Manganese Chloride, All	NT	NT	NT	NT
Manganese Sulfate, All	NT	NT	NT	NT
MeCl:Methanol:Water 1:4:95	NT	NT	NT	NT
Melamine Formalde Res, All	NT	NT	NT	NT
Mercaptoacetic Acid, All	NT	NT	NT	NT
Mercaptoethanol	NT	NT	NR	NR
Mercuric Chloride	NT	NT	NT	NT
Mercury	NT	NT	NT	NT
Mercury and Salts	NT	NT	NT	NT
Methacrylic Acid Crude	NT	NT	NT	NT
Methacrylic Acid Glacial	NT	NT	NR	R
Methacrylic Acid	NT	NT	NT	NT
Methane Gas 20%				
Methane Sulfonic Acid	NT	NT	NT	NT
Methanesulfonic Acid Anhydrous	NT	NT	NR	NR
Methanesulfonic Chloride	NT	NT	NR	NR
Methanesulfonyl Chloride	NT	NT	NR	NR
Methanol 5%	NR	R	NT	NT
Methanol 20 - 100%	NR	NR	NR	R
Methanol 38 1%; Chloroform 1.2%; Water 60.7%	NR	NR	NT	NT
Methanol 50%; Hydrochloric Acid 5%; Water 45%	NR	NR	NT	NT

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Chemical Environment and Concentration (%)	Magnalux 304 Vinyl Ester		Sher-Glass FF	
	Immersion	Secondary Containment	Immersion	Secondary Containment
Lard	140	R	NT	NT
Lasso Herbicide	NT	NT	NT	NT
Latex	140	R	NT	NT
Lauric Acid	140	R	NT	NT
Lauryl Alcohol	140	R	NT	NT
Lauryl Chloride	140	R	NT	NT
Lauryl Chloride, Acidic	NT	NT	NT	NT
Lauryldimethylamine	NT	NT	NT	NT
Lauryl Mercaptain, All	140	R	NT	NT
Lead Acetate, All	140	R	NT	NT
Lead Chloride	140	R	NT	NT
Lead Nitrate	140	R	NT	NT
Leachate (Landfill)	NT	NT	NT	NT
Lecithin	140	R	NT	NT
Lemon Juice	NT	NT	NT	NT
Levulinic Acid, All	140	R	NT	NT
Light Water	NT	NT	NT	NT
Lime Juice	NT	NT	NT	NT
Limestone, Saturated	140	R	NT	NT
Linseed Oil	140	R	NT	NT
Lithium Bromide, Saturated	140	R	NT	NT
Lithium Carbonate, Saturated (1, 2, 4, 7)	140	R	NT	NT
Lithium Chloride 40%	140	R	NT	NT
Lithium Chloride, Saturated	140	R	NT	NT
Lithium Hydroxide 10% (1, 2, 4, 7)	NR	NR	NT	NT
Lithium Hydroxide, Saturated (1, 2, 4, 7)	NR	NR	NT	NT
Lithium Hypochlorite, All (1, 2, 4, 7, 8)	NR	NR	NT	NT
LP Gas	140	R	NT	NT
Lube / Motor Oils, All	140	R	NT	NT
Ludox LS	NT	NT	NT	NT
Lusol	NT	NT	NT	NT
Magnesium Bisulfite, All	140	R	NT	NT
Magnesium Carbonate, All	140	R	NT	NT
Magnesium Chloride, All	140	R	NT	NT
Magnesium Fluosilicate, All (1, 2, 4, 7)	140	R	NT	NT
Magnesium Hydroxide, All	140	R	NT	NT
Magnesium Nitrate, All	140	R	NT	NT
Magnesium Sulfate, All	140	R	NT	NT
Magnifloc 500 Series Products, All	140	R	NT	NT
Magnifloc 837A Products, All	140	R	NT	NT
Maleic Acid	140	R	NT	NT
Maleic Anhydrite	140	R	NT	NT
Malic Acid	140	R	NT	NT
Manganese Ammonium Sulfate	NT	NT	NT	NT
Manganese Chloride, All	140	R	NT	NT
Manganese Sulfate, All	140	R	NT	NT
MeCl:Methanol:Water 1:4:95	NT	NT	NT	NT
Melamine Formalde Res, All	100	R	NT	NT
Mercaptoacetic Acid, All	NR	NR	NT	NT
Mercaptoethanol	140	R	NT	NT
Mercuric Chloride	140	R	NT	NT
Mercury	140	R	NT	NT
Mercury and Salts	140	R	NT	NT
Methacrylic Acid Crude	100	R	NT	NT
Methacrylic Acid Glacial	NR	R	NT	NT
Methacrylic Acid	NR	R	NT	NT
Methane Gas 20%			NT	NT
Methane Sulfonic Acid	NR	NR	NT	NT
Methanesulfonic Acid Anhydrous	NT	NT	NT	NT
Methanesulfonic Chloride	NT	NT	NT	NT
Methanesulfonyl Chloride	NT	NT	NT	NT
Methanol 5%	100	R	NR	R
Methanol 20 - 100%	NR	NR	NR	NR
Methanol 38 1%; Chloroform 1.2%; Water 60.7%	NT	NT	NT	NT
Methanol 50%; Hydrochloric Acid 5%; Water 45%	NT	NT	NT	NT

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Chemical Environment and Concentration (%)	Cor-Cote VEN FF Immersion	Cor-Cote VEN FF Secondary Containment	Cor-Cote VEN GF Immersion	Cor-Cote VEN GF Secondary Containment	Cor-Cote HCR FF Immersion	Cor-Cote HCR FF Secondary Containment
Methanol 93%; Acetic Acid (DI Water 2%)	NR	R	NT	R	NT	NT
Methene Bis 4, Cyclohexylamine	NT	NT	NT	NT	NT	NT
Methionine Hydroxy, Analog	NT	NT	NT	NT	NT	NT
Methy Mercaptan	150	R	150	R	NT	NT
n-Methyl-2-Pyrrolidone	NR	R	NR	R	NT	NT
Methyl Alcohol (see Methanol 100%)	NT	NT	NT	NT	NT	NT
Methylamyl Alcohol	NT	NT	NT	NT	NR	R
Methyl Acetate	NR	R	NR	R	NR	R
Methyl Acrylate	NT	NT	NT	NT	NT	NT
Methyl Amyl Ketone MAK	NT	NT	NT	NT	NT	NT
Methylaminoethanol	100	R	100	R	NT	NT
Methyl-Bis-Amino Propylamine	NT	NT	NT	NT	NT	NT
Methyl Bromide, Gas 10%	80	R	80	R	NT	NT
Methyl Cellosolve	NT	NT	NT	NT	NT	NT
Methyl Chloride	NR	R	NR	R	NR	R
Methyl Chloroformate	NT	NT	NT	NT	NT	NT
Methyl Diethanolamine	150	R	150	R	NT	NT
Methyl Ethyl Ketone (MEK)	NR	R	NR	R	NR	R
MEK Peroxide in Plasticizer	NT	NT	NT	NT	NR	NR
Methyl FORMCEL	120	R	120	R	NT	NT
Methyl Oleate	120	R	120	R	NR	R
Methyl Isobutyl Ketone (MIBK)	100	R	100	R	NR	R
Methyl Tertiary Butyl Ether (MTBE)	80	R	80	R	NT	NT
Methylamine	NR	R	NR	R	NT	NT
Methylamyl Alcohol	100	R	100	R	NR	R
Methyldiethanolamine 50%	150	R	150	R	NT	NT
Methyldiethanolamine	150	R	150	R	NT	NT
Methylene Chloride	NR	R	NR	R	NR	R
Methylstyrene	80	R	80	R	NT	NT
Milk, Fresh and Sour	150	R	150	R	120	R
Milk Whey	NT	NT	NT	NT	120	R
Mineral Oils	150	R	150	R	120	R
Mineral Spirits	150	R	150	R	120	R
Molasses	150	R	150	R	120	R
Monochloracetic Acid (see Chloracetic Acid)	NT	NT	NT	NT	NT	NT
Monochlorobenzene	100	R	100	R	NT	NT
Mono Ethyl Ether Acetate	NT	NT	NT	NT	NT	NT
Monomethyl Ether PM-Acetate	NT	NT	NT	NT	NT	NT
Monomethylhydrazine	NR	R	NR	R	NT	NT
Monylphenol	NT	NT	NT	NT	NT	NT
Monylphenoxy Polyoxyethylene Ethanol	NT	NT	NT	NT	NT	NT
Morpholine (9)	80	R	80	R	NT	NT
Motor Oil	150	R	150	R	120	R
Muratic Acid (see Hydrochloric Acid)	NT	NT	NT	NT	NT	NT
Mustard	NT	NT	NT	NT	NT	NT
Myristic Acid	150	R	150	R	NT	NT
Naphtha, Aliphatic	150	R	150	R	120	R
Naphtha, Aromatic (coal tar)	140	R	140	R	100	R
Naphtha, Heavy Aromatic	140	R	140	R	100	R
Naphtha VM&P	NT	NT	NT	NT	NT	NT
Naphtha Sour	NT	NT	NT	NT	NT	NT
Naphtha Sufonic Acid	NT	NT	NT	NT	NT	NT
Naphthalene	120	R	120	R	100	R
Naphthenic Acid	120	R	120	R	100	R
Neodene	NT	NT	NT	NT	NT	NT
Neodol	NT	NT	NT	NT	NT	NT
Neutralizer and Desmut	120	R	120	R	NT	NT
N-Methyl-2-Pyrrolidone	NR	R	NR	R	NR	R
Nickel Acetate 50%	NT	NT	NT	NT	NT	NT
Nickel Chloride 50%	150	R	150	R	NT	NT
Nickel Chloride, All	150	R	150	R	NT	NT
Nickel Nitrate, All	150	R	150	R	NT	NT
Nickel Plating Solution #1	150	R	150	R	120	R
Nickel Plating Solution #2	150	R	150	R	120	R
Nickel Plating, Bright	150	R	150	R	120	R

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	Cor-Cote HP		Cor-Cote HP FF		Cor-Cote SC	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Methanol 93%; Acetic Acid (DI Water 2%)	NT	NT	NT	NT	NT	NT
Methene Bis 4, Cyclohexylamine	NT	NT	NT	NT	NT	NT
Methionine Hydroxy, Analog	NT	NT	NT	NT	NT	NT
Methy Mercaptan	NT	NT	NT	NT	NT	NT
n-Methyl-2-Pyrrolidone	NT	NT	NT	NT	NT	NT
Methyl Alcohol (see Methanol 100%)	NT	NT	NT	NT	NT	NT
Methylamyl Alcohol	NR	NR	NR	NR	NR	NR
Methyl Acetate	NR	R	NR	R	NR	NR
Methyl Acrylate	NT	NT	NT	NT	NT	NT
Methyl Amyl Ketone MAK	NT	NT	NT	NT	NT	NT
Methylaminoethanol	NT	NT	NT	NT	NT	NT
Methyl-Bis-Amino Propylamine	NR	R	NR	R	NR	R
Methyl Bromide, Gas 10%	NT	NT	NT	NT	NT	NT
Methyl Cellosolve	NT	NT	NT	NT	NT	NT
Methyl Chloride	NR	NR	NR	NR	NR	NR
Methyl Chloroformate	NR	NR	NR	NR	NR	NR
Methyl Diethanolamine	NT	NT	NT	NT	NT	NT
Methyl Ethyl Ketone (MEK)	NR	NR	NR	NR	NR	R
MEK Peroxide in Plasticizer	NR	NR	NR	NR	NR	NR
Methyl FORMCEL	NT	NT	NT	NT	NT	NT
Methyl Oleate	NR	NR	NR	NR	NR	NR
Methyl Isobutyl Ketone (MIBK)	NR	NR	NR	NR	NR	NR
Methyl Tertiary Butyl Ether (MTBE)	NT	NT	NT	NT	NT	NT
Methylamine	NT	NT	NT	NT	NT	NT
Methylamyl Alcohol	NR	NR	NR	NR	NR	NR
Methyldiethanolamine 50%	NT	NT	NT	NT	NT	NT
Methyldiethanolamine	NT	R	NT	R	NT	R
Methylene Chloride	NR	NR	NR	NR	NR	NR
Methylstyrene	NT	NT	NT	NT	NT	NT
Milk, Fresh and Sour	NR	R	120	R	120	R
Milk Whey	NR	R	120	R	120	R
Mineral Oils	NR	R	120	R	120	R
Mineral Spirits	NR	R	100	R	100	R
Molasses	NR	R	120	R	120	R
Monochloracetic Acid (see Chloracetic Acid)	NT	NT	NT	NT	NT	NT
Monochlorobenzene	NT	NT	NT	NT	NT	NT
Mono Ethyl Ether Acetate	NT	NT	NT	NT	NT	NT
Monomethyl Ether PM-Acetate	NT	NT	NT	NT	NT	NT
Monomethylhydrazine	NT	NT	NT	NT	NT	NT
Monylphenol	NT	NT	NT	NT	NT	NT
Monylphenoxy Polyoxyethylene Ethanol	NT	NT	NT	NT	NT	NT
Morpholine (9)	NT	NT	NT	NT	NT	NT
Motor Oil	NR	R	120	R	120	R
Muratic Acid (see Hydrochloric Acid)	NT	NT	NT	NT	NT	NT
Mustard	NT	NT	NT	NT	NT	NT
Myristic Acid	NT	NT	NT	NT	NT	NT
Naphtha, Aliphatic	NR	R	120	R	120	R
Naphtha, Aromatic (coal tar)	NR	R	NR	R	NR	R
Naphtha, Heavy Aromatic	NR	R	NR	R	NR	R
Naphtha VM&P	NT	NT	NT	NT	NT	NT
Naphtha Sour	NT	NT	NT	NT	NT	NT
Naphtha Sufonic Acid	NR	R	80	R	80	R
Naphthalene	NR	R	NR	R	NR	R
Naphthenic Acid	NR	R	NR	R	NR	R
Neodene	NR	R	120	R	100	R
Neodol	NR	R	120	R	100	R
Neutralizer and Desmut	NT	NT	NT	NT	NT	NT
N-Methyl-2-Pyrrolidone	NR	NR	NR	NR	NR	NR
Nickel Acetate 50%	NT	NT	NT	NT	NT	NT
Nickel Chloride 50%	NT	NT	NT	NT	NT	NT
Nickel Chloride, All	NT	NT	NT	NT	NT	NT
Nickel Nitrate, All	NT	NT	NT	NT	NT	NT
Nickel Plating Solution #1	NR	NR	NR	NR	NR	NR
Nickel Plating Solution #2	NR	NR	NR	NR	NR	NR
Nickel Plating, Bright	NR	NR	NR	NR	NR	NR

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Methanol 93%; Acetic Acid (DI Water 2%)	NR	NR	NT	NT
Methene Bis 4, Cyclohexylamine	NT	NT	NT	NT
Methionine Hydroxy, Analog	NT	NT	NT	NT
Methy Mercaptan	NT	NT	NT	NT
n-Methyl-2-Pyrrolidone	NR	NR	NT	NT
Methyl Alcohol (see Methanol 100%)	NT	NT	NR	NR
Methylamyl Alcohol	NR	NR	NT	NT
Methyl Acetate	NT	NT	NT	NT
Methyl Acrylate	NT	NT	NT	NT
Methyl Amyl Ketone MAK	NR	NR	NT	NT
Methylaminoethanol	NR	NR	NT	NT
Methyl-Bis-Amino Propylamine	NR	NR	NR	R
Methyl Bromide, Gas 10%	NR	NR	NT	NT
Methyl Cellosolve	NR	NR	NR	NR
Methyl Chloride	NR	NR	NT	NT
Methyl Chloroformate	NR	NR	NR	NR
Methyl Diethanolamine	NR	NR	NT	NT
Methyl Ethyl Ketone (MEK)	NR	NR	NR	NR
MEK Peroxide in Plasticizer	NR	NR	NT	NT
Methyl FORMCEL	NT	NT	NT	NT
Methyl Oleate	NT	NT	NT	NT
Methyl Isobutyl Ketone (MIBK)	NT	NT	NR	NR
Methyl Tertiary Butyl Ether (MTBE)	NR	R	NR	R
Methylamine	NT	NT	NT	NT
Methylamyl Alcohol	NT	NT	NT	NT
Methyldiethanolamine 50%	NT	NT	NT	NT
Methyldiethanolamine	NT	NT	NR	R
Methylene Chloride	NT	NR	NR	NR
Methylstyrene	NT	NT	NT	NT
Milk, Fresh and Sour	NT	NT	NT	NT
Milk Whey	NT	NT	NT	NT
Mineral Oils	NT	NT	80	R
Mineral Spirits	NT	R	80	R
Molasses	NT	NT	100	R
Monochloracetic Acid (see Chloracetic Acid)	NT	NT	NT	NT
Monochlorobenzene	NT	NT	NT	NT
Mono Ethyl Ether Acetate	NT	NT	NT	NT
Monomethyl Ether PM-Acetate	NT	NT	NT	NT
Monomethylhydrazine	NT	NT	NT	NT
Monylphenol	NT	NT	NT	NT
Monylphenoxy Polyoxyethylene Ethanol	NT	NT	NT	NT
Morpholine (9)	NT	NT	NT	NT
Motor Oil	80	R	120	R
Muratic Acid (see Hydrochloric Acid)	NT	NT	NT	NT
Mustard	NT	NT	NT	NT
Myristic Acid	NT	NT	NT	NT
Naphtha, Aliphatic	NT	NT	NT	NT
Naphtha, Aromatic (coal tar)	NT	NT	80	R
Naphtha, Heavy Aromatic	NT	NT	80	R
Naphtha VM&P	NT	NT	80	R
Naphtha Sour	NT	NT	NT	NT
Naphtha Sufonic Acid	NT	NT	100	R
Naphthalene	NT	NT	NT	NT
Naphthenic Acid	NT	NT	NT	NT
Neodene	NT	NT	100	R
Neodol	NT	NT	100	R
Neutralizer and Desmut	NT	NT	NT	NT
N-Methyl-2-Pyrrolidone	NR	NR	NT	NT
Nickel Acetate 50%	NT	NT	NT	NT
Nickel Chloride 50%	NT	NT	NT	NT
Nickel Chloride, All	NT	NT	NT	NT
Nickel Nitrate, All	NT	NT	NT	NT
Nickel Plating Solution #1	NT	NT	NT	NT
Nickel Plating Solution #2	NT	NT	NT	NT
Nickel Plating, Bright	NT	NT	NT	NT

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	Magnalux 304 Vinyl Ester		Sher-Glass FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Methanol 93%; Acetic Acid (DI Water 2%)	NT	NT	NT	NT
Methene Bis 4, Cyclohexylamine	NT	NT	NT	NT
Methionine Hydroxy, Analog	NT	NT	NT	NT
Methy Mercaptan	100	R	NT	NT
n-Methyl-2-Pyrrolidone	NR	R	NT	NT
Methyl Alcohol (see Methanol 100%)	NT	NT	NT	NT
Methylamyl Alcohol	NT	NT	NT	NT
Methyl Acetate	NR	NR	NT	NT
Methyl Acrylate	NT	NT	NT	NT
Methyl Amyl Ketone MAK	NT	NT	NT	NT
Methylaminoethanol	NR	NR	NT	NT
Methyl-Bis-Amino Propylamine	NT	NT	NT	NT
Methyl Bromide, Gas 10%	80	R	NT	NT
Methyl Cellosolve	NT	NT	NT	NT
Methyl Chloride	NR	NR	NT	NT
Methyl Chloroformate	NT	NT	NT	NT
Methyl Diethanolamine	140	R	NT	NT
Methyl Ethyl Ketone (MEK)	NR	NR	NT	NT
MEK Peroxide in Plasticizer	NT	NT	NT	NT
Methyl FORMCEL	100	R	NT	NT
Methyl Oleate	100	R	NT	NT
Methyl Isobutyl Ketone (MIBK)	NR	NR	NT	NT
Methyl Tertiary Butyl Ether (MTBE)	NR	NR	120	R
Methylamine	NR	NR	NT	NT
Methylamyl Alcohol	100	R	NT	NT
Methyldiethanolamine 50%	140	R	NT	NT
Methyldiethanolamine	140	R	NT	NT
Methylene Chloride	NR	NR	NT	NT
Methylstyrene	NR	R	NT	NT
Milk, Fresh and Sour	140	R	NT	NT
Milk Whey	NT	NT	NT	NT
Mineral Oils	140	R	NT	NT
Mineral Spirits	140	R	NT	NT
Molasses	140	R	NT	NT
Monochloracetic Acid (see Chloracetic Acid)	NT	NT	NT	NT
Monochlorobenzene	NR	NR	NT	NT
Mono Ethyl Ether Acetate	NT	NT	NT	NT
Monomethyl Ether PM-Acetate	NT	NT	NT	NT
Monomethylhydrazine	NR	NR	NT	NT
Monylphenol	NT	NT	NT	NT
Monylphenoxy Polyoxyethylene Ethanol	NT	NT	NT	NT
Morpholine (9)	NR	NR	NT	NT
Motor Oil	140	R	NT	NT
Muratic Acid (see Hydrochloric Acid)	NT	NT	NT	NT
Mustard	NT	NT	NT	NT
Myristic Acid	140	R	NT	NT
Naphtha, Aliphatic	140	R	NT	NT
Naphtha, Aromatic (coal tar)	120	R	NT	NT
Naphtha, Heavy Aromatic	120	R	NT	NT
Naphtha VM&P	NT	NT	NT	NT
Naphtha Sour	NT	NT	NT	NT
Naphtha Sufonic Acid	NT	NT	NT	NT
Naphthalene	140	R	NT	NT
Naphthenic Acid	140	R	NT	NT
Neodene	NT	NT	NT	NT
Neodol	NT	NT	NT	NT
Neutralizer and Desmut	120	R	NT	NT
N-Methyl-2-Pyrrolidone	NR	NR	NT	NT
Nickel Acetate 50%	NT	NT	NT	NT
Nickel Chloride 50%	140	R	NT	NT
Nickel Chloride, All	140	R	NT	NT
Nickel Nitrate, All	140	R	NT	NT
Nickel Plating Solution #1	140	R	NT	NT
Nickel Plating Solution #2	140	R	NT	NT
Nickel Plating, Bright	140	R	NT	NT

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Chemical Environment and Concentration (%)	Cor-Cote VEN FF Immersion	Cor-Cote VEN FF Secondary Containment	Cor-Cote VEN GF Immersion	Cor-Cote VEN GF Secondary Containment	Cor-Cote HCR FF Immersion	Cor-Cote HCR FF Secondary Containment
Nickel Sulfate, All	150	R	150	R	NT	NT
NIPAR S30	NT	NT	NT	NT	NT	NT
Nitric Acid 0% - 5%	150	R	150	R	80	R
Nitric Acid 6% - 10%	120	R	120	R	80	R
Nitric Acid 11% - 20%	120	R	120	R	NR	R
Nitric Acid 21%- 29% (9)	80	R	80	R	NR	NR
Nitric Acid 30% - 35% (9)	NR	R	NR	R	NR	NR
Nitric Acid 36% - 40% (9)	NR	R	NR	R	NR	NR
Nitric Acid 60%	NR	R	NR	R	NR	NR
Nitric Acid 70%	NR	R	NR	R	NR	NR
Nitric Acid, Fumes <60% (9)	150	R	150	R	NR	NR
Nitric Acid, Fumes >60%, Non-condensing (9)	150	R	150	R	NR	NR
Nitric/Hydrofluoric Acid 20/6% (1, 2, 4, 7, 9)	NR	R	NT	R	NR	R
Nitrilotriethanol	100	R	100	R	NR	R
1-Nitropropane 50%; 2-Nitropropane 50%	NT	NT	NT	NT	NT	NT
Nitrochlorobenzene	NT	NT	NT	NT	NT	NT
Nitrobenzene	80	R	80	R	NR	R
Nitrogen Fertilizer Solution	NT	NT	NT	NT	NT	NT
Nitromethane	NR	NR	NR	NR	NR	R
2-Nitropropane	NT	NT	NT	NT	NT	NT
Nonylphenol	NT	NT	NT	NT	NT	NT
Nylon Resin Pellets	NT	NT	NT	NT	NT	NT
Oakite Rust Stripper	NT	NT	NT	NT	NT	NT
Oakite Plasti-Prep	NT	NT	NT	NT	NT	NT
n-Octadecanoic Acid 90%	NT	NT	NT	NT	NT	NT
Octanoic Acid (see Caprylic Acid)	150	R	150	R	NR	NR
Octanol	100	R	100	R	100	R
n-Octyl Mercaptan	NT	NT	NT	NT	NT	NT
Oil, Separator Fluid	NT	NT	NT	NT	NT	NT
Oil, Lubricating	150	R	150	R	120	R
Oil, Silicon	150	R	150	R	120	R
Oil, Turbine-Synthetic	150	R	150	R	120	R
Oil, Water Soluble	150	R	150	R	120	R
Oil, Wyoming Crude	150	R	150	R	120	R
Oleic Acid, All	150	R	150	R	80	R
Oleo Margarine	NT	NT	NT	NT	120	R
Oleum (Fuming Sulfuric Acid)	NR	R	NR	R	NR	NR
Olive Oils	150	R	150	R	120	R
Orange Juice	NT	NT	NT	NT	100	R
Orange Conc	NT	NT	NT	NT	100	R
Orange Soda	NT	NT	NT	NT	100	R
Organic Amine 1% - 2%	NT	NT	NT	NT	NT	NT
Ortho-Dichloronitrobenzene (see Dichlorobenzene)	NT	NT	NT	NT	NT	NT
Orthoxylene	NT	NT	NT	NT	NT	NT
Oxalic Acid 10%	150	R	150	R	NR	R
Oxalic Acid, Saturated	150	R	150	R	NR	R
Oxohexamethyleneimine	NT	NT	NT	NT	NT	NT
Oxynol Blends	NT	NT	NT	NT	NT	NT
Ozone, 2 mg/L	80	R	80	R	NT	R
Palm Oil	150	R	150	R	120	R
Palmitic Acid	NT	NT	NT	NT	120	R
Palmitoleic Fatty Acid	NT	NT	NT	NT	NT	NT
Peracetic Acid 10% (1, 2, 4, 7, 8)	80	R	80	R	80	R
Peracetic Acid 20% (1, 2, 4, 7, 8)	80	R	80	R	NR	NR
Peracetic Acid 35% (1, 2, 4, 7, 8)	NR	R	NR	R	NR	NR
Paraffin Wax	100	R	100	R	120	R
Paraformaldehyde 50%	150	R	150	R	100	R
Paraldehyde	NT	NT	NT	NT	NT	NT
Paraxylene	120	R	120	R	100	R
Peanut Buter	150	R	150	R	120	R
Peanut Oil	150	R	150	R	120	R
Pelargonic Acid	100	R	100	R	NR	R
Pennstop #1866	NT	NT	NT	NT	NT	NT
Pentane	NT	R	NT	R	NT	R
n-Pentanoic Acid	NT	NT	NT	NT	NT	NT

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	Cor-Cote HP		Cor-Cote HP FF		Cor-Cote SC	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Nickel Sulfate, All	NT	NT	NT	NT	NT	NT
NIPAR S30	NT	NT	NT	NT	NT	NT
Nitric Acid 0% - 5%	NR	R	NR	R	NR	R
Nitric Acid 6% - 10%	NR	R	NR	R	NR	R
Nitric Acid 11% - 20%	NR	NR	NR	NR	NR	R
Nitric Acid 21%- 29% (9)	NR	NR	NR	NR	NR	NR
Nitric Acid 30% - 35% (9)	NR	NR	NR	NR	NR	NR
Nitric Acid 36% - 40% (9)	NR	NR	NR	NR	NR	NR
Nitric Acid 60%	NR	NR	NR	NR	NR	NR
Nitric Acid 70%	NR	NR	NR	NR	NR	NR
Nitric Acid, Fumes <60% (9)	NR	NR	NR	NR	NR	NR
Nitric Acid, Fumes >60%, Non-condensing (9)	NR	NR	NR	NR	NR	NR
Nitric/Hydrofluoric Acid 20/6% (1, 2, 4, 7, 9)	NR	NR	NR	NR	NR	R
Nitrilotriethanol	NR	R	NR	R	NR	R
1-Nitropropane 50%; 2-Nitropropane 50%	NT	NT	NT	NT	NT	NT
Nitrochlorobenzene	NT	NT	NT	NT	NT	NT
Nitrobenzene	NR	NR	NR	NR	NR	NR
Nitrogen Fertilizer Solution	NT	NT	NT	NT	NT	NT
Nitromethane	NR	NR	NR	NR	NR	NR
2-Nitropropane	NT	NT	NT	NT	NT	NT
Nonylphenol	NR	R	120	R	100	R
Nylon Resin Pellets	NT	NT	NT	NT	NT	NT
Oakite Rust Stripper	NT	NT	NT	NT	NT	NT
Oakite Plasti-Prep	NT	NT	NT	NT	NT	NT
n-Octadecanoic Acid 90%	NT	NT	NT	NT	NT	NT
Octanoic Acid (see Caprylic Acid)	NR	NR	NR	NR	NR	NR
Octanol	NR	R	NR	R	NR	R
n-Octyl Mercaptan	NR	R	NR	R	NR	R
Oil, Separator Fluid	NT	NT	NT	NT	NT	NT
Oil, Lubricating	NR	R	120	R	120	R
Oil, Silicon	NR	R	120	R	120	R
Oil, Turbine-Synthetic	NR	R	120	R	120	R
Oil, Water Soluble	NR	R	120	R	120	R
Oil, Wyoming Crude	NR	R	120	R	120	R
Oleic Acid, All	NR	NR	NR	NR	NR	NR
Oleo Margarine	NR	R	120	R	120	R
Oleum (Fuming Sulfuric Acid)	NR	NR	NR	NR	NR	NR
Olive Oils	NR	R	120	R	120	R
Orange Juice	NR	R	120	R	100	R
Orange Conc	NR	R	120	R	100	R
Orange Soda	NR	R	120	R	100	R
Organic Amine 1% - 2%	NT	NT	NT	NT	NT	NT
Ortho-Dichloronitrobenzene (see Dichlorobenzene)	NT	NT	NT	NT	NT	NT
Orthoxylene	NT	NT	NT	NT	NT	NT
Oxalic Acid 10%	NR	NR	NR	NR	NR	NR
Oxalic Acid, Saturated	NR	NR	NR	NR	NR	NR
Oxohexamethyleneimine	NT	NT	NT	NT	NT	NT
Oxynol Blends	NT	NT	NT	NT	NT	NT
Ozone, 2 mg/L	NT	R	NT	R	NT	R
Palm Oil	NR	R	120	R	120	R
Palmitic Acid	NR	R	120	R	120	R
Palmitoleic Fatty Acid	NT	NT	NT	NT	NT	NT
Peracetic Acid 10% (1, 2, 4, 7, 8)	NR	R	NR	R	80	R
Peracetic Acid 20% (1, 2, 4, 7, 8)	NR	NR	NR	NR	NR	NR
Peracetic Acid 35% (1, 2, 4, 7, 8)	NR	NR	NR	NR	NR	NR
Paraffin Wax	NR	R	100	R	100	R
Paraformaldehyde 50%	NR	R	NR	R	NR	R
Paraldehyde	NT	NT	NT	NT	NT	NT
Paraxylene	NR	R	NR	R	NR	R
Peanut Buter	NR	R	120	R	120	R
Peanut Oil	NR	R	120	R	120	R
Pelargonic Acid	NR	R	NR	R	NR	R
Pennstop #1866	NT	NT	NT	NT	NT	NT
Pentane	NT	R	NT	R	NT	R
n-Pentanoic Acid	NT	NT	NT	NT	NT	NT

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Nickel Sulfate, All	NT	NT	NT	NT
NIPAR S30	NT	NT	NT	NT
Nitric Acid 0% - 5%	NR	R	NT	NT
Nitric Acid 6% - 10%	NR	R	NT	NT
Nitric Acid 11% - 20%	NR	NR	NT	NT
Nitric Acid 21%- 29% (9)	NR	NR	NT	NT
Nitric Acid 30% - 35% (9)	NR	NR	NT	NT
Nitric Acid 36% - 40% (9)	NR	NR	NR	NR
Nitric Acid 60%	NR	NR	NR	NR
Nitric Acid 70%	NR	NR	NR	NR
Nitric Acid, Fumes <60% (9)	NR	NR	NR	NR
Nitric Acid, Fumes >60%, Non-condensing (9)	NR	NR	NR	NR
Nitric/Hydrofluoric Acid 20/6% (1, 2, 4, 7, 9)	NR	NR	NT	NT
Nitrilotriethanol	NR	NR	NT	NT
1-Nitropropane 50%; 2-Nitropropane 50%	NT	NT	NR	NR
Nitrochlorobenzene	NT	NT	NR	NR
Nitrobenzene	NR	NR	NT	NT
Nitrogen Fertilizer Solution	NT	NT	NT	NT
Nitromethane	NR	NR	NT	NT
2-Nitropropane	NT	NT	NT	NT
Nonylphenol	NT	NT	100	R
Nylon Resin Pellets	NT	NT	NT	NT
Oakite Rust Stripper	NT	NT	NT	NT
Oakite Plasti-Prep	NT	NT	NT	NT
n-Octadecanoic Acid 90%	NT	NT	NT	NT
Octanoic Acid (see Caprylic Acid)	NT	NT	NR	R
Octanol	NT	NT	NT	NT
n-Octyl Mercaptan	NT	NT	NR	R
Oil, Separator Fluid	NT	NT	NT	NT
Oil, Lubricating	NT	NT	NT	NT
Oil, Silicon	NT	NT	NT	NT
Oil, Turbine-Synthetic	NT	NT	150	R
Oil, Water Soluble	NT	NT	NT	NT
Oil, Wyoming Crude	NT	NT	NT	NT
Oleic Acid, All	NT	NT	NT	NT
Oleo Margarine	NT	NT	NT	NT
Oleum (Fuming Sulfuric Acid)	NT	NT	NT	NT
Olive Oils	NT	NT	NT	NT
Orange Juice	NT	NT	NT	NT
Orange Conc	NT	NT	100	R
Orange Soda	NT	NT	NT	NT
Organic Amine 1% - 2%	NT	NT	NT	NT
Ortho-Dichloronitrobenzene (see Dichlorobenzene)	NT	NT	NT	NT
Orthoxylene	NT	NT	80	R
Oxalic Acid 10%	NT	NT	NT	NT
Oxalic Acid, Saturated	NT	NT	NT	NT
Oxohexamethyleneimine	NT	NT	NT	NT
Oxynol Blends	NT	NT	NT	NT
Ozone, 2 mg/L	NT	NT	NT	NT
Palm Oil	NT	NT	140	R
Palmitic Acid	NT	NT	140	R
Palmitoleic Fatty Acid	NT	NT	NT	NT
Peracetic Acid 10% (1, 2, 4, 7, 8)	NT	NT	NT	NT
Peracetic Acid 20% (1, 2, 4, 7, 8)	NT	NT	NT	NT
Peracetic Acid 35% (1, 2, 4, 7, 8)	NT	NT	NT	NT
Paraffin Wax	NT	R	80	R
Paraformaldehyde 50%	NT	NT	NT	NT
Paraldehyde	NT	NT	NT	NT
Paraxylene	NT	NT	80	R
Peanut Buter	NT	NT	NT	NT
Peanut Oil	NT	NT	NT	NT
Pelargonic Acid	NT	NT	NT	NT
Pennstop #1866	NT	NT	NT	NT
Pentane	NR	R	80	R
n-Pentanoic Acid	NT	NT	NT	NT

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Chemical Environment and Concentration (%)	Magnalux 304 Vinyl Ester Immersion	Magnalux 304 Vinyl Ester Secondary Containment	Sher-Glass FF Immersion	Sher-Glass FF Secondary Containment
Nickel Sulfate, All	140	R	NT	NT
NIPAR S30	NT	NT	NT	NT
Nitric Acid 0% - 5%	140	R	NT	NT
Nitric Acid 6% - 10%	120	R	NT	NT
Nitric Acid 11% - 20%	80	R	NT	NT
Nitric Acid 21%- 29% (9)	NR	R	NT	NT
Nitric Acid 30% - 35% (9)	NR	NR	NT	NT
Nitric Acid 36% - 40% (9)	NR	R	NT	NT
Nitric Acid 60%	NR	R	NT	NT
Nitric Acid 70%	NR	NR	NT	NT
Nitric Acid, Fumes <60% (9)	140	NR	NT	NT
Nitric Acid, Fumes >60%, Non-condensing (9)	140	NR	NT	NT
Nitric/Hydrofluoric Acid 20/6% (1, 2, 4, 7, 9)	NT	NT	NT	NT
Nitrilotriethanol	100	R	NT	NT
1-Nitropropane 50%; 2-Nitropropane 50%	NT	NT	NT	NT
Nitrochlorobenzene	NT	NT	NT	NT
Nitrobenzene	NR	NR	NT	NT
Nitrogen Fertilizer Solution	NT	NT	NT	NT
Nitromethane	NR	NR	NT	NT
2-Nitropropane	NT	NT	NT	NT
Nonylphenol	100	R	NT	NT
Nylon Resin Pellets	NT	NT	NT	NT
Oakite Rust Stripper	NT	NT	NT	NT
Oakite Plasti-Prep	NT	NT	NT	NT
n-Octadecanoic Acid 90%	NT	NT	NT	NT
Octanoic Acid (see Caprylic Acid)	140	R	NT	NT
Octanol	100	R	NT	NT
n-Octyl Mercaptan	NT	NT	NT	NT
Oil, Separator Fluid	NT	NT	NT	NT
Oil, Lubricating	140	R	NT	NT
Oil, Silicon	140	R	NT	NT
Oil, Turbine-Synthetic	140	R	NT	NT
Oil, Water Soluble	NT	NT	NT	NT
Oil, Wyoming Crude	140	R	NT	NT
Oleic Acid, All	140	R	NT	NT
Oleo Margarine	NT	NT	NT	NT
Oleum (Fuming Sulfuric Acid)	NR	NR	NT	NT
Olive Oils	140	R	NT	NT
Orange Juice	NT	NT	NT	NT
Orange Conc	NT	NT	NT	NT
Orange Soda	NT	NT	NT	NT
Organic Amine 1% - 2%	NT	NT	NT	NT
Ortho-Dichloronitrobenzene (see Dichlorobenzene)	NT	NT	NT	NT
Orthoxylene	NT	NT	NT	NT
Oxalic Acid 10%	100	R	NT	NT
Oxalic Acid, Saturated	100	R	NT	NT
Oxohexamethyleneimine	NT	NT	NT	NT
Oxynol Blends	NT	NT	NT	NT
Ozone, 2 mg/L	80	R	NT	NT
Palm Oil	140	R	NT	NT
Palmitic Acid	140	R	NT	NT
Palmitoleic Fatty Acid	NT	NT	NT	NT
Peracetic Acid 10% (1, 2, 4, 7, 8)	80	R	NT	NT
Peracetic Acid 20% (1, 2, 4, 7, 8)	80	R	NT	NT
Peracetic Acid 35% (1, 2, 4, 7, 8)	NR	NR	NT	NT
Paraffin Wax	100	R	NT	NT
Paraformaldehyde 50%	140	R	NT	NT
Paraldehyde	NT	NT	NT	NT
Paraxylene	NR	NR	NT	NT
Peanut Buter	140	R	NT	NT
Peanut Oil	140	R	NT	NT
Pelargonic Acid	100	R	NT	NT
Pennstop #1866	NT	NT	NT	NT
Pentane	NT	R	NT	NT
n-Pentanoic Acid	NT	NT	NT	NT

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	Cor-Cote VEN FF		Cor-Cote VEN GF		Cor-Cote HCR FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Pentanedione	NT	NT	NT	NT	NT	NT
Pentanedioic Acid (see Glutaric Acid 50%)	100	R	100	R	NT	NT
Pentachloroethane	100	R	100	R	NR	R
Pepper	NR	R	NR	R	NR	R
Perchloric Acid 10%	120	R	120	R	NR	R
Perchloric Acid 30%	100	R	100	R	NR	R
Perchloroethylene	120	R	120	R	100	R
PERMACOL #120	NT	NT	NT	NT	NT	NT
Permalastic Adhesive	100	R	100	R	100	R
Petroleum Jelly	150	R	150	R	120	R
Phenol Formaldehyde Resin, All (9)	100	R	100	R	NT	NT
Phenol Sulfonic Acid 65% (9)	NR	R	NR	R	NR	NR
Phenol (Carbolic Acid) 5% (9)	100	R	100	R	NR	R
Phenol (Carbolic Acid) 10% (9)	100	R	100	R	NR	NR
Phenol (Carbolic Acid) 15% (9)	80	R	80	R	NR	NR
Phenol (Carbolic Acid) 88% (9)	100	R	100	R	NR	NR
Phenolic Resin (9)	NR	R	NR	R	NR	NR
1-Phenyl-2-Methyl-1,2-Propane Diamin	NT	NT	NT	NT	NT	NT
Phenylenediamine 50%	NT	NT	NT	NT	NT	NT
Phenylhydrazine	NT	NT	NT	NT	NT	NT
Phosphoric Acid 115% (Polyphos)	150	R	150	R	NR	R
Phosphoric Acid 105% (Superphos)	150	R	150	R	NR	R
Phosphoric Acid 100% (Vapor and Condensate)	100	R	100	R	NR	R
Phosphoric 100% (Vapor)	150	R	150	R	NR	R
Phosphoric Acid:HCL Acid 15:9	NT	R	NT	R	NR	R
Phosphoric Acid 5%	150	R	150	R	NR	R
Phosphoric Acid 10%	150	R	150	R	NR	R
Phosphoric Acid 20%	150	R	150	R	NR	R
Phosphoric Acid 40%	150	R	150	R	NR	R
Phosphoric Acid 50%	150	R	150	R	NR	R
Phosphoric Acid 85%	150	R	150	R	NR	R
Phosphorous Acid 70%	150	R	150	R	NR	R
Phosphorous Oxychloride	NR	R	NR	R	100	R
Phosphorous Trichloride	NR	R	NR	R	100	R
Phthalic Acid, All	150	R	150	R	NT	NT
Phthalic Anhydride	150	R	150	R	NT	NT
Phthalic Anhydrous Acid	NT	NT	NT	NT	NT	NT
Pickling Acids	80	R	NR	R	NT	NT
Picric Acid (in Alcohol) 10%	120	R	120	R	NR	R
Pine Gum (Diluted)	150	R	150	R	NT	NT
Pine Oil	150	R	150	R	NT	NT
Platformate	NT	NT	NT	NT	NT	NT
Platinum Plating Solution	NT	NT	NT	NT	NT	NT
POAST Herbicide	NT	NT	NT	NT	NT	NT
Podecyl Benzene Sulfonic Acid	NT	NT	NT	NT	NT	NT
Polyacrylic Acid	120	R	120	R	NR	R
Polyaluminum Chloride	NT	NT	NT	NT	NT	NT
Polyamide, Aqueous Borne	NT	NT	NT	NT	NT	NT
Polychlorinated Biphenyl (PCB)	NT	NT	NT	NT	120	R
Poly-EM 10 Anionic	NT	NT	NT	NT	NT	NT
Poly-EM20	NT	NT	NT	NT	NT	NT
Polyester Resin	NT	NT	NT	NT	NT	NT
Polyethylene Glycol	NT	NT	NT	NT	NT	NT
Polyethylene, Resin w/ PVA Traces	NT	NT	NT	NT	NT	NT
Polyethyleneimine	NT	NT	NT	NT	NT	NT
Polymin SK	NT	NT	NT	NT	NT	NT
Polymer (Emulsion)	NT	R	NT	R	NT	R
Polymer (Mannich)	NT	NT	NT	NT	NT	NT
Polyol	NT	NT	NT	NT	NT	NT
Polyolefin Resin, Dry	NT	NT	NT	NT	NT	NT
Polyphosphate (Zinc Orthophosphate)	NT	NT	NT	NT	NT	NT
Polyphosphoric Acid 115% H3PO4	NT	NT	NT	NT	NT	NT
Polypropylene Resin, Dry	NT	NT	NT	NT	NT	NT
Polytetrahydrofuran	NT	NT	NT	NT	NT	NT
POLYTEX 669	NT	NT	NT	NT	NT	NT

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	Cor-Cote HP		Cor-Cote HP FF		Cor-Cote SC	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Pentanedione	NT	NT	NT	NT	NT	NT
Pentanedioic Acid (see Glutaric Acid 50%)	NT	NT	NT	NT	NT	NT
Pentachloroethane	NR	NR	NR	NR	NR	NR
Pepper	NR	R	NR	R	NR	R
Perchloric Acid 10%	NR	NR	NR	NR	NR	NR
Perchloric Acid 30%	NR	NR	NR	NR	NR	NR
Perchloroethylene	NR	R	NR	R	NR	R
PERMACOL #120	NT	NT	NT	NT	NT	NT
Permalastic Adhesive	NR	R	120	R	100	R
Petroleum Jelly	NR	R	120	R	120	R
Phenol Formaldehyde Resin, All (9)	NT	NT	NT	NT	NT	NT
Phenol Sulfonic Acid 65% (9)	NR	NR	NR	NR	NR	NR
Phenol (Carbolic Acid) 5% (9)	NR	R	NR	R	NR	R
Phenol (Carbolic Acid) 10% (9)	NR	NR	NR	NR	NR	NR
Phenol (Carbolic Acid) 15% (9)	NR	NR	NR	NR	NR	NR
Phenol (Carbolic Acid) 88% (9)	NR	NR	NR	NR	NR	NR
Phenolic Resin (9)	NR	NR	NR	NR	NR	NR
1-Phenyl-2-Methyl-1,2-Propane Diamin	NT	NT	NT	NT	NT	NT
Phenylenediamine 50%	NT	NT	NT	NT	NT	NT
Phenylhydrazine	NT	NT	NT	NT	NT	NT
Phosphoric Acid 115% (Polyphos)	NR	R	NR	R	NR	R
Phosphoric Acid 105% (Superphos)	NR	R	NR	R	NR	R
Phosphoric Acid 100% (Vapor and Condensate)	NR	R	NR	R	NR	R
Phosphoric 100% (Vapor)	NR	R	NR	R	NR	R
Phosphoric Acid:HCL Acid 15:9	NR	R	NR	R	NR	R
Phosphoric Acid 5%	NR	R	NR	R	NR	R
Phosphoric Acid 10%	NR	R	NR	R	NR	R
Phosphoric Acid 20%	NR	R	NR	R	NR	R
Phosphoric Acid 40%	NR	NR	NR	NR	NR	NR
Phosphoric Acid 50%	NR	NR	NR	NR	NR	NR
Phosphoric Acid 85%	NR	NR	NR	NR	NR	NR
Phosphorous Acid 70%	NR	NR	NR	NR	NR	NR
Phosphorous Oxychloride	NR	R	NR	R	NR	R
Phosphorous Trichloride	NR	R	NR	R	NR	R
Phthalic Acid, All	NT	NT	NT	NT	NT	NT
Phthalic Anhydride	NT	NT	NT	NT	NT	NT
Phthalic Anhydrous Acid	NT	NT	NT	NT	NT	NT
Pickling Acids	NT	NT	NT	NT	NT	NT
Picric Acid (in Alcohol) 10%	NR	NR	NR	NR	NR	NR
Pine Gum (Diluted)	NT	NT	NT	NT	NT	NT
Pine Oil	NT	NT	NT	NT	NT	NT
Platformate	NT	NT	NT	NT	NT	NT
Platinum Plating Solution	NT	NT	NT	NT	NT	NT
POAST Herbicide	NR	R	120	R	100	R
Podecyl Benzene Sulfonic Acid	NT	NT	NT	NT	NT	NT
Polyacrylic Acid	NR	NR	NR	NR	NR	NR
Polyaluminum Chloride	NT	NT	NT	NT	NT	NT
Polyamide, Aqueous Borne	NT	NT	NT	NT	NT	NT
Polychlorinated Biphenyl (PCB)	NT	NT	NT	NT	NT	NT
Poly-EM 10 Anionic	NT	NT	NT	NT	NT	NT
Poly-EM20	NT	NT	NT	NT	NT	NT
Polyester Resin	NR	R	120	R	100	R
Polyethylene Glycol	NT	NT	NT	NT	NT	NT
Polyethylene, Resin w/ PVA Traces	NT	NT	NT	NT	NT	NT
Polyethyleneimine	NT	NT	NT	NT	NT	NT
Polymin SK	NT	NT	NT	NT	NT	NT
Polymer (Emulsion)	NT	R	NT	R	NT	R
Polymer (Mannich)	NT	NT	NT	NT	NT	NT
Polyol	NR	R	120	R	120	R
Polyolefin Resin, Dry	NT	NT	NT	NT	NT	NT
Polyphosphate (Zinc Orthophosphate)	NT	NT	NT	NT	NT	NT
Polyphosphoric Acid 115% H3PO4	NT	NT	NT	NT	NT	NT
Polypropylene Resin, Dry	NT	NT	NT	NT	NT	NT
Polytetrahydrofuran	NT	NT	NT	NT	NT	NT
POLYTEX 669	NT	NT	NT	NT	NT	NT

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Pentanedione	NT	NT	NT	NT
Pentanedioic Acid (see Glutaric Acid 50%)	NT	NT	NT	NT
Pentachloroethane	NR	NR	NT	NT
Pepper	NT	NT	NT	NT
Perchloric Acid 10%	NT	NT	NT	NT
Perchloric Acid 30%	NT	NT	NT	NT
Perchloroethylene	NT	NT	NT	NT
PERMACOL #120	NT	NT	NT	NT
Permalastic Adhesive	NT	NT	NT	NT
Petroleum Jelly	NT	NT	150	R
Phenol Formaldehyde Resin, All (9)	NT	NT	NT	NT
Phenol Sulfonic Acid 65% (9)	NR	NR	NT	NT
Phenol (Carbolic Acid) 5% (9)	NR	NR	NT	NT
Phenol (Carbolic Acid) 10% (9)	NR	NR	NT	NT
Phenol (Carbolic Acid) 15% (9)	NR	NR	NT	NT
Phenol (Carbolic Acid) 88% (9)	NR	NR	NT	NT
Phenolic Resin (9)	NR	NR	NT	NT
1-Phenyl-2-Methyl-1,2-Propane Diamin	NT	NT	NT	NT
Phenylenediamine 50%	NT	NT	NT	NT
Phenylhydrazine	NT	NT	NT	NT
Phosphoric Acid 115% (Polyphos)	NT	NT	NT	NT
Phosphoric Acid 105% (Superphos)	NT	NT	NT	NT
Phosphoric Acid 100% (Vapor and Condensate)	NT	NT	NT	NT
Phosphoric 100% (Vapor)	NT	NT	NT	NT
Phosphoric Acid:HCL Acid 15:9	NT	NT	NT	NT
Phosphoric Acid 5%	80	R	NT	NT
Phosphoric Acid 10%	80	R	NT	NT
Phosphoric Acid 20%	NT	NR	NT	NT
Phosphoric Acid 40%	NT	NR	NT	NT
Phosphoric Acid 50%	NT	NR	NR	NR
Phosphoric Acid 85%	NT	NT	NR	NR
Phosphorous Acid 70%	NT	NT	NT	NT
Phosphorous Oxychloride	NT	NT	NT	NT
Phosphorous Trichloride	NT	NT	NT	NT
Phthalic Acid, All	NT	NT	NT	NT
Phthalic Anhydride	NT	NT	NT	NT
Phthalic Anhydrous Acid	NT	NT	NT	NT
Pickling Acids	NT	NT	NT	NT
Picric Acid (in Alcohol) 10%	NT	NT	NT	NT
Pine Gum (Diluted)	NT	NT	NT	NT
Pine Oil	NT	NT	NT	NT
Platformate	NT	NT	80	R
Platinum Plating Solution	NT	NT	NT	NT
POAST Herbicide	NT	NT	100	R
Podecyl Benzene Sulfonic Acid	NT	NT	NT	NT
Polyacrylic Acid	NT	NT	NT	NT
Polyaluminum Chloride	NT	NT	NT	NT
Polyamide, Aqueous Borne	NT	NT	NT	NT
Polychlorinated Biphenyl (PCB)	NT	NT	NT	NT
Poly-EM 10 Anionic	NT	NT	NT	NT
Poly-EM20	NT	NT	NT	NT
Polyester Resin	NT	NT	NT	NT
Polyethylene Glycol	NT	NT	NT	NT
Polyethylene, Resin w/ PVA Traces	NT	NT	NT	NT
Polyethyleneimine	NT	NT	100	R
Polymin SK	NT	NT	NT	NT
Polymer (Emulsion)	NT	R	NT	R
Polymer (Mannich)	NR	R	NT	NT
Polyol	NR	R	140	R
Polyolefin Resin, Dry	NT	NT	NT	NT
Polyphosphate (Zinc Orthophosphate)	NT	NT	NT	NT
Polyphosphoric Acid 115% H3PO4	NT	NT	NT	NT
Polypropylene Resin, Dry	NT	NT	NT	NT
Polytetrahydrofuran	NT	NT	NT	NT
POLYTEX 669	NT	NT	NT	NT

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	Magnalux 304 Vinyl Ester		Sher-Glass FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Pentanedione	NT	NT	NT	NT
Pentanedioic Acid (see Glutaric Acid 50%)	100	R	NT	NT
Pentachloroethane	NR	NR	NT	NT
Pepper	100	R	NT	NT
Perchloric Acid 10%	140	R	NT	NT
Perchloric Acid 30%	100	R	NT	NT
Perchloroethylene	100	R	NT	NT
PERMACOL #120	NT	NT	NT	NT
Permalastic Adhesive	100	R	NT	NT
Petroleum Jelly	140	R	NT	NT
Phenol Formaldehyde Resin, All (9)	80	R	NT	NT
Phenol Sulfonic Acid 65% (9)	NR	NR	NT	NT
Phenol (Carbolic Acid) 5% (9)	NR	NR	NT	NT
Phenol (Carbolic Acid) 10% (9)	NR	NR	NT	NT
Phenol (Carbolic Acid) 15% (9)	NR	NR	NT	NT
Phenol (Carbolic Acid) 88% (9)	100	R	NT	NT
Phenolic Resin (9)	NR	NR	NT	NT
1-Phenyl-2-Methyl-1,2-Propane Diamin	NT	NT	NT	NT
Phenylenediamine 50%	NT	NT	NT	NT
Phenylhydrazine	NT	NT	NT	NT
Phosphoric Acid 115% (Polyphos)	140	R	NT	NT
Phosphoric Acid 105% (Superphos)	140	R	NT	NT
Phosphoric Acid 100% (Vapor and Condensate)	100	R	NT	NT
Phosphoric 100% (Vapor)	140	R	NT	NT
Phosphoric Acid:HCL Acid 15:9	NT	NT	NT	NT
Phosphoric Acid 5%	140	R	NT	NT
Phosphoric Acid 10%	140	R	NT	NT
Phosphoric Acid 20%	140	R	NT	NT
Phosphoric Acid 40%	140	R	NT	NT
Phosphoric Acid 50%	140	R	NT	NT
Phosphoric Acid 85%	140	R	NT	NT
Phosphorous Acid 70%	140	R	NT	NT
Phosphorous Oxychloride	NR	NR	NT	NT
Phosphorous Trichloride	NR	NR	NT	NT
Phthalic Acid, All	140	R	NT	NT
Phthalic Anhydride	140	R	NT	NT
Phthalic Anhydrous Acid	NT	NT	NT	NT
Pickling Acids	NR	NR	NT	NT
Picric Acid (in Alcohol) 10%	140	NR	NT	NT
Pine Gum (Diluted)	140	R	NT	NT
Pine Oil	140	R	NT	NT
Platformate	NT	NT	NT	NT
Platinum Plating Solution	NT	NT	NT	NT
POAST Herbicide	NT	NT	NT	NT
Podecyl Benzene Sulfonic Acid	NT	NT	NT	NT
Polyacrylic Acid	120	R	NT	NT
Polyaluminum Chloride	NT	NT	NT	NT
Polyamide, Aqueous Borne	NT	NT	NT	NT
Polychlorinated Biphenyl (PCB)	NT	NT	NT	NT
Poly-EM 10 Anionic	NT	NT	NT	NT
Poly-EM20	NT	NT	NT	NT
Polyester Resin	NT	NT	NT	NT
Polyethylene Glycol	NT	NT	NT	NT
Polyethylene, Resin w/ PVA Traces	NT	NT	NT	NT
Polyethyleneimine	NT	NT	NT	NT
Polymin SK	NT	NT	NT	NT
Polymer (Emulsion)	NT	R	NT	NT
Polymer (Mannich)	NT	NT	NT	NT
Polyol	NT	NT	NT	NT
Polyolefin Resin, Dry	NT	NT	NT	NT
Polyphosphate (Zinc Orthophosphate)	NT	NT	NT	NT
Polyphosphoric Acid 115% H3PO4	NT	NT	NT	NT
Polypropylene Resin, Dry	NT	NT	NT	NT
Polytetrahydrofuran	NT	NT	NT	NT
POLYTEX 669	NT	NT	NT	NT

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	Cor-Cote VEN FF		Cor-Cote VEN GF		Cor-Cote HCR FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Polyvinyl Acetate Adhesives	100	R	100	R	NT	NT
Polyvinyl Acetate Emulsion	100	R	100	R	NT	NT
Polyvinyl Alcohol, All	150	R	150	R	NT	NT
Polyvinyl Chloride Latex	100	R	100	R	NT	NT
Potassium Acetate	150	R	150	R	120	R
Potassium Aluminum Sulfate, All	150	R	150	R	NT	NT
Potassium Bicarbonate, All	150	R	150	R	80	R
Potassium Bichromate	150	R	150	R	80	R
Potassium Bromide, All	150	R	150	R	120	R
Potassium Carbonate 10% (1, 2, 4, 7)	150	R	150	R	120	R
Potassium Carbonate 25% (1, 2, 4, 7)	150	R	150	R	120	R
Potassium Carbonate 50% (1, 2, 4, 7)	150	R	150	R	NT	NT
Potassium Chlorate	150	R	150	R	100	R
Potassium Chloride, All	150	R	150	R	120	R
Potassium Chloride 20%	150	R	150	R	120	R
Potassium Cyanide	150	R	150	R	120	R
Potassium Dichromate, All	150	R	150	R	NT	NT
Potassium Ferricyanide, All	150	R	150	R	NT	NT
Potassium Ferrocyanide, All	150	R	150	R	NT	NT
Potassium Fluoride (2, 4, 7)	150	R	150	R	120	R
Potassium Gold Cyanide 12%	150	R	150	R	NT	NT
Potassium Hydroxide 5% (1, 2, 4, 7, 9)	NR	R	NR	R	120	R
Potassium Hydroxide 10% (1, 2, 4, 7, 9)	NR	R	NR	R	120	R
Potassium Hydroxide 20% (1, 2, 4, 7, 9)	NR	R	NR	R	120	R
Potassium Hydroxide 25% (1, 2, 4, 7, 9)	NR	R	NR	R	120	R
Potassium Hydroxide 45% (1, 2, 4, 7, 9)	NR	R	NR	R	120	R
Potassium Hydroxide 44%; Acrylic Acid 21% (1, 2, 4, 7, 9	NR	R	NR	R	NT	NT
Potassium Hydroxide 50% (1, 2, 4, 7, 9)	NR	R	NR	R	120	R
Potassium Hypochlorite (1, 2, 4, 7, 9)	NR	R	NR	R	NT	NT
Potassium Iodide, All	120	R	120	R	NT	NT
Potassium Nitrate, All	150	R	150	R	120	R
Potassium Permaganate, All	150	R	150	R	NR	R
Potassium Persulfate, All	150	R	150	R	NR	R
Potassium Phosphate, Tribasic	NT	NT	NT	NT	NT	NT
Potassium Phosphate 50%	NT	NT	NT	NT	NT	NT
Potassium Pyrophosphate 60%	120	R	120	R	NT	NT
Potassium Silicofluoride (1, 2, 4, 7)	100	R	100	R	NT	NT
Potassium Sulfate, All	150	R	150	R	120	R
Potassium Sulfite 45%	100	R	100	R	NT	NT
Potassium Thiosulfate Solution	100	R	100	R	NT	NT
Potassium Titanium Fluoride <5%	NT	NT	NT	NT	NT	NT
Power Steering Fluid	NT	NT	NT	NT	NT	NT
Potato Starch	NT	NT	NT	NT	NT	NT
Propane	120	R	120	R	NT	NT
Propanediol	120	R	120	R	100	R
Propionaldehyde	100	R	100	R	NT	NT
Propionic Acid 50%	150	R	150	R	NR	NR
Propionic Acid	100	R	100	R	NR	NR
Propyl Acetate	80	R	80	R	NT	NT
Propyl Alcohol	80	R	80	R	NT	NT
Propyl Cellosolve	NT	NT	NT	NT	NT	NT
Propylene Carbonate	NT	NT	NT	NT	NT	NT
Propylene Dichloride	NT	NT	NT	NT	NT	NT
Propylene Glycol	150	R	150	R	120	R
Propylene Glycol [Dowanol PMA] Monomethyl Ether Ac	100	R	100	R	NT	NT
Propylene Glycol [Dowanol PMA] Monomethyl Ether Ac	NR	NR	NR	NR	NT	NT
Propylene Oxide	NR	NR	NR	NR	NT	NT
Prune Juice	NT	NT	NT	NT	NT	NT
Pulp, Slurry	NT	NT	NT	NT	NT	NT
Pulp Mill Blow Down from Digester (5)	150	R	150	R	NT	NT
Purifloc C-41 Flocculant	NT	NT	NT	NT	NT	NT
PVC Powder	NT	NT	NT	NT	NT	NT
PVC 2% in Sulfuric Acid 5%	NT	NT	NT	NT	NT	NT
PVC Feed Tank, Slurry	NT	NT	NT	NT	NT	NT
PYRANOL 1481	NT	NT	NT	NT	NT	NT

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	Cor-Cote HP		Cor-Cote HP FF		Cor-Cote SC	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Polyvinyl Acetate Adhesives	NT	NT	NT	NT	NT	NT
Polyvinyl Acetate Emulsion	NT	NT	NT	NT	NT	NT
Polyvinyl Alcohol, All	NT	NT	NT	NT	NT	NT
Polyvinyl Chloride Latex	NT	NT	NT	NT	NT	NT
Potassium Acetate	NR	R	120	R	120	R
Potassium Aluminum Sulfate, All	NT	NT	NT	NT	NT	NT
Potassium Bicarbonate, All	NR	NR	NR	NR	NR	R
Potassium Bichromate	NR	NR	NR	NR	NR	R
Potassium Bromide, All	NR	R	120	R	120	R
Potassium Carbonate 10% (1, 2, 4, 7)	NR	R	80	R	80	R
Potassium Carbonate 25% (1, 2, 4, 7)	NR	R	80	R	80	R
Potassium Carbonate 50% (1, 2, 4, 7)	NT	NT	NT	NT	NT	NT
Potassium Chlorate	NR	R	120	R	100	R
Potassium Chloride, All	NR	R	120	R	120	R
Potassium Chloride 20%	NR	R	120	R	120	R
Potassium Cyanide	NR	R	NR	R	120	R
Potassium Dichromate, All	NT	NT	NT	NT	NT	NT
Potassium Ferricyanide, All	NT	NT	NT	NT	NT	NT
Potassium Ferrocyanide, All	NT	NT	NT	NT	NT	NT
Potassium Fluoride (2, 4, 7)	NR	R	NR	R	120	R
Potassium Gold Cyanide 12%	NT	NT	NT	NT	NT	NT
Potassium Hydroxide 5% (1, 2, 4, 7, 9)	NR	R	120	R	120	R
Potassium Hydroxide 10% (1, 2, 4, 7, 9)	NR	R	120	R	120	R
Potassium Hydroxide 20% (1, 2, 4, 7, 9)	NR	R	NR	R	120	R
Potassium Hydroxide 25% (1, 2, 4, 7, 9)	NR	R	NR	R	120	R
Potassium Hydroxide 45% (1, 2, 4, 7, 9)	NR	R	NR	R	120	R
Potassium Hydroxide 44%; Acrylic Acid 21% (1, 2, 4, 7, 9	NT	NT	NT	NT	NT	NT
Potassium Hydroxide 50% (1, 2, 4, 7, 9)	NR	R	NR	R	120	R
Potassium Hypochlorite (1, 2, 4, 7, 9)	NT	NT	NT	NT	NT	NT
Potassium Iodide, All	NT	NT	NT	NT	NT	NT
Potassium Nitrate, All	NR	R	120	R	120	R
Potassium Permaganate, All	NR	NR	NR	NR	NR	NR
Potassium Persulfate, All	NR	R	NR	R	NR	R
Potassium Phosphate, Tribasic	NT	NT	NT	NT	NT	NT
Potassium Phosphate 50%	NR	R	120	R	100	R
Potassium Pyrophosphate 60%	NT	NT	NT	NT	NT	NT
Potassium Silicofluoride (1, 2, 4, 7)	NT	NT	NT	NT	NT	NT
Potassium Sulfate, All	NR	R	120	R	120	R
Potassium Sulfite 45%	NR	R	120	R	100	R
Potassium Thiosulfate Solution	NR	R	120	R	100	R
Potassium Titanium Fluoride <5%	NT	NT	NT	NT	NT	NT
Power Steering Fluid	NT	NT	NT	NT	NT	NT
Potato Starch	NT	NT	NT	NT	NT	NT
Propane	NT	NT	NT	NT	NT	NT
Propanediol	NR	R	120	R	100	R
Propionaldehyde	NR	NR	NR	NR	NR	NR
Propionic Acid 50%	NR	R	NR	R	NR	R
Propionic Acid	NR	R	NR	R	NR	R
Propyl Acetate	NT	NT	NT	NT	NT	NT
Propyl Alcohol	NT	NT	NT	NT	NT	NT
Propyl Cellosolve	NT	NT	NT	NT	NT	NT
Propylene Carbonate	NR	R	NR	R	NR	R
Propylene Dichloride	NT	NT	NT	NT	NT	NT
Propylene Glycol	NR	R	120	R	120	R
Propylene Glycol [Dowanol PMA] Monomethyl Ether Ace	NT	NT	NT	NT	NT	NT
Propylene Glycol [Dowanol PMA] Monomethyl Ether Ace	NT	NT	NT	NT	NT	NT
Propylene Oxide	NT	NT	NT	NT	NT	NT
Prune Juice	NT	NT	NT	NT	NT	NT
Pulp, Slurry	NR	R	80	R	80	R
Pulp Mill Blow Down from Digester (5)	NT	NT	NT	NT	NT	NT
Purifloc C-41 Flocculant	NT	NT	NT	NT	NT	NT
PVC Powder	NT	NT	NT	NT	NT	NT
PVC 2% in Sulfuric Acid 5%	NT	NT	NT	NT	NT	NT
PVC Feed Tank, Slurry	NT	NT	NT	NT	NT	NT
PYRANOL 1481	NT	NT	NT	NT	NT	NT

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Polyvinyl Acetate Adhesives	NT	NT	NT	NT
Polyvinyl Acetate Emulsion	NT	NT	NT	NT
Polyvinyl Alcohol, All	NT	NT	NT	NT
Polyvinyl Chloride Latex	NT	NT	NT	NT
Potassium Acetate	NT	NT	NT	NT
Potassium Aluminum Sulfate, All	NT	NT	NT	NT
Potassium Bicarbonate, All	NT	NT	NT	NT
Potassium Bichromate	NR	NR	NT	NT
Potassium Bromide, All	NT	NT	NT	NT
Potassium Carbonate 10% (1, 2, 4, 7)	NT	NT	NT	NT
Potassium Carbonate 25% (1, 2, 4, 7)	NT	NT	NT	NT
Potassium Carbonate 50% (1, 2, 4, 7)	NT	NT	NT	NT
Potassium Chlorate	NT	NT	NT	NT
Potassium Chloride, All	NT	NT	NT	NT
Potassium Chloride 20%	NT	NT	140	R
Potassium Cyanide	NT	NT	NT	NT
Potassium Dichromate, All	NT	NT	NT	NT
Potassium Ferricyanide, All	NT	NT	100	R
Potassium Ferrocyanide, All	NT	NT	NT	NT
Potassium Fluoride (2, 4, 7)	NT	NT	NT	NT
Potassium Gold Cyanide 12%	NT	NT	NT	NT
Potassium Hydroxide 5% (1, 2, 4, 7, 9)	80	R	80	R
Potassium Hydroxide 10% (1, 2, 4, 7, 9)	80	R	80	R
Potassium Hydroxide 20% (1, 2, 4, 7, 9)	80	R	80	R
Potassium Hydroxide 25% (1, 2, 4, 7, 9)	80	R	NT	NT
Potassium Hydroxide 45% (1, 2, 4, 7, 9)	NR	NR	NT	NT
Potassium Hydroxide 44%; Acrylic Acid 21% (1, 2, 4, 7, 9	NT	NT	100	R
Potassium Hydroxide 50% (1, 2, 4, 7, 9)	NR	NR	NR	NR
Potassium Hypochlorite (1, 2, 4, 7, 9)	NR	NR	NT	NT
Potassium Iodide, All	NT	NT	NT	NT
Potassium Nitrate, All	NT	NT	NT	NT
Potassium Permaganate, All	NT	NT	80	R
Potassium Persulfate, All	NT	NT	NT	NT
Potassium Phosphate, Tribasic	NT	NT	NT	NT
Potassium Phosphate 50%	NT	NT	100	R
Potassium Pyrophosphate 60%	NT	NT	NT	NT
Potassium Silicofluoride (1, 2, 4, 7)	NT	NT	NT	NT
Potassium Sulfate, All	NT	NT	NT	R
Potassium Sulfite 45%	NT	NT	100	R
Potassium Thiosulfate Solution	NT	NT	100	R
Potassium Titanium Fluoride <5%	NT	NT	NT	NT
Power Steering Fluid	NR	NR	NT	NT
Potato Starch	NT	NT	NT	NT
Propane	NT	NT	80	R
Propanediol	NT	NT	NT	R
Propionaldehyde	NT	NT	NR	NR
Propionic Acid 50%	NT	NT	NT	NT
Propionic Acid	NT	NT	NT	NT
Propyl Acetate	NT	NT	NT	NT
Propyl Alcohol	NT	NT	NT	NT
Propyl Cellosolve	NT	NT	NR	NR
Propylene Carbonate	NT	NR	NR	NR
Propylene Dichloride	NT	NT	NT	NT
Propylene Glycol	80	R	80	R
Propylene Glycol [Dowanol PMA] Monomethyl Ether Ac	NT	NT	NR	NR
Propylene Glycol [Dowanol PMA] Monomethyl Ether Ac	NT	NT	NR	NR
Propylene Oxide	NR	R	NT	NT
Prune Juice	NT	NT	NT	NT
Pulp, Slurry	NT	NT	120	R
Pulp Mill Blow Down from Digester (5)	NT	NT	NT	NT
Purifloc C-41 Flocculant	NT	NT	NT	NT
PVC Powder	NT	NT	NT	NT
PVC 2% in Sulfuric Acid 5%	NT	NT	NT	NT
PVC Feed Tank, Slurry	NT	NT	NT	NT
PYRANOL 1481	NT	NT	NT	NT

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	Magnalux 304 Vinyl Ester		Sher-Glass FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Polyvinyl Acetate Adhesives	100	R	NT	NT
Polyvinyl Acetate Emulsion	100	R	NT	NT
Polyvinyl Alcohol, All	140	R	NT	NT
Polyvinyl Chloride Latex	100	R	NT	NT
Potassium Acetate	140	R	NT	NT
Potassium Aluminum Sulfate, All	140	R	NT	NT
Potassium Bicarbonate, All	140	R	NT	NT
Potassium Bichromate	140	R	NT	NT
Potassium Bromide, All	140	R	NT	NT
Potassium Carbonate 10% (1, 2, 4, 7)	140	R	NT	NT
Potassium Carbonate 25% (1, 2, 4, 7)	140	R	NT	NT
Potassium Carbonate 50% (1, 2, 4, 7)	140	R	NT	NT
Potassium Chlorate	140	R	NT	NT
Potassium Chloride, All	140	R	NT	NT
Potassium Chloride 20%	140	R	NT	NT
Potassium Cyanide	140	R	NT	NT
Potassium Dichromate, All	140	R	NT	NT
Potassium Ferricyanide, All	140	R	NT	NT
Potassium Ferrocyanide, All	140	R	NT	NT
Potassium Fluoride (2, 4, 7)	140	R	NT	NT
Potassium Gold Cyanide 12%	140	R	NT	NT
Potassium Hydroxide 5% (1, 2, 4, 7, 9)	140	R	NT	NT
Potassium Hydroxide 10% (1, 2, 4, 7, 9)	120	R	NT	NT
Potassium Hydroxide 20% (1, 2, 4, 7, 9)	140	R	NT	NT
Potassium Hydroxide 25% (1, 2, 4, 7, 9)	140	R	NT	NT
Potassium Hydroxide 45% (1, 2, 4, 7, 9)	140	R	NT	NT
Potassium Hydroxide 44%; Acrylic Acid 21% (1, 2, 4, 7, 9	140	R	NT	NT
Potassium Hydroxide 50% (1, 2, 4, 7, 9)	140	R	NT	NT
Potassium Hypochlorite (1, 2, 4, 7, 9)	140	R	NT	NT
Potassium Iodide, All	140	R	NT	NT
Potassium Nitrate, All	140	R	NT	NT
Potassium Permaganate, All	140	R	NT	NT
Potassium Persulfate, All	140	R	NT	NT
Potassium Phosphate, Tribasic	NT	NT	NT	NT
Potassium Phosphate 50%	NT	NT	NT	NT
Potassium Pyrophosphate 60%	100	R	NT	NT
Potassium Silicofluoride (1, 2, 4, 7)	100	R	NT	NT
Potassium Sulfate, All	140	R	NT	NT
Potassium Sulfite 45%	100	R	NT	NT
Potassium Thiosulfate Solution	NR	R	NT	NT
Potassium Titanium Fluoride <5%	NT	NT	NT	NT
Power Steering Fluid	NT	NT	NT	NT
Potato Starch	NT	NT	NT	NT
Propane	140	R	NT	NT
Propanediol	120	R	NT	NT
Propionaldehyde	80	R	NT	NT
Propionic Acid 50%	140	R	NT	NT
Propionic Acid	NR	NR	NT	NT
Propyl Acetate	NR	NR	NT	NT
Propyl Alcohol	80	R	NT	NT
Propyl Cellosolve	NT	NT	NT	NT
Propylene Carbonate	NT	NT	NT	NT
Propylene Dichloride	NT	NT	NT	NT
Propylene Glycol	140	R	NT	NT
Propylene Glycol [Dowanol PMA] Monomethyl Ether Ace	80	R	NT	NT
Propylene Glycol [Dowanol PMA] Monomethyl Ether Ace	NR	NR	NT	NT
Propylene Oxide	NR	NR	NT	NT
Prune Juice	NT	NT	NT	NT
Pulp, Slurry	NT	NT	NT	NT
Pulp Mill Blow Down from Digester (5)	140	R	NT	NT
Purifloc C-41 Flocculant	NT	NT	NT	NT
PVC Powder	NT	NT	NT	NT
PVC 2% in Sulfuric Acid 5%	NT	NT	NT	NT
PVC Feed Tank, Slurry	NT	NT	NT	NT
PYRANOL 1481	NT	NT	NT	NT

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Chemical Environment and Concentration (%)	Cor-Cote VEN FF Immersion	Cor-Cote VEN FF Secondary Containment	Cor-Cote VEN GF Immersion	Cor-Cote VEN GF Secondary Containment	Cor-Cote HCR FF Immersion	Cor-Cote HCR FF Secondary Containment
Pyridine 20%	80	R	80	R	NR	R
Pyridine 100%	NR	R	NR	R	NR	NR
Quaternary Amine Salts	150	R	150	R	NT	NT
Raisin Feedstock Concentrate (SunMaid)	150	R	NR	R	NT	NT
Rayon Spin Bath	120	R	120	R	100	R
Rayon Spin Liquor	120	R	120	R	100	R
Rock Salt	150	R	150	R	140	R
Red Liquor	150	R	150	R	NT	NT
Rosin Size	NT	NT	NT	NT	NT	NT
ROUNDUP Herbicide	100	R	100	R	NT	NT
Rum, 80 Proof	150	R	150	R	100	R
Salicyaldehyde	100	R	100	R	80	R
Salicylic Acid	140	R	140	R	100	R
SC - Solvent	NT	NT	NT	NT	NT	NT
Selenious Acid, All	150	R	150	R	NT	NT
Separan CP-7 Flocculant	NT	NT	NT	NT	NT	NT
SERVAC	NT	NT	NT	NT	NT	NT
Shell, Orthoxylene	NT	NT	NT	NT	NT	NT
Silicon Tetrafluoride w/HFL, Sulfuric (1, 2, 4, 7, 9)	80	R	80	R	NT	NT
Silicon Tetrachloride	120	R	120	R	80	R
Silicone Fluid 2-0408	NT	NT	NT	NT	NT	NT
Silver Nitrate	150	R	150	R	80	R
Silver Plating Solution (1, 2, 4, 7)	150	R	150	R	NT	NT
Skydrol	80	R	80	R	80	R
Soap Solution 10%	NT	NT	NT	NT	NT	NT
Soap Concentrate, Fatty Acid	NT	NT	NT	NT	NT	NT
Soap Concentrate, Oleic Acid	NT	NT	NT	NT	NT	NT
Soda Ash (Sodium Carbonate)	150	R	150	R	NT	NT
Sodium Acetate	150	R	150	R	120	R
Sodium Alkyd Aryl Sulfate, All	150	R	150	R	NT	NT
Sodium Aluminate, All (1, 2, 4, 7)	120	R	120	R	120	R
Sodium Benzoate	150	R	150	R	NT	NT
Sodium Bicarbonate (1, 2, 4, 7)	150	R	150	R	120	R
Sodium Bicarbonate 10% (1, 2, 4, 7)	150	R	150	R	120	R
Sodium Bicarbonate 20% (1, 2, 4, 7)	150	R	150	R	120	R
Sodium Bicarbonate, Saturated (1, 2, 4, 7)	150	R	150	R	120	R
Sodium Bisulfate, All	100	R	100	R	120	R
Sodium Bisulfide	150	R	150	R	NR	R
Sodium Bisulfite 38%	150	R	150	R	120	R
Sodium Bisulfite, Saturated	150	R	150	R	120	R
Sodium Borate, Saturated	150	R	150	R	NT	NT
Sodium Bromate	150	R	150	R	120	R
Sodium Bromate 5%	150	R	150	R	120	R
Sodium Bromide 5%	150	R	150	R	100	R
Sodium Bromide	150	R	150	R	100	R
Sodium Bromide;Sodium Hydroxide	150	R	150	R	100	R
Sodium Bromide Waste	150	R	150	R	NT	NT
Sodium Carbonate 10% (1, 2, 4, 7)	150	R	150	R	120	R
Sodium Carbonate 25% (1, 2, 4, 7)	150	R	150	R	120	R
Sodium Carbonate 30% (1, 2, 4, 7)	150	R	150	R	120	R
Sodium Carbonate 35% (1, 2, 4, 7)	150	R	150	R	120	R
Sodium Carbonate, Saturated (1, 2, 4, 7)	150	R	150	R	120	R
Sodium Carbonate, Slurry (1, 2, 4, 7)	150	R	150	R	120	R
Sodium Chlorate 50%	150	R	150	R	120	R
Sodium Chlorate (solid)	150	R	150	R	120	R
Sodium Chlorate; Sodium Chloride	150	R	150	R	120	R
Sodium Chloride; Sodium Hydrosulfite	80	R	80	R	NT	NT
Sodium Chloride; Sodium Hydroxide	80	R	80	R	NT	NT
Sodium Chloride	150	R	150	R	120	R
Sodium Chloride Solution 10%	150	R	150	R	120	R
Sodium Chlorite pH >6	150	R	150	R	NR	NR
Sodium Chlorite, Saturated	150	R	150	R	NR	NR
Sodium Chromate	150	R	150	R	120	R
Sodium Citrate	120	R	120	R	120	R
Sodium Cyanide 15%	150	R	150	R	120	R

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Chemical Environment and Concentration (%)	Cor-Cote HP		Cor-Cote HP FF		Cor-Cote SC	
	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Pyridine 20%	NR	NR	NR	NR	NR	NR
Pyridine 100%	NR	NR	NR	NR	NR	NR
Quaternary Amine Salts	NT	NT	NT	NT	NT	NT
Raisin Feedstock Concentrate (SunMaid)	NR	R	120	R	100	R
Rayon Spin Bath	NR	R	120	R	100	R
Rayon Spin Liquor	NR	R	120	R	100	R
Rock Salt	NR	R	120	R	120	R
Red Liquor	NT	NT	NT	NT	NT	NT
Rosin Size	NT	NT	NT	NT	NT	NT
ROUNDUP Herbicide	NT	NT	NT	NT	NT	NT
Rum, 80 Proof	NR	R	NR	R	NR	R
Salicyaldehyde	NR	NR	NR	NR	NR	NR
Salicylic Acid	NR	R	NR	R	NR	R
SC - Solvent	NT	NT	NT	NT	NT	NT
Selenious Acid, All	NT	NT	NT	NT	NT	NT
Separan CP-7 Flocculant	NT	NT	NT	NT	NT	NT
SERVAC	NT	NT	NT	NT	NT	NT
Shell, Orthoxylene	NT	NT	NT	NT	NT	NT
Silicon Tetrafluoride w/HFL, Sulfuric (1, 2, 4, 7, 9)	NT	NT	NT	NT	NT	NT
Silicon Tetrachloride	NR	R	NR	R	NR	R
Silicone Fluid 2-0408	NR	R	120	R	100	R
Silver Nitrate	NR	R	NR	R	NR	R
Silver Plating Solution (1, 2, 4, 7)	NT	NT	NT	NT	NT	NT
Skydrol	NR	R	NR	R	NR	R
Soap Solution 10%	NT	NT	NT	NT	NT	NT
Soap Concentrate, Fatty Acid	NT	NT	NT	NT	NT	NT
Soap Concentrate, Oleic Acid	NT	NT	NT	NT	NT	NT
Soda Ash (Sodium Carbonate)	NT	NT	NT	NT	NT	NT
Sodium Acetate	NR	R	120	R	120	R
Sodium Alkyd Aryl Sulfate, All	NT	NT	NT	NT	NT	NT
Sodium Aluminate, All (1, 2, 4, 7)	NR	R	120	R	120	R
Sodium Benzoate	NT	NT	NT	NT	NT	NT
Sodium Bicarbonate (1, 2, 4, 7)	NR	R	120	R	120	R
Sodium Bicarbonate 10% (1, 2, 4, 7)	NR	R	120	R	120	R
Sodium Bicarbonate 20% (1, 2, 4, 7)	NR	R	120	R	120	R
Sodium Bicarbonate, Saturated (1, 2, 4, 7)	NR	R	120	R	120	R
Sodium Bisulfate, All	NR	R	120	R	120	R
Sodium Bisulfide	NR	R	NR	R	NR	R
Sodium Bisulfite 38%	NR	R	NR	R	120	R
Sodium Bisulfite, Saturated	NR	R	120	R	120	R
Sodium Borate, Saturated	NT	NT	NT	NT	NT	NT
Sodium Bromate	NR	R	120	R	120	R
Sodium Bromate 5%	NR	R	100	R	100	R
Sodium Bromide 5%	NR	R	100	R	100	R
Sodium Bromide	NR	R	100	R	120	R
Sodium Bromide;Sodium Hydroxide	NR	R	100	R	120	R
Sodium Bromide Waste	NT	NT	NT	NT	NT	NT
Sodium Carbonate 10% (1, 2, 4, 7)	NR	R	120	R	120	R
Sodium Carbonate 25% (1, 2, 4, 7)	NR	R	120	R	120	R
Sodium Carbonate 30% (1, 2, 4, 7)	NR	R	120	R	120	R
Sodium Carbonate 35% (1, 2, 4, 7)	NR	R	120	R	120	R
Sodium Carbonate, Saturated (1, 2, 4, 7)	NR	R	120	R	120	R
Sodium Carbonate, Slurry (1, 2, 4, 7)	NR	R	120	R	120	R
Sodium Chlorate 50%	NR	R	120	R	NR	R
Sodium Chlorate (solid)	NR	R	120	R	120	R
Sodium Chlorate; Sodium Chloride	NR	R	120	R	120	R
Sodium Chloride; Sodium Hydrosulfite	NT	NT	NT	NT	NT	NT
Sodium Chloride; Sodium Hydroxide	NT	NT	NT	NT	NT	NT
Sodium Chloride	NR	R	120	R	120	R
Sodium Chloride Solution 10%	NR	R	120	R	120	R
Sodium Chlorite pH >6	NR	NR	NR	NR	NR	NR
Sodium Chlorite, Saturated	NR	NR	NR	NR	NR	NR
Sodium Chromate	NR	R	120	R	NR	R
Sodium Citrate	NR	R	NR	R	NR	R
Sodium Cyanide 15%	NR	R	120	R	120	R

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Pyridine 20%	NR	R	NT	NT
Pyridine 100%	NR	R	NT	NT
Quaternary Amine Salts	NT	NT	NT	NT
Raisin Feedstock Concentrate (SunMaid)	NT	NT	100	R
Rayon Spin Bath	NT	NT	NT	NT
Rayon Spin Liquor	NT	NT	NT	NT
Rock Salt	NR	R	100	R
Red Liquor	NT	NT	NT	NT
Rosin Size	NR	R	NT	NT
ROUNDUP Herbicide	NT	NT	100	R
Rum, 80 Proof	NT	NT	NR	NR
Salicyaldehyde	NT	NT	NT	NT
Salicylic Acid	NT	NT	NT	NT
SC - Solvent	NT	NT	NT	NT
Selenious Acid, All	NT	NT	NT	NT
Separan CP-7 Flocculant	NT	NT	NT	NT
SERVAC	NT	NT	NT	NT
Shell, Orthoxylene	NT	NT	80	R
Silicon Tetrafluoride w/HFL, Sulfuric (1, 2, 4, 7, 9)	NT	NT	NT	NT
Silicon Tetrachloride	NT	NT	NT	NT
Silicone Fluid 2-0408	NT	NT	NT	NT
Silver Nitrate	NT	NT	NT	NT
Silver Plating Solution (1, 2, 4, 7)	NT	NT	NT	NT
Skydrol	NR	NR	NT	NT
Soap Solution 10%	NT	NT	NT	NT
Soap Concentrate, Fatty Acid	NT	NT	NT	NT
Soap Concentrate, Oleic Acid	NT	NT	NT	NT
Soda Ash (Sodium Carbonate)	NT	NT	NT	NT
Sodium Acetate	NT	NT	NT	NT
Sodium Alkyd Aryl Sulfate, All	NT	NT	NT	NT
Sodium Aluminate, All (1, 2, 4, 7)	NT	NT	140	R
Sodium Benzoate	NT	NT	NT	NT
Sodium Bicarbonate (1, 2, 4, 7)	NT	NT	NT	NT
Sodium Bicarbonate 10% (1, 2, 4, 7)	NT	NT	NT	NT
Sodium Bicarbonate 20% (1, 2, 4, 7)	NT	NT	NT	NT
Sodium Bicarbonate, Saturated (1, 2, 4, 7)	NT	NT	NT	NT
Sodium Bisulfate, All	NT	NT	NT	NT
Sodium Bisulfide	NT	NT	NT	R
Sodium Bisulfite 38%	NT	NT	NT	NR
Sodium Bisulfite, Saturated	NT	NT	NT	NT
Sodium Borate, Saturated	NT	NT	NT	NT
Sodium Bromate	NT	NT	NT	NT
Sodium Bromate 5%	NT	NT	NT	NT
Sodium Bromide 5%	NT	NT	NT	NT
Sodium Bromide	NT	NT	NT	R
Sodium Bromide;Sodium Hydroxide	NT	NT	100	R
Sodium Bromide Waste	NT	NT	NT	NT
Sodium Carbonate 10% (1, 2, 4, 7)	NT	NT	140	R
Sodium Carbonate 25% (1, 2, 4, 7)	NT	NT	140	R
Sodium Carbonate 30% (1, 2, 4, 7)	NT	NT	140	R
Sodium Carbonate 35% (1, 2, 4, 7)	NT	NT	NT	R
Sodium Carbonate, Saturated (1, 2, 4, 7)	NT	NT	NT	R
Sodium Carbonate, Slurry (1, 2, 4, 7)	NT	NT	140	R
Sodium Chlorate 50%	NT	NT	NR	R
Sodium Chlorate (solid)	NT	NT	140	R
Sodium Chlorate; Sodium Chloride	NT	NT	NT	NT
Sodium Chloride; Sodium Hydrosulfite	NT	NT	NT	NT
Sodium Chloride; Sodium Hydroxide	NT	NT	NR	NR
Sodium Chloride	80	R	NT	NT
Sodium Chloride Solution 10%	120	R	NT	NT
Sodium Chlorite pH >6	NT	NT	100	R
Sodium Chlorite, Saturated	NT	NT	NR	R
Sodium Chromate	NT	NT	80	R
Sodium Citrate	NT	NT	NT	NT
Sodium Cyanide 15%	NT	NT	NT	NT

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Chemical Environment and Concentration (%)	Magnalux 304 Vinyl Ester		Sher-Glass FF	
	Immersion	Secondary Containment	Immersion	Secondary Containment
Pyridine 20%	80	R	NT	NT
Pyridine 100%	NR	NR	NT	NT
Quaternary Amine Salts	140	R	NT	NT
Raisin Feedstock Concentrate (SunMaid)	NR	R	NT	NT
Rayon Spin Bath	140	R	NT	NT
Rayon Spin Liquor	140	R	NT	NT
Rock Salt	140	R	NT	NT
Red Liquor	140	R	NT	NT
Rosin Size	NT	NT	NT	NT
ROUNDUP Herbicide	100	R	NT	NT
Rum, 80 Proof	140	R	NT	NT
Salicyaldehyde	NR	NR	NT	NT
Salicylic Acid	120	R	NT	NT
SC - Solvent	NT	NT	NT	NT
Selenious Acid, All	140	R	NT	NT
Separan CP-7 Flocculant	NT	NT	NT	NT
SERVAC	NT	NT	NT	NT
Shell, Orthoxylene	NT	NT	NT	NT
Silicon Tetrafluoride w/HFL, Sulfuric (1, 2, 4, 7, 9)	80	R	NT	NT
Silicon Tetrachloride	140	R	NT	NT
Silicone Fluid 2-0408	NT	NT	NT	NT
Silver Nitrate	140	R	NT	NT
Silver Plating Solution (1, 2, 4, 7)	140	R	NT	NT
Skydrol	80	R	NT	NT
Soap Solution 10%	NT	NT	NT	NT
Soap Concentrate, Fatty Acid	NT	NT	NT	NT
Soap Concentrate, Oleic Acid	140	R	NT	NT
Soda Ash (Sodium Carbonate)	140	R	NT	NT
Sodium Acetate	140	R	NT	NT
Sodium Alkyd Aryl Sulfate, All	140	R	NT	NT
Sodium Aluminate, All (1, 2, 4, 7)	140	R	NT	NT
Sodium Benzoate	140	R	NT	NT
Sodium Bicarbonate (1, 2, 4, 7)	140	R	NT	NT
Sodium Bicarbonate 10% (1, 2, 4, 7)	100	R	NT	NT
Sodium Bicarbonate 20% (1, 2, 4, 7)	100	R	NT	NT
Sodium Bicarbonate, Saturated (1, 2, 4, 7)	100	R	NT	NT
Sodium Bisulfate, All	140	R	NT	NT
Sodium Bisulfide	140	R	NT	NT
Sodium Bisulfite 38%	140	R	NT	NT
Sodium Bisulfite, Saturated	140	R	NT	NT
Sodium Borate, Saturated	140	R	NT	NT
Sodium Bromate	140	R	NT	NT
Sodium Bromate 5%	140	R	NT	NT
Sodium Bromide 5%	140	R	NT	NT
Sodium Bromide	140	R	NT	NT
Sodium Bromide;Sodium Hydroxide	140	R	NT	NT
Sodium Bromide Waste	140	R	NT	NT
Sodium Carbonate 10% (1, 2, 4, 7)	140	R	NT	NT
Sodium Carbonate 25% (1, 2, 4, 7)	140	R	NT	NT
Sodium Carbonate 30% (1, 2, 4, 7)	140	R	NT	NT
Sodium Carbonate 35% (1, 2, 4, 7)	140	R	NT	NT
Sodium Carbonate, Saturated (1, 2, 4, 7)	140	R	NT	NT
Sodium Carbonate, Slurry (1, 2, 4, 7)	140	R	NT	NT
Sodium Chlorate 50%	140	R	NT	NT
Sodium Chlorate (solid)	140	R	NT	NT
Sodium Chlorate; Sodium Chloride	140	R	NT	NT
Sodium Chloride; Sodium Hydrosulfite	140	R	NT	NT
Sodium Chloride; Sodium Hydroxide	140	R	NT	NT
Sodium Chloride	140	R	NT	NT
Sodium Chloride Solution 10%	140	R	NT	NT
Sodium Chlorite pH >6	120	R	NT	NT
Sodium Chlorite, Saturated	120	R	NT	NT
Sodium Chromate	140	R	NT	NT
Sodium Citrate	140	R	NT	NT
Sodium Cyanide 15%	140	R	NT	NT

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	Cor-Cote VEN FF		Cor-Cote VEN GF		Cor-Cote HCR FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Sodium Cyanide	150	R	150	R	NT	NT
Sodium Dichromate, All	150	R	150	R	100	R
Sodium Diphosphate, All	150	R	150	R	NT	NT
Sodium Dodecylbenzenesulf	150	R	150	R	NT	NT
Sodium Ferricyanide, All	150	R	150	R	NT	NT
Sodium Ferrocyanide, All	150	R	150	R	NT	NT
Sodium Formate	100	R	100	R	NT	NT
Sodium Fluoride, All (1, 2, 4, 7)	150	R	150	R	120	R
Sodium Fluorosilicate, All (1, 2, 4, 7)	120	R	120	R	NT	NT
Sodium Gluconate	150	R	150	R	NT	NT
Sodium Glycolate	150	R	150	R	NT	NT
Sodium Hexametaphosph, All	150	R	150	R	NT	NT
Sodium Hydrosulfide (see Sodium Bisulfide)	NT	NT	NT	NT	NT	NT
Sodium Hydrosulfite 25%	150	R	150	R	NT	NT
Sodium Hydrosulfite 40%	100	R	100	R	NT	NT
Sodium Hydroxide 2% (1, 2, 4, 7, 9)	100	R	100	R	100	R
Sodium Hydroxide 5% (1, 2, 4, 7, 9)	100	R	100	R	100	R
Sodium Hydroxide 10% (1, 2, 4, 7, 9)	100	R	100	R	100	R
Sodium Hydroxide 20% (1, 2, 4, 7, 9)	100	R	100	R	100	R
Sodium Hydroxide 25% (1, 2, 4, 7, 9)	100	R	100	R	100	R
Sodium Hydroxide 50% (1, 2, 4, 7, 9)	100	R	100	R	100	R
Sodium Hypochlorite 3% (1, 2, 4, 7, 8)	120	R	120	R	NR	R
Sodium Hypochlorite 12.5% (1, 2, 4, 7, 8, 9)	120	R	120	R	NR	R
Sodium Hypochlorite 15% (1, 2, 4, 7, 8)	120	R	120	R	NR	R
Sodium Hypochlorite 20% (1, 2, 4, 7, 8)	NR	R	NR	R	NR	R
Sodium Lauryl Sulfate 20%	140	R	140	R	120	R
Sodium Metabisulfite, All	150	R	150	R	NT	NT
Sodium Monophosphate, All	150	R	150	R	NT	NT
Sodium N-Methyldithiocarbamate	150	R	150	R	NT	NT
Sodium Nitrite, All	150	R	150	R	NT	NT
Sodium Nitrite, 41-47%	NT	NT	NT	NT	NT	R
Sodium Oxalate, Saturated	150	R	150	R	120	R
Sodium Permaganate, 41-44%	NT	NT	NT	NT	NR	NR
Sodium Persulfate	150	R	150	R	NT	NT
Sodium Peroxide - Peroxide Bleach	150	R	150	R	120	R
Sodium (Acid) Phosphate	150	R	150	R	120	R
Sodium Phosphate 10%	150	R	150	R	120	R
Sodium Phosphate 50%	150	R	150	R	120	R
Sodium Phosphate (Tri), All	100	R	100	R	120	R
Sodium Polyacrylate 25%	150	R	150	R	NT	NT
Sodium Polymethacrylate	120	R	120	R	100	R
Sodium Propionate	NT	NT	NT	NT	NT	NT
Sodium Silicate, All	150	R	150	R	NT	NT
Sodium Silicofluoride	NT	NT	NT	NT	NT	NT
Sodium Sulfate, All	150	R	150	R	120	R
Sodium Sulfide, All	150	R	150	R	120	R
Sodium Sulfite, All	150	R	150	R	120	R
Sodium Sulfide, Saturated	150	R	150	R	120	R
Sodium Tartrate, All	150	R	150	R	120	R
Sodium Tetraborate, Saturated	150	R	150	R	NT	NT
Sodium Thiocyanate 57%	150	R	150	R	NT	NT
Sodium Thiosulfate (Hypo)	150	R	150	R	120	R
Sodium Tripolyphosphate, Saturated	150	R	150	R	NT	NT
Sodium Vinyl Sulfonate	NT	NT	NT	NT	NT	NT
Sodium Xylene Sulfonate, All	150	R	150	R	NT	NT
Soil Fumigant	NT	NT	NT	NT	NT	NT
Solder Plate	NT	NT	NT	NT	NT	NT
Solu-Smokte	NT	NT	NT	NT	NT	NT
Solvent Extraction Solutions	150	R	150	R	NT	NT
Solvent SC #100	NT	NT	NT	NT	NT	NT
Sorbitol Solutions, All	150	R	150	R	NT	NT
Soy Sauce	NT	NT	NT	NT	NT	NT
Soya Oil	150	R	150	R	100	R
Soybean Oil	150	R	150	R	100	R
Soybean Roots	150	R	150	R	100	R

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	Cor-Cote HP		Cor-Cote HP FF		Cor-Cote SC	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Sodium Cyanide	NT	NT	NT	NT	NT	NT
Sodium Dichromate, All	NR	R	120	R	100	R
Sodium Diphosphate, All	NT	NT	NT	NT	NT	NT
Sodium Dodecylbenzenesulf	NT	NT	NT	NT	NT	NT
Sodium Ferricyanide, All	NT	NT	NT	NT	NT	NT
Sodium Ferrocyanide, All	NT	NT	NT	NT	NT	NT
Sodium Formate	NT	NT	NT	NT	NT	NT
Sodium Fluoride, All (1, 2, 4, 7)	NR	R	120	R	100	R
Sodium Fluorosilicate, All (1, 2, 4, 7)	NT	NT	NT	NT	NT	NT
Sodium Gluconate	NT	NT	NT	NT	NT	NT
Sodium Glycolate	NT	NT	NT	NT	NT	NT
Sodium Hexametaphosph, All	NT	NT	NT	NT	NT	NT
Sodium Hydrosulfide (see Sodium Bisulfide)	NT	NT	NT	NT	NT	NT
Sodium Hydrosulfite 25%	NT	NT	NT	NT	NT	NT
Sodium Hydrosulfite 40%	NT	NT	NT	NT	NT	NT
Sodium Hydroxide 2% (1, 2, 4, 7, 9)	NR	R	100	R	100	R
Sodium Hydroxide 5% (1, 2, 4, 7, 9)	NR	R	100	R	100	R
Sodium Hydroxide 10% (1, 2, 4, 7, 9)	NR	R	100	R	100	R
Sodium Hydroxide 20% (1, 2, 4, 7, 9)	NR	R	100	R	100	R
Sodium Hydroxide 25% (1, 2, 4, 7, 9)	NR	R	100	R	100	R
Sodium Hydroxide 50% (1, 2, 4, 7, 9)	NR	R	100	R	100	R
Sodium Hypochlorite 3% (1, 2, 4, 7, 8)	NR	R	100	R	NR	R
Sodium Hypochlorite 12.5% (1, 2, 4, 7, 8, 9)	NR	NR	NR	NR	NR	NR
Sodium Hypochlorite 15% (1, 2, 4, 7, 8)	NR	NR	NR	NR	NR	NR
Sodium Hypochlorite 20% (1, 2, 4, 7, 8)	NR	NR	NR	NR	NR	NR
Sodium Lauryl Sulfate 20%	NR	R	120	R	120	R
Sodium Metabisulfite, All	NT	NT	NT	NT	NT	NT
Sodium Monophosphate, All	NT	NT	NT	NT	NT	NT
Sodium N-Methyldithiocarbamate	NR	R	120	R	100	R
Sodium Nitrite, All	NR	R	120	R	100	R
Sodium Nitrite, 41-47%	NT	R	NT	R	NT	NT
Sodium Oxalate, Saturated	NR	R	120	R	120	R
Sodium Permaganate, 41-44%	NR	NR	NR	NR	NT	NT
Sodium Persulfate	NT	NT	NT	NT	NT	NT
Sodium Peroxide - Peroxide Bleach	NR	R	NR	R	NR	R
Sodium (Acid) Phosphate	NR	R	120	R	120	R
Sodium Phosphate 10%	NR	R	120	R	100	R
Sodium Phosphate 50%	NR	R	120	R	100	R
Sodium Phosphate (Tri), All	NR	R	120	R	100	R
Sodium Polyacrylate 25%	NT	NT	NT	NT	NT	NT
Sodium Polymethacrylate	NR	R	120	R	100	R
Sodium Propionate	NT	NT	NT	NT	NT	NT
Sodium Silicate, All	NT	NT	NT	NT	NT	NT
Sodium Silicofluoride	NT	NT	NT	NT	NT	NT
Sodium Sulfate, All	NR	R	120	R	120	R
Sodium Sulfide, All	NR	R	120	R	120	R
Sodium Sulfite, All	NR	R	120	R	120	R
Sodium Sulfide, Saturated	NR	R	NR	R	NR	R
Sodium Tartrate, All	NR	R	120	R	120	R
Sodium Tetraborate, Saturated	NT	NT	NT	NT	NT	NT
Sodium Thiocyanate 57%	NR	R	80	R	80	R
Sodium Thiosulfate (Hypo)	NR	R	120	R	120	R
Sodium Tripolyphosphate, Saturated	NT	NT	NT	NT	NT	NT
Sodium Vinyl Sulfonate	NR	R	120	R	100	R
Sodium Xylene Sulfonate, All	NT	NT	NT	NT	NT	NT
Soil Fumigant	NR	R	120	R	120	R
Solder Plate	NT	NT	NT	NT	NT	NT
Solu-Smokte	NR	R	120	R	100	R
Solvent Extraction Solutions	NT	NT	NT	NT	NT	NT
Solvent SC #100	NT	NT	NT	NT	NT	NT
Sorbitol Solutions, All	NT	NT	NT	NT	NT	NT
Soy Sauce	NR	R	120	R	120	R
Soya Oil	NR	R	120	R	100	R
Soybean Oil	NR	R	120	R	100	R
Soybean Roots	NR	R	120	R	100	R

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Sodium Cyanide	NT	NT	NT	NT
Sodium Dichromate, All	NT	NT	NT	NT
Sodium Diphosphate, All	NT	NT	NT	NT
Sodium Dodecylbenzenesulf	NT	NT	NT	NT
Sodium Ferricyanide, All	NT	NT	NT	NT
Sodium Ferrocyanide, All	NT	NT	NT	NT
Sodium Formate	NT	NT	NT	NT
Sodium Fluoride, All (1, 2, 4, 7)	NT	NT	100	R
Sodium Fluorosilicate, All (1, 2, 4, 7)	NT	NT	NT	NT
Sodium Gluconate	NT	NT	NT	NT
Sodium Glycolate	NT	NT	NT	NT
Sodium Hexametaphosph, All	NT	NT	NT	NT
Sodium Hydrosulfide (see Sodium Bisulfide)	NT	NT	NR	NR
Sodium Hydrosulfite 25%	NT	NT	NT	R
Sodium Hydrosulfite 40%	NT	NT	NT	NT
Sodium Hydroxide 2% (1, 2, 4, 7, 9)	80	R	140	R
Sodium Hydroxide 5% (1, 2, 4, 7, 9)	80	R	140	R
Sodium Hydroxide 10% (1, 2, 4, 7, 9)	80	R	140	R
Sodium Hydroxide 20% (1, 2, 4, 7, 9)	NR	R	100	R
Sodium Hydroxide 25% (1, 2, 4, 7, 9)	NR	R	100	R
Sodium Hydroxide 50% (1, 2, 4, 7, 9)	NR	R	100	R
Sodium Hypochlorite 3% (1, 2, 4, 7, 8)	80	R	100	R
Sodium Hypochlorite 12.5% (1, 2, 4, 7, 8, 9)	NR	NR	80	NT
Sodium Hypochlorite 15% (1, 2, 4, 7, 8)	NR	NR	NR	R
Sodium Hypochlorite 20% (1, 2, 4, 7, 8)	NR	NR	NT	NT
Sodium Lauryl Sulfate 20%	NT	NT	NR	NR
Sodium Metabisulfite, All	NT	NT	NT	NT
Sodium Monophosphate, All	NT	NT	NT	NT
Sodium N-Methyldithiocarbamate	NT	NT	NT	NT
Sodium Nitrite, All	NR	R	NT	NT
Sodium Nitrite, 41-47%	NR	R	140	R
Sodium Oxalate, Saturated	NT	NT	NT	NT
Sodium Permanganate, 41-44%	NR	NR	NT	NT
Sodium Persulfate	NT	NT	NT	NT
Sodium Peroxide - Peroxide Bleach	NT	NT	NT	NT
Sodium (Acid) Phosphate	NT	NT	NT	NT
Sodium Phosphate 10%	NT	NT	NT	NT
Sodium Phosphate 50%	NT	NT	NT	NT
Sodium Phosphate (Tri), All	NT	NT	NT	NT
Sodium Polyacrylate 25%	NT	NT	NT	NT
Sodium Polymethacrylate	NT	NT	NT	NT
Sodium Propionate	NT	NT	NT	NT
Sodium Silicate, All	NT	NT	NT	NT
Sodium Silicofluoride	NT	NT	NT	NT
Sodium Sulfate, All	NT	NT	NT	R
Sodium Sulfide, All	NT	NT	100	R
Sodium Sulfite, All	NT	NT	100	R
Sodium Sulfide, Saturated	NT	NT	NT	NT
Sodium Tartrate, All	NT	NT	NT	NT
Sodium Tetraborate, Saturated	NT	NT	NT	NT
Sodium Thiocyanate 57%	NT	NT	100	R
Sodium Thiosulfate (Hypo)	NT	NT	100	R
Sodium Tripolyphosphate, Saturated	NT	NT	NT	NT
Sodium Vinyl Sulfonate	NT	NT	100	R
Sodium Xylene Sulfonate, All	NT	NT	NT	NT
Soil Fumigant	NT	NT	100	R
Solder Plate	NT	NT	NT	NT
Solu-Smokle	NT	NT	100	R
Solvent Extraction Solutions	NT	NT	NT	NT
Solvent SC #100	NT	NT	NT	NT
Sorbitol Solutions, All	NT	NT	NT	NT
Soy Sauce	NT	NT	140	R
Soya Oil	NT	NT	80	R
Soybean Oil	NT	NT	80	R
Soybean Roots	NT	NT	NT	NT

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	Magnalux 304 Vinyl Ester		Sher-Glass FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Sodium Cyanide	140	R	NT	NT
Sodium Dichromate, All	140	R	NT	NT
Sodium Diphosphate, All	140	R	NT	NT
Sodium Dodecylbenzenesulf	140	R	NT	NT
Sodium Ferricyanide, All	140	R	NT	NT
Sodium Ferrocyanide, All	140	R	NT	NT
Sodium Formate	100	R	NT	NT
Sodium Fluoride, All (1, 2, 4, 7)	140	R	NT	NT
Sodium Fluorosilicate, All (1, 2, 4, 7)	140	R	NT	NT
Sodium Gluconate	140	R	NT	NT
Sodium Glycolate	140	R	NT	NT
Sodium Hexametaphosph, All	140	R	NT	NT
Sodium Hydrosulfide (see Sodium Bisulfide)	NT	NT	NT	NT
Sodium Hydrosulfite 25%	100	R	NT	NT
Sodium Hydrosulfite 40%	NR	R	NT	NT
Sodium Hydroxide 2% (1, 2, 4, 7, 9)	140	R	NT	NT
Sodium Hydroxide 5% (1, 2, 4, 7, 9)	140	R	NT	NT
Sodium Hydroxide 10% (1, 2, 4, 7, 9)	140	R	NT	NT
Sodium Hydroxide 20% (1, 2, 4, 7, 9)	140	R	NT	NT
Sodium Hydroxide 25% (1, 2, 4, 7, 9)	140	R	NT	NT
Sodium Hydroxide 50% (1, 2, 4, 7, 9)	140	R	NT	NT
Sodium Hypochlorite 3% (1, 2, 4, 7, 8)	NR	R	NT	NT
Sodium Hypochlorite 12.5% (1, 2, 4, 7, 8, 9)	NR	R	NT	NT
Sodium Hypochlorite 15% (1, 2, 4, 7, 8)	NR	R	NT	NT
Sodium Hypochlorite 20% (1, 2, 4, 7, 8)	NR	R	NT	NT
Sodium Lauryl Sulfate 20%	120	R	NT	NT
Sodium Metabisulfite, All	140	R	NT	NT
Sodium Monophosphate, All	140	R	NT	NT
Sodium N-Methyldithiocarbamate	140	R	NT	NT
Sodium Nitrite, All	140	R	NT	NT
Sodium Nitrite, 41-47%	NT	NT	NT	NT
Sodium Oxalate, Saturated	140	R	NT	NT
Sodium Permanganate, 41-44%	NT	NT	NT	NT
Sodium Persulfate	140	R	NT	NT
Sodium Peroxide - Peroxide Bleach	140	R	NT	NT
Sodium (Acid) Phosphate	140	R	NT	NT
Sodium Phosphate 10%	140	R	NT	NT
Sodium Phosphate 50%	140	R	NT	NT
Sodium Phosphate (Tri), All	100	R	NT	NT
Sodium Polyacrylate 25%	140	R	NT	NT
Sodium Polymethacrylate	120	R	NT	NT
Sodium Propionate	NT	NT	NT	NT
Sodium Silicate, All	140	R	NT	NT
Sodium Silicofluoride	NT	NT	NT	NT
Sodium Sulfate, All	140	R	NT	NT
Sodium Sulfide, All	140	R	NT	NT
Sodium Sulfite, All	140	R	NT	NT
Sodium Sulfide, Saturated	140	R	NT	NT
Sodium Tartrate, All	140	R	NT	NT
Sodium Tetraborate, Saturated	140	R	NT	NT
Sodium Thiocyanate 57%	140	R	NT	NT
Sodium Thiosulfate (Hypo)	140	R	NT	NT
Sodium Tripolyphosphate, Saturated	140	R	NT	NT
Sodium Vinyl Sulfonate	140	NT	NT	NT
Sodium Xylene Sulfonate, All	140	R	NT	NT
Soil Fumigant	140	NT	NT	NT
Solder Plate	140	NT	NT	NT
Solu-Smokto	140	NT	NT	NT
Solvent Extraction Solutions	140	R	NT	NT
Solvent SC #100	140	NT	NT	NT
Sorbitol Solutions, All	140	R	NT	NT
Soy Sauce	140	R	NT	NT
Soya Oil	140	R	NT	NT
Soybean Oil	140	R	NT	NT
Soybean Roots	140	R	NT	NT

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	Cor-Cote VEN FF		Cor-Cote VEN GF		Cor-Cote HCR FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
SR-10	NT	NT	NT	NT	NT	NT
Stannic Chloride, All	150	R	150	R	80	R
Stannous Chloride, All	150	R	150	R	80	R
Starch	150	R	150	R	120	R
Steam	NR	R	NR	R	NT	NT
Stearic Acid, All	150	R	150	R	80	R
Stearic Acid 50% in Ethyl Alcohol	140	R	140	R	NT	NT
Steep Water	150	R	150	R	NT	NT
STEROX AJ-85	NT	NT	NT	NT	NT	NT
Stock-Brown, Filtrate	NT	NT	NT	NT	NT	NT
Stock, Hardwood	NT	NT	NT	NT	NT	NT
Strawberry Preserve	NT	NT	NT	NT	NT	NT
Strontium Nitrate, 41-47%	NT	NT	NT	NT	NT	R
Styrene	120	R	120	R	80	R
Styrene Acrylic Emulsion	100	R	100	R	NT	NT
SU 2000	NT	NT	NT	NT	NT	NT
Succinonitrile, Aqueous	80	R	80	R	NT	NT
Sugar 10%	150	R	150	R	140	R
Sugar Beet, Liquor	150	R	150	R	140	R
Sugar Cane, Liquor	150	R	150	R	140	R
Sugar, Saturated	150	R	150	R	140	R
Sulfamic Acid 10%	150	R	150	R	80	R
Sulfamic Acid 25%	150	R	150	R	80	R
Sulfanilic Acid, All	150	R	150	R	NT	NT
Sulfated Ethoxylated Alcohol	120	R	120	R	NT	NT
Sulfide Caustic	NT	NT	NT	NT	NT	NT
Sulfite/Sulfate Black Liquors (4, 9)	150	R	150	R	120	R
Sulfolane 60%	NT	NT	NT	NT	NT	NT
Sulfonated Detergents	150	R	150	R	NT	NT
Sulfonated Styrene Maleic Anhydride (Aqueous)	NT	NT	NT	NT	NT	NT
Sulfonic Acid	NR	NR	NR	NR	NR	NR
Sulfurous Acid	100	R	100	R	NT	NT
Sulfur, Molten, Dry	150	R	150	R	NT	NT
Sulfur, Precipitated	NT	NT	NT	NT	NT	NT
Sulfur, Sublimed	NT	NT	NT	NT	NT	NT
Sulfur Dioxide 1% Solution	150	R	150	R	120	R
Sulfur Dioxide, Dry Gas	150	R	150	R	120	R
Sulfur Dioxide, Wet Gas	150	R	150	R	120	R
Sulfur Trioxide, Dry	150	R	150	R	100	R
Sulfur Trioxide, Wet (see Sulfuric Acid)	NT	NT	NT	NT	NT	NT
Sulfur, Wettable, Fungicide	150	R	150	R	NT	NT
Sulfuric Acid 5%	150	R	150	R	120	R
Sulfuric Acid 10%	150	R	150	R	120	R
Sulfuric Acid 25%	150	R	150	R	120	R
Sulfuric Acid 50%	150	R	150	R	120	R
Sulfuric Acid 70%	120	R	120	R	100	R
Sulfuric Acid 75% (12)	100	R	100	R	100	R
Sulfuric Acid 80% (9, 12)	100	R	100	R	100	R
Sulfuric Acid 93% (12)	NR	R	NR	R	100	R
Sulfuric Acid 98% (12)	NR	R	NR	R	NR	R
Sulfuric Acid/Chlorine Solution	NR	NR	NR	NR	NT	NT
Sulfuric Acid - Fuming (see Oleum)	NR	NR	NR	NR	NR	NR
Sulfuric Acid:Ferrous 10, Saturated	NT	NT	NT	NT	NT	NT
Sulfuric Acid; Heptane; Water; Oil	NT	NT	NT	NT	NT	NT
Sulfuric Acid:Phosphorous 20%	150	R	150	R	NT	NT
Sulfurous Acid	80	R	80	R	NT	NT
Sulfurous Acid 10%	120	R	120	R	NT	NT
Swift Glue	NT	NT	NT	NT	NT	NT
Tall Oil	150	R	150	R	120	R
Tall Oil Fatty Acid	150	R	150	R	120	R
Tall Oil Reactor	150	R	150	R	120	R
Tall Oil Storage, All	150	R	150	R	120	R
Tallow/Sulfuric Acid	NT	NT	NT	NT	NT	NT
Tannic Acid, All	150	R	150	R	NR	R
Tanning Extract	150	R	150	R	NR	R

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Chemical Environment and Concentration (%)	Cor-Cote HP Immersion	Cor-Cote HP Secondary Containment	Cor-Cote HP FF Immersion	Cor-Cote HP FF Secondary Containment	Cor-Cote SC Immersion	Cor-Cote SC Secondary Containment
SR-10	NT	NT	NT	NT	NT	NT
Stannic Chloride, All	NR	NR	NR	NR	NR	R
Stannous Chloride, All	NR	NR	NR	NR	NR	R
Starch	NR	NR	120	NR	100	NR
Steam	NT	NT	NT	NT	NT	NT
Stearic Acid, All	NR	R	80	R	80	R
Stearic Acid 50% In Ethyl Alcohol	NT	NT	NT	NT	NT	NT
Steep Water	NR	R	120	R	100	R
STEROX AJ-85	NT	NT	NT	NT	NT	NT
Stock-Brown, Filtrate	NT	NT	NT	NT	NT	NT
Stock, Hardwood	NT	NT	NT	NT	NT	NT
Strawberry Preserve	NT	NT	NT	NT	NT	NT
Strontium Nitrate, 41-47%	NT	R	NT	R	NT	NT
Styrene	NR	R	NR	R	NR	R
Styrene Acrylic Emulsion	NT	NT	NT	NT	NT	NT
SU 2000	NT	NT	NT	NT	NT	NT
Succinonitrile, Aqueous	NT	NT	NT	NT	NT	NT
Sugar 10%	NR	R	120	R	120	R
Sugar Beet, Liquor	NR	R	120	R	120	R
Sugar Cane, Liquor	NR	R	120	R	120	R
Sugar, Saturated	NR	R	120	R	120	R
Sulfamic Acid 10%	NR	R	NR	R	NR	R
Sulfamic Acid 25%	NR	R	NR	R	NR	R
Sulfanilic Acid, All	NT	NT	NT	NT	NT	NT
Sulfated Ethoxylated Alcohol	NT	NT	NT	NT	NT	NT
Sulfide Caustic	NT	NT	NT	NT	NT	NT
Sulfite/Sulfate Black Liquors (4, 9)	NR	R	120	R	120	R
Sulfolane 60%	NR	R	120	R	100	R
Sulfonated Detergents	NT	NT	NT	NT	NT	NT
Sulfonated Styrene Maleic Anhydride (Aqueous)	NT	NT	NT	NT	NT	NT
Sulfonic Acid	NR	NR	NR	NR	NR	NR
Sulfurous Acid	NT	NT	NT	NT	NT	NT
Sulfur, Molten, Dry	NT	NT	NT	NT	NT	NT
Sulfur, Precipitated	NR	R	NR	R	NR	R
Sulfur, Sublimed	NT	NT	NT	NT	NT	NT
Sulfur Dioxide 1% Solution	NR	R	120	R	120	R
Sulfur Dioxide, Dry Gas	NR	R	120	R	120	R
Sulfur Dioxide, Wet Gas	NR	R	120	R	120	R
Sulfur Trioxide, Dry	NR	R	100	R	100	R
Sulfur Trioxide, Wet (see Sulfuric Acid)	NT	NT	NT	NT	NT	NT
Sulfur, Wettable, Fungicide	NT	NT	NT	NT	NT	NT
Sulfuric Acid 5%	NR	R	80	R	80	R
Sulfuric Acid 10%	NR	R	80	R	80	R
Sulfuric Acid 25%	NR	R	NR	R	NR	R
Sulfuric Acid 50%	NR	NR	NR	NR	NR	R
Sulfuric Acid 70%	NR	NR	NR	NR	NR	NR
Sulfuric Acid 75% (12)	NR	NR	NR	NR	NR	NR
Sulfuric Acid 80% (9, 12)	NR	NR	NR	NR	NR	NR
Sulfuric Acid 93% (12)	NR	NR	NR	NR	NR	NR
Sulfuric Acid 98% (12)	NR	NR	NR	NR	NR	NR
Sulfuric Acid/Chlorine Solution	NT	NT	NT	NT	NT	NT
Sulfuric Acid - Fuming (see Oleum)	NR	NR	NR	NR	NR	NR
Sulfuric Acid:Ferrous 10, Saturated	NT	NT	NT	NT	NT	NT
Sulfuric Acid; Heptane; Water; Oil	NT	NT	NT	NT	NT	NT
Sulfuric Acid:Phosphorous 20%	NT	NT	NT	NT	NT	NT
Sulfurous Acid	NT	NT	NT	NT	NT	NT
Sulfurous Acid 10%	NT	NT	NT	NT	NT	NT
Swift Glue	NT	NT	NT	NT	NT	NT
Tall Oil	NR	R	120	R	100	R
Tall Oil Fatty Acid	NR	R	120	R	100	R
Tall Oil Reactor	NR	R	120	R	100	R
Tall Oil Storage, All	NR	R	120	R	100	R
Tallow/Sulfuric Acid	NT	NT	NT	NT	NT	NT
Tannic Acid, All	NR	R	NR	R	NR	R
Tanning Extract	NR	R	NR	R	NR	R

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
SR-10	NT	NT	NT	NT
Stannic Chloride, All	NT	NT	NT	NT
Stannous Chloride, All	NT	NT	NT	NT
Starch	NT	NT	NT	NT
Steam	NT	NT	NT	NT
Stearic Acid, All	NT	R	NT	NT
Stearic Acid 50% in Ethyl Alcohol	NT	NT	NT	NT
Steep Water	NT	NT	140	R
STEROX AJ-85	NT	NT	NT	NT
Stock-Brown, Filtrate	NT	NT	NT	NT
Stock, Hardwood	NT	NT	NT	NT
Strawberry Preserve	NT	NT	NT	NT
Strontium Nitrate, 41-47%	NT	R	NT	NT
Styrene	NT	NT	NR	NR
Styrene Acrylic Emulsion	NT	NT	NT	NT
SU 2000	NT	NT	80	R
Succinonitrile, Aqueous	NT	NT	NT	NT
Sugar 10%	120	R	NT	NT
Sugar Beet, Liquor	120	R	80	R
Sugar Cane, Liquor	120	R	80	R
Sugar, Saturated	120	R	80	R
Sulfamic Acid 10%	NT	NT	NR	NR
Sulfamic Acid 25%	NT	NT	NR	NR
Sulfanilic Acid, All	NT	NT	NT	NT
Sulfated Ethoxylated Alcohol	NT	NT	NT	NT
Sulfide Caustic	NT	NT	NR	R
Sulfite/Sulfate Black Liquors (4, 9)	NT	NT	NT	NT
Sulfolane 60%	NT	NT	100	R
Sulfonated Detergents	NT	NT	NT	NT
Sulfonated Styrene Maleic Anhydride (Aqueous)	NT	NT	NT	NT
Sulfonic Acid	NT	NT	NT	NT
Sulfurous Acid	NT	NT	NT	NT
Sulfur, Molten, Dry	NT	NT	NT	NT
Sulfur, Precipitated	NT	NT	NT	NT
Sulfur, Sublimed	NT	NT	NT	NT
Sulfur Dioxide 1% Solution	NT	NT	NT	NT
Sulfur Dioxide, Dry Gas	NT	NT	NT	NT
Sulfur Dioxide, Wet Gas	NT	NT	NT	NT
Sulfur Trioxide, Dry	NT	NT	NT	NT
Sulfur Trioxide, Wet (see Sulfuric Acid)	NT	NT	NT	NT
Sulfur, Wettable, Fungicide	NT	NT	NT	NT
Sulfuric Acid 5%	80	R	NT	R
Sulfuric Acid 10%	80	R	NT	R
Sulfuric Acid 25%	NR	R	NR	NR
Sulfuric Acid 50%	NR	R	NR	NR
Sulfuric Acid 70%	NR	NR	NR	NR
Sulfuric Acid 75% (12)	NR	NR	NR	NR
Sulfuric Acid 80% (9, 12)	NR	NR	NR	NR
Sulfuric Acid 93% (12)	NR	NR	NR	NR
Sulfuric Acid 98% (12)	NR	NR	NR	NR
Sulfuric Acid/Chlorine Solution	NR	NR	NR	NR
Sulfuric Acid - Fuming (see Oleum)	NR	NR	NR	NR
Sulfuric Acid:Ferrous 10, Saturated	NR	NR	NT	NT
Sulfuric Acid; Heptane; Water, Oil	NR	NR	NT	NT
Sulfuric Acid:Phosphorous 20%	NR	NR	NT	NT
Sulfurous Acid	NR	NR	NT	NT
Sulfurous Acid 10%	NR	NR	NT	NT
Swift Glue	NT	NT	NT	NT
Tall Oil	NT	NT	100	R
Tall Oil Fatty Acid	NT	NT	NT	NT
Tall Oil Reactor	NT	NT	NT	NT
Tall Oil Storage, All	NT	NT	NT	NT
Tallow/Sulfuric Acid	NT	NT	NT	NT
Tannic Acid, All	NT	NT	NT	NT
Tanning Extract	NT	NT	NT	NT

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Chemical Environment and Concentration (%)	Magnalux 304 Vinyl Ester Immersion	Magnalux 304 Vinyl Ester Secondary Containment	Shar-Glass FF Immersion	Shar-Glass FF Secondary Containment
SR-10	NT	NT	NT	NT
Stannic Chloride, All	140	R	NT	NT
Stannous Chloride, All	140	R	NT	NT
Starch	140	R	NT	NT
Steam	NR	NR	NT	NT
Stearic Acid, All	140	R	NT	NT
Stearic Acid 50% In Ethyl Alcohol	140	R	NT	NT
Steep Water	140	R	NT	NT
STEROX AJ-85	NT	NT	NT	NT
Stock-Brown, Filtrate	NT	NT	NT	NT
Stock, Hardwood	NT	NT	NT	NT
Strawberry Preserve	NT	NT	NT	NT
Strontium Nitrate, 41-47%	NT	NT	NT	NT
Styrene	NR	NR	NT	NT
Styrene Acrylic Emulsion	100	R	NT	NT
SU 2000	NT	NT	NT	NT
Succinonitrile, Aqueous	NR	R	NT	NT
Sugar 10%	140	R	NT	NT
Sugar Beet, Liquor	140	R	NT	NT
Sugar Cane, Liquor	140	R	NT	NT
Sugar, Saturated	140	R	NT	NT
Sulfamic Acid 10%	140	R	NT	NT
Sulfamic Acid 25%	140	R	NT	NT
Sulfanilic Acid, All	140	R	NT	NT
Sulfated Ethoxylated Alcohol	100	R	NT	NT
Sulfide Caustic	NT	NT	NT	NT
Sulfite/Sulfate Black Liquors (4, 9)	140	R	NT	NT
Sulfolane 60%	NT	NT	NT	NT
Sulfonated Detergents	140	R	NT	NT
Sulfonated Styrene Maleic Anhydride (Aqueous)	NT	NT	NT	NT
Sulfonic Acid	NR	NR	NT	NT
Sulfurous Acid	100	R	NT	NT
Sulfur, Molten, Dry	140	R	NT	NT
Sulfur, Precipitated	NT	NT	NT	NT
Sulfur, Sublimed	NT	NT	NT	NT
Sulfur Dioxide 1% Solution	140	R	NT	NT
Sulfur Dioxide, Dry Gas	140	R	NT	NT
Sulfur Dioxide, Wet Gas	140	R	NT	NT
Sulfur Trioxide, Dry	140	R	NT	NT
Sulfur Trioxide, Wet (see Sulfuric Acid)	NT	NT	NT	NT
Sulfur, Wettable, Fungicide	140	R	NT	NT
Sulfuric Acid 5%	140	R	NT	NT
Sulfuric Acid 10%	140	R	NT	NT
Sulfuric Acid 25%	140	R	NT	NT
Sulfuric Acid 50%	140	R	NT	NT
Sulfuric Acid 70%	100	R	NT	NT
Sulfuric Acid 75% (12)	100	R	NT	NT
Sulfuric Acid 80% (9, 12)	100	R	NT	NT
Sulfuric Acid 93% (12)	NR	NR	NT	NT
Sulfuric Acid 98% (12)	NR	NR	NT	NT
Sulfuric Acid/Chlorine Solution	NR	NR	NT	NT
Sulfuric Acid - Fuming (see Oleum)	NR	NR	NT	NT
Sulfuric Acid:Ferrous 10, Saturated	NT	NT	NT	NT
Sulfuric Acid; Heptane; Water; Oil	NT	NT	NT	NT
Sulfuric Acid:Phosphorous 20%	140	R	NT	NT
Sulfurous Acid	80	R	NT	NT
Sulfurous Acid 10%	140	R	NT	NT
Swift Glue	NT	NT	NT	NT
Tall Oil	140	R	NT	NT
Tall Oil Fatty Acid	140	R	NT	NT
Tall Oil Reactor	140	R	NT	NT
Tall Oil Storage, All	140	R	NT	NT
Tallow/Sulfuric Acid	140	R	NT	NT
Tannic Acid, All	140	R	NT	NT
Tanning Extract	140	R	NT	NT

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Chemical Environment and Concentration (%)	Cor-Cote VEN FF Immersion	Cor-Cote VEN FF Secondary Containment	Cor-Cote VEN GF Immersion	Cor-Cote VEN GF Secondary Containment	Cor-Cote HCR FF Immersion	Cor-Cote HCR FF Secondary Containment
Tartaric Acid, All	150	R	150	R	NR	R
TELVAR	NT	NT	NT	NT	NT	NT
Tert Butyl Peroxybenzoate	80	R	80	R	NT	NT
Tetrachloroethane	120	R	120	R	NR	R
Tetrachloroethylene (Perchlorethylene)	120	R	120	R	100	R
Tetrachloropentane	NT	NT	NT	NT	NT	NT
Tetrachloropyridine	80	R	80	R	NT	NT
Tetraethylenepentamine	NT	NT	NT	NT	NT	NT
Tetraethyl Lead	NT	NT	NT	NT	NT	NT
Tetrahydrofuran	NR	R	NR	R	NR	NR
Tetrahydrofurfuryl Alcohol	100	R	100	R	NR	NR
Tetrapotassium Pyrophos 60%	120	R	120	R	NT	NT
Tetrasodium Salt of EDTA (Ethylenediaminetetraacetic A	120	R	120	R	NT	NT
Texanol	100	R	100	R	NT	NT
Textone (see Sodium Chlorite)	150	R	150	R	NT	NT
Thermal Oxidizer (see Flue Gas, Wet)	NT	NT	NT	NT	NT	NT
Therminol	NT	NT	NT	NT	NT	NT
Thioglycolic Acid (see Mercaptoacetic)	NT	NT	NT	NT	NT	NT
Thiosulfate	NT	NT	NT	NT	NT	NT
Thionyl Chloride	NR	R	NR	R	NR	NR
Tin Fluoborate Plating Bath (1, 2, 4, 7)	150	R	150	R	NR	R
Titanium Dioxide, Dry	150	R	150	R	140	R
Titanium Dioxide, Slurry	150	R	150	R	140	R
Tobias Acid	150	R	150	R	140	R
Toluene, Toluol (Methyl Benzene, Methyl Benzol)	120	R	120	R	NR	R
Toluene Sulfonic Acid, All	150	R	150	R	NR	R
2,4-Toluene Diisocyanate	NT	NT	NT	NT	NT	NT
Toluenesulfonic Acid 70%; Methanol 30%	NT	NT	NT	NT	NT	NT
p-Toluenesulfonic Acid	NT	NT	NT	NT	NT	NT
Toluidine	NR	NR	NR	NR	NR	NR
Tomato Juice	NT	NT	NT	NT	NT	NT
Tomato Paste	NT	NT	NT	NT	NT	NT
Tornado(R) Herbicide	NT	NT	NT	NT	NT	NT
Torpedo(R) Insecticide	NT	NT	NT	NT	NT	NT
Transformer Oils (Esters)	150	R	150	R	NT	NT
Transformer Oils (Silicone and Mineral)	150	R	150	R	NT	NT
Transmission Fluid	NT	NT	NT	NT	NT	NT
Tributyl Phosphate	120	R	120	R	NT	NT
Trichloroacetic Acid (see Chloroacetic Acid)	NT	NT	NT	NT	NT	NT
Trichlorobenzene (1, 2, 4-)	NR	R	NR	R	NR	R
Trichloroethane	100	R	100	R	NR	R
Trichloroethylene	NR	R	NR	R	NR	R
Trichloromonofluoromethane (see Freon 11)	NT	NT	NT	NT	NT	NT
Tricresyl Phosphate	140	R	140	R	100	R
Tridecyl Alcohol	NT	NT	NT	NT	NT	NT
Tri (Dimethylaminomethyl) Phenol	NT	NT	NT	NT	NT	NT
Triethanolamine	120	R	120	R	NT	NT
TRI-ETHONE	NT	NT	NT	NT	NT	NT
Triethylamine, All	100	R	100	R	NR	NR
Triethylenetetramine	100	R	100	R	NR	NR
TriethyleneGlycol (see Ethylene Glycol)	NT	NT	NT	NT	NT	NT
Trimethyl Benzene	80	R	80	R	NT	NT
Trimethyl Phosphite	100	R	100	R	NR	R
Trimethyl Phosphate	NT	NT	NT	NT	NT	NT
Triphenyl Phosphite	NT	NT	NT	NT	NT	NT
Tripotassium Phosphate	NT	NT	NT	NT	NT	NT
Tripropylene Glycol (see Ethylene Glycol)	NT	NT	NT	NT	NT	NT
Trisodium Phosphate	150	R	150	R	120	R
Trisodium Phosphate, Saturated	150	R	150	R	120	R
Triton X-100 Wetting Agent	150	R	150	R	NT	NT
Turbine Oil	NT	NT	NT	NT	NT	NT
Turbo 15	NT	NT	NT	NT	NT	NT
Turbo 27	NT	NT	NT	NT	NT	NT
Turbo 33	NT	NT	NT	NT	NT	NT
Turbo 41	NT	NT	NT	NT	NT	NT

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Chemical Environment and Concentration (%)	Cor-Cote HP Immersion	Cor-Cote HP Secondary Containment	Cor-Cote HP FF Immersion	Cor-Cote HP FF Secondary Containment	Cor-Cote SC Immersion	Cor-Cote SC Secondary Containment
Tartaric Acid, All	NR	R	NR	R	NR	R
TELVAR	NT	NT	NT	NT	NT	NT
Tert Butyl Peroxybenzoate	NT	NT	NT	NT	NT	NT
Tetrachloroethane	NR	NR	NR	NR	NR	NR
Tetrachloroethylene (Perchlorethylene)	NR	R	NR	R	NR	R
Tetrachloropentane	NT	NT	NT	NT	NT	NT
Tetrachloropyridine	NT	NT	NT	NT	NT	NT
Tetraethylenepentamine	NR	R	NR	R	NR	R
Tetraethyl Lead	NT	NT	NT	NT	NT	NT
Tetrahydrofuran	NR	NR	NR	NR	NR	NR
Tetrahydrofurfuryl Alcohol	NR	NR	NR	NR	NR	NR
Tetrapotassium Pyrophos 60%	NT	NT	NT	NT	NT	NT
Tetrasodium Salt of EDTA (Ethylenediaminetetraacetic A	NT	NT	NT	NT	NT	NT
Texanol	NT	NT	NT	NT	NT	NT
Textone (see Sodium Chlorite)	NT	NT	NT	NT	NT	NT
Thermal Oxidizer (see Flue Gas, Wet)	NT	NT	NT	NT	NT	NT
Therminol	NT	R	NT	R	NT	R
Thioglycolic Acid (see Mercaptoacetic)	NR	NR	NR	NR	NR	NR
Thiosulfate	NT	NT	NT	NT	NT	NT
Thionyl Chloride	NR	NR	NR	NR	NR	NR
Tin Fluoborate Plating Bath (1, 2, 4, 7)	NR	R	NR	R	NR	R
Titanium Dioxide, Dry	NR	R	120	R	100	R
Titanium Dioxide, Slurry	NR	R	120	R	100	R
Tobias Acid	NR	R	NR	R	NR	R
Toluene, Toluol (Methyl Benzene, Methyl Benzol)	NR	NR	NR	NR	NR	NR
Toluene Sulfonic Acid, All	NR	NR	NR	NR	NR	NR
2,4-Toluene Diisocyanate	NT	NT	NT	NT	NT	NT
Toluenesulfonic Acid 70%; Methanol 30%	NT	NT	NT	NT	NT	NT
p-Toluenesulfonic Acid	NR	R	NR	R	NR	R
Toluidine	NR	NR	NR	NR	NR	NR
Tomato Juice	NT	NT	NT	NT	NT	NT
Tomato Paste	NR	R	120	R	100	R
Tornado(R) Herbicide	NR	R	120	R	100	R
Torpedo(R) Insecticide	NR	R	120	R	100	R
Transformer Oils (Esters)	NT	NT	NT	NT	NT	NT
Transformer Oils (Silicone and Mineral)	NT	NT	NT	NT	NT	NT
Transmission Fluid	NT	NT	NT	NT	NT	NT
Tributyl Phosphate	NT	NT	NT	NT	NT	NT
Trichloroacetic Acid (see Chloroacetic Acid)	NT	NT	NT	NT	NT	NT
Trichlorobenzene (1, 2, 4-)	NR	R	NR	R	NR	R
Trichloroethane	NR	NR	NR	NR	NR	NR
Trichloroethylene	NR	NR	NR	NR	NR	NR
Trichloromonofluoromethane (see Freon 11)	NT	NT	NT	NT	NT	NT
Tricresyl Phosphate	NR	R	NR	R	NR	R
Tridecyl Alcohol	NT	NT	NT	NT	NT	NT
Tri (Dimethylaminomethyl) Phenol	NT	NT	NT	NT	NT	NT
Triethanolamine	NT	NT	NT	NT	NT	NT
TRI-ETHONE	NT	NT	NT	NT	NT	NT
Triethylamine, All	NR	NR	NR	NR	NR	NR
Triethylenetetramine	NR	NR	NR	NR	NR	NR
TriethyleneGlycol (see Ethylene Glycol)	NR	R	NR	R	NR	R
Trimethyl Benzene	NT	NT	NT	NT	NT	NT
Trimethyl Phosphite	NR	R	NR	R	NR	R
Trimethyl Phosphate	NR	NR	NR	NR	NR	NR
Triphenyl Phosphite	NT	NT	NT	NT	NT	NT
Tripotassium Phosphate	NT	NT	NT	NT	NT	NT
Tripropylene Glycol (see Ethylene Glycol)	NR	R	120	R	100	R
Trisodium Phosphate	NR	R	120	R	120	R
Trisodium Phosphate, Saturated	NR	R	120	R	120	R
Triton X-100 Wetting Agent	NT	NT	NT	NT	NT	NT
Turbine Oil	NT	NT	NT	NT	NT	NT
Turbo 15	NT	NT	NT	NT	NT	NT
Turbo 27	NT	NT	NT	NT	NT	NT
Turbo 33	NT	NT	NT	NT	NT	NT
Turbo 41	NT	NT	NT	NT	NT	NT

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Tartaric Acid, All	NT	NT	NT	NT
TELVAR	NT	NT	NT	NT
Tert Butyl Peroxybenzoate	NT	NT	NT	NT
Tetrachloroethane	NT	NT	NT	NT
Tetrachloroethylene (Perchlorethylene)	NT	NT	NR	R
Tetrachloropentane	NT	NT	NT	NT
Tetrachloropyridine	NT	NT	NT	NT
Tetraethylenepentamine	NT	NT	NR	NR
Tetraethyl Lead	NT	NT	NT	NT
Tetrahydrofuran	NT	NT	NT	NT
Tetrahydrofurfuryl Alcohol	NT	NT	NT	NT
Tetrapotassium Pyrophos 60%	NT	NT	NT	NT
Tetrasodium Salt of EDTA (Ethylenediaminetetraacetic A	NT	NT	NT	NT
Texanol	NT	NT	NT	NT
Textone (see Sodium Chlorite)	NT	NT	NT	NT
Thermal Oxidizer (see Flue Gas, Wet)	NT	NT	NT	NT
Therminol	NT	NT	120	R
Thioglycolic Acid (see Mercaptoacetic)	NT	NT	NR	NR
Thiosulfate	NT	NT	NT	NT
Thionyl Chloride	NT	NT	NT	NT
Tin Fluoborate Plating Bath (1, 2, 4, 7)	NT	NT	NT	NT
Titanium Dioxide, Dry	250	R	100	R
Titanium Dioxide, Slurry	100	R	100	R
Tobias Acid	NT	NT	NT	NT
Toluene, Toluol (Methyl Benzene, Methyl Benzol)	NR	NR	80	R
Toluene Sulfonic Acid, All	NT	NT	NT	NT
2,4-Toluene Diisocyanate	NT	NT	NT	NT
Toluenesulfonic Acid 70%; Methanol 30%	NT	NT	NT	NT
p-Toluenesulfonic Acid	NT	NT	100	R
Toluidine	NT	NT	NT	NT
Tomato Juice	NT	NT	NT	NT
Tomato Paste	NT	NT	100	R
Tornado(R) Herbicide	NT	NT	NT	NT
Torpedo(R) Insecticide	NT	NT	100	R
Transformer Oils (Esters)	NT	NT	NT	NT
Transformer Oils (Silicone and Mineral)	NT	NT	NT	NT
Transmission Fluid	NT	NT	NT	NT
Tributyl Phosphate	NT	NT	NT	NT
Trichloroacetic Acid (see Chloroacetic Acid)	NT	NT	NT	NT
Trichlorobenzene [1, 2, 4-]	NT	NT	NT	NT
Trichloroethane	NT	NR	NT	NT
Trichloroethylene	NT	NT	NR	NR
Trichloromonofluoromethane (see Freon 11)	NT	NT	NT	NT
Tricresyl Phosphate	NT	NT	NT	NT
Tridecyl Alcohol	NT	NT	NT	NT
Tri (Dimethylaminomethyl) Phronol	NT	NT	100	R
Triethanolamine	NT	NT	100	R
TRI-ETHONE	NT	NT	NT	NT
Triethylamine, All	NT	NT	NT	NT
Triethylenetetramine	NT	NT	NT	NT
TriethyleneGlycol (see Ethylene Glycol)	NT	NT	NT	NT
Trimethyl Benzene	NT	NT	NT	NT
Trimethyl Phosphite	NT	NT	NT	NT
Trimethyl Phosphate	NT	NT	NT	NT
Triphenyl Phosphite	NT	NT	NT	NT
Tripotassium Phosphate	NT	NT	NT	NT
Tripropylene Glycol (see Ethylene Glycol)	NT	NT	NT	R
Trisodium Phosphate	NT	R	NR	NR
Trisodium Phosphate, Saturated	NT	R	NT	NT
Triton X-100 Wetting Agent	NT	NT	NT	NT
Turbine Oil	NT	NT	NT	NT
Turbo 15	NT	NT	NT	NT
Turbo 27	NT	NT	NR	R
Turbo 33	NT	NT	NR	R
Turbo 41	NT	NT	NR	R

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	Magnalux 304 Vinyl Ester		Shor-Glass FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Tartaric Acid, All	140	R	NT	NT
TELVAR	NT	NT	NT	NT
Tert Butyl Peroxybenzoate	NR	R	NT	NT
Tetrachloroethane	100	R	NT	NT
Tetrachloroethylene (Perchlorethylene)	100	R	NT	NT
Tetrachloropentane	NT	NT	NT	NT
Tetrachloropyridine	NR	R	NT	NT
Tetraethylenepentamine	NT	NT	NT	NT
Tetraethyl Lead	NT	NT	NT	NT
Tetrahydrofuran	NR	NR	NT	NT
Tetrahydrofurfuryl Alcohol	100	R	NT	NT
Tetrapotassium Pyrophos 60%	100	R	NT	NT
Tetrasodium Salt of EDTA (Ethylenediaminetetraacetic A	150	R	NT	NT
Texanol	NR	R	NT	NT
Textone (see Sodium Chlorite)	140	R	NT	NT
Thermal Oxidizer (see Flue Gas, Wet)	NT	NT	NT	NT
Therminol	NT	NT	NT	NT
Thioglycolic Acid (see Mercaptoacetic)	NT	NT	NT	NT
Thiosulfate	NT	NT	NT	NT
Thionyl Chloride	NR	NR	NT	NT
Tin Fluoborate Plating Bath (1, 2, 4, 7)	140	R	NT	NT
Titanium Dioxide, Dry	140	R	NT	NT
Titanium Dioxide, Slurry	140	R	NT	NT
Tobias Acid	140	R	NT	NT
Toluene, Toluol (Methyl Benzene, Methyl Benzol)	80	R	NT	NT
Toluene Sulfonic Acid, All	140	R	NT	NT
2,4-Toluene Diisocyanate	NT	NT	NT	NT
Toluenesulfonic Acid 70%; Methanol 30%	NT	NT	NT	NT
p-Toluenesulfonic Acid	NT	NT	NT	NT
Toluidine	NR	NR	NT	NT
Tomato Juice	140	R	NT	NT
Tomato Paste	140	R	NT	NT
Tornado(R) Herbicide	140	R	NT	NT
Torpedo(R) Insecticide	140	R	NT	NT
Transformer Oils (Esters)	140	R	NT	NT
Transformer Oils (Silicone and Mineral)	140	R	NT	NT
Transmission Fluid	NT	NT	NT	NT
Tributyl Phosphate	140	R	NT	NT
Trichloroacetic Acid (see Chloroacetic Acid)	NT	NT	NT	NT
Trichlorobenzene (1, 2, 4-)	NR	NR	NT	NT
Trichloroethane	80	R	NT	NT
Trichloroethylene	NR	NR	NT	NT
Trichloromonofluoromethane (see Freon 11)	NT	NT	NT	NT
Tricresyl Phosphate	140	R	NT	NT
Tridecyl Alcohol	NT	NT	NT	NT
Tri (Dimethylaminomethyl) Phenol	NT	NT	NT	NT
Triethanolamine	140	R	NT	NT
TRI-ETHONE	NT	NT	NT	NT
Triethylamine, All	100	R	NT	NT
Triethylenetetramine	NR	NR	NT	NT
TriethyleneGlycol (see Ethylene Glycol)	NT	NT	NT	NT
Trimethyl Benzene	NR	NR	NT	NT
Trimethyl Phosphite	100	R	NT	NT
Trimethyl Phosphate	NT	NT	NT	NT
Triphenyl Phosphite	NT	NT	NT	NT
Tripotassium Phosphate	NT	NT	NT	NT
Tripropylene Glycol (see Ethylene Glycol)	NT	NT	NT	NT
Trisodium Phosphate	140	R	NT	NT
Trisodium Phosphate, Saturated	140	R	NT	NT
Triton X-100 Wetting Agent	140	R	NT	NT
Turbine Oil	NT	NT	NT	NT
Turbo 15	NT	NT	NT	NT
Turbo 27	NT	NT	NT	NT
Turbo 33	NT	NT	NT	NT
Turbo 41	NT	NT	NT	NT

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	Cor-Cote VEN FF		Cor-Cote VEN GF		Cor-Cote HCR FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Turpentine	150	R	150	R	100	R
Tween Surfactant (see Ethylene Glycol)	NT	NT	NT	NT	NT	NT
Tychem Resin Emulsion	NT	NT	NT	NT	NT	NT
Tydex 12 Flocculant	NT	NT	NT	NT	NT	NT
Ultrawet Surfactant (see Sodium Dodecylbenzenesulfon	NT	NT	NT	NT	NT	NT
UCON Quenchants	NT	NT	NT	NT	NT	NT
Uran Fertilizer Urea	150	R	150	R	NT	NT
Uranium Extraction (see Kerosene)	NT	NT	NT	NT	NT	NT
Urea (Dry)	150	R	150	R	120	R
Urea 33%	150	R	150	R	120	R
Urea 50%	150	R	150	R	120	R
Urea Ammonium Nitrate	150	R	150	R	120	R
Urea Formaldehyde Resin	120	R	120	R	NT	NT
Urea:Ammonium:Nitrate 35:44:20	150	R	150	R	NT	NT
Urea Solutions	150	R	150	R	120	R
Uric Acid Solution	150	R	150	R	120	R
Urine (see Urea)	NT	NT	NT	NT	NT	NT
Valeric Acid 5%	NR	R	NR	R	NT	NT
Vegetable Fat	NT	NT	NT	NT	NT	NT
Vegetable Juice	NT	NT	NT	NT	NT	NT
Vegetable Oil	NT	NT	NT	NT	100	R
Vegetable Shortening	NT	NT	NT	NT	NT	NT
VERSENE 100	100	R	100	R	NT	NT
Versene Chelating Agents	100	R	100	R	NT	NT
Vetran 650	120	R	120	R	NT	NT
Vidden D Fumigant (see Dichloropropane)	NT	NT	NT	NT	NT	NT
Vinegar (See Acetic Acid, 10-80%)	150	R	NR	R	NR	R
Vinyl Acetate 20%	80	R	80	R	NT	NT
Vinyl Acetate Ethylene Copolymer	100	R	100	R	NT	NT
Vinyl Acetate 100%	NR	R	NR	R	NT	NT
Vinyl Chloride	NR	R	NR	R	NR	NR
Vinyultoluene	80	R	80	R	NT	NT
Vitamin D Solution	NT	NT	NT	NT	NT	NT
VM&P Naphtha	NT	NT	NT	NT	NT	NT
Vodka, 190 Proof (96% Ethanol)	100	R	100	R	100	R
Voranol P-400 Polyol (see Ethylene Glycol)	150	R	150	R	120	R
Waste Sulfide Liquid	NT	NT	NT	NT	NT	NT
Wastewater / Sewage	150	R	150	R	120	R
Waste, Organic	150	R	150	R	120	R
Water, Condensate Return	150	R	150	R	120	R
Water, Deionized (9)	150	R	150	R	120	R
Water, Demineralized (9)	150	R	150	R	120	R
Water, Distilled (9)	150	R	150	R	120	R
Water, Fresh (9)	150	R	150	R	120	R
Water, Salt	NT	NT	NT	NT	NT	NT
Water, Steam Condensate (9)	150	R	150	R	120	R
Water, Sea	150	R	150	R	120	R
Water, Tap Hard (9)	150	R	150	R	140	R
Water, Tap Soft (9)	150	R	150	R	140	R
Whiskey	150	R	150	R	100	R
White Liquor (Pulp Mill) (1, 2, 4, 7, 9)	100	R	100	R	120	R
White Liquor, Clear or Amber	NT	NT	NT	NT	NT	NT
Wine, 13% Alcohol	150	R	150	R	100	R
Worchestershire Sauce	NT	NT	NT	NT	NT	NT
Xylene (Xylol)	120	R	120	R	100	R
Zinc Chloride	150	R	150	R	NT	NT
Zinc Chloride 70%	150	R	150	R	NT	NT
Zinc Electrolyte	NT	NT	NT	NT	NT	NT
Zinc Nitrate, All	150	R	150	R	NT	NT
Zinc Plating - Acid Fluoborate (1, 2, 4, 7)	150	R	150	R	NR	NR
Zinc Plating - Acid Sulfate	150	R	150	R	120	R
Zinc Plating - Cyanide (1, 2, 4, 7, 9)	100	R	100	R	120	R
Zinc Orthophosphate (see Polyphosphate)	NT	NT	NT	NT	NT	NT
Zinc Phosphate 15%	150	R	150	R	NT	NT
Zinc Sulfate, All	150	R	150	R	NT	NT

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	Cor-Cote HP		Cor-Cote HP FF		Cor-Cote SC	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Turpentine	NR	R	120	R	100	R
Tween Surfactant (see Ethylene Glycol)	NT	NT	NT	NT	NT	NT
Tychem Resin Emulsion	NR	R	120	R	100	R
Tydex 12 Flocculant	NT	NT	NT	NT	NT	NT
Ultrawet Surfactant (see Sodium Dodecylbenzenesulfon	NT	NT	NT	NT	NT	NT
UCON Quenchants	NR	R	NR	R	NR	R
Uran Fertilizer Urea	NT	NT	NT	NT	NT	NT
Uranium Extraction (see Kerosene)	NT	NT	NT	NT	NT	NT
Urea (Dry)	NR	R	120	R	120	R
Urea 33%	NR	R	120	R	120	R
Urea 50%	NR	R	120	R	120	R
Urea Ammonium Nitrate	NR	R	120	R	120	R
Urea Formaldehyde Resin	NT	NT	NT	NT	NT	NT
Urea:Ammonium:Nitrate 35:44:20	NT	NT	NT	NT	NT	NT
Urea Solutions	NR	R	120	R	120	R
Uric Acid Solution	NR	R	120	R	120	R
Urine (see Urea)	NT	NT	NT	NT	NT	NT
Valeric Acid 5%	NR	NR	NR	NR	NR	NR
Vegetable Fat	NR	R	120	R	100	R
Vegetable Juice	NT	NT	NT	NT	NT	NT
Vegetable Oil	NT	NT	NT	NT	NT	NT
Vegetable Shortening	NT	NT	NT	NT	NT	NT
VERSENE 100	NT	NT	NT	NT	NT	NT
Versene Chelating Agents	NT	NT	NT	NT	NT	NT
Vetran 650	NT	NT	NT	NT	NT	NT
Vidden D Fumigant (see Dichloropropane)	NT	NT	NT	NT	NT	NT
Vinegar (See Acetic Acid, 10-80%)	NR	R	NR	R	NR	R
Vinyl Acetate 20%	NT	NT	NT	NT	NT	NT
Vinyl Acetate Ethylene Copolymer	NR	R	120	R	100	R
Vinyl Acetate 100%	NR	NR	NR	NR	NR	NR
Vinyl Chloride	NR	NR	NR	NR	NR	NR
Vinyultoluene	NT	NT	NT	NT	NT	NT
Vitamin D Solution	NT	NT	NT	NT	NT	NT
VM&P Naphtha	NT	NT	NT	NT	NR	NR
Vodka, 190 Proof (95% Ethanol)	NR	R	NR	R	NR	R
Voranol P-400 Polyol (see Ethylene Glycol)	NR	R	120	R	120	R
Waste Sulfide Liquid	NT	NT	NT	NT	NT	NT
Wastewater / Sewage	NR	R	120	R	120	R
Waste, Organic	NR	R	120	R	120	R
Water, Condensate Return	NR	R	120	R	120	R
Water, Deionized (9)	NR	R	120	R	120	R
Water, Demineralized (9)	NR	R	120	R	120	R
Water, Distilled (9)	NR	R	120	R	120	R
Water, Fresh (9)	NR	R	120	R	120	R
Water, Salt	NT	NT	NT	NT	NT	NT
Water, Steam Condensate (9)	NR	R	120	R	120	R
Water, Sea	NR	R	120	R	120	R
Water, Tap Hard (9)	NR	R	120	R	120	R
Water, Tap Soft (9)	NR	R	120	R	120	R
Whiskey	NR	R	NR	R	NR	R
White Liquor (Pulp Mill) (1, 2, 4, 7, 9)	NR	R	120	R	120	R
White Liquor, Clear or Amber	NT	NT	NT	NT	NT	NT
Wine, 13% Alcohol	NR	R	NR	R	NR	R
Worchestershire Sauce	NT	NT	NT	NT	NT	NT
Xylene (Xylol)	NR	R	NR	R	NR	R
Zinc Chloride	NT	NT	NT	NT	NT	NT
Zinc Chloride 70%	NT	NT	NT	NT	NT	NT
Zinc Electrolyte	NT	NT	NT	NT	NT	NT
Zinc Nitrate, All	NT	NT	NT	NT	NT	NT
Zinc Plating - Acid Fluoborate (1, 2, 4, 7)	NR	R	NR	R	NR	R
Zinc Plating - Acid Sulfate	NR	R	120	R	120	R
Zinc Plating - Cyanide (1, 2, 4, 7, 9)	NR	R	120	R	120	R
Zinc Orthophosphate (see Polyphosphate)	NT	NT	NT	NT	NT	NT
Zinc Phosphate 15%	NT	NT	NT	NT	NT	NT
Zinc Sulfate, All	NT	NT	NT	NT	NT	NT

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Turpentine	NT	NT	NT	NT
Tween Surfactant (see Ethylene Glycol)	NT	NT	NT	NT
Tychem Resin Emulsion	NT	NT	100	R
Tydex 12 Flocculant	NT	NT	NT	NT
Ultrawet Surfactant (see Sodium Dodecylbenzenesulfon	NT	NT	NT	NT
UCON Quenchants	NT	NT	NT	NT
Uran Fertilizer Urea	NT	NT	NT	NT
Uranium Extraction (see Kerosene)	NT	NT	NT	NT
Urea (Dry)	NT	NT	NT	NT
Urea 33%	NT	NT	NT	R
Urea 50%	NT	NT	NT	R
Urea Ammonium Nitrate	NT	NT	NT	R
Urea Formaldehyde Resin	NT	NT	NT	NT
Urea:Ammonium:Nitrate 35:44:20	NT	NT	NT	NT
Urea Solutions	NT	NT	NT	NT
Uric Acid Solution	NT	NT	NT	NT
Urine (see Urea)	NT	NT	NT	NT
Valeric Acid 5%	NT	NT	NR	NR
Vegetable Fat	NT	NT	140	R
Vegetable Juice	NT	NT	NT	NT
Vegetable Oil	NT	NT	NT	NT
Vegetable Shortening	NT	NT	NT	NT
VERSENE 100	NT	NT	NT	NT
Versene Chelating Agents	NT	NT	NT	NT
Vetran 650	NT	NT	NT	NT
Vidden D Fumigant (see Dichloropropane)	NT	NT	NT	NT
Vinegar (See Acetic Acid, 10-80%)	NR	R	NT	NT
Vinyl Acetate 20%	NT	NT	NT	NT
Vinyl Acetate Ethylene Copolymer	NT	NT	100	R
Vinyl Acetate 100%	NT	NT	NR	NR
Vinyl Chloride	NT	NT	NT	NT
Vinyultoluene	NT	NT	NT	NT
Vitamin D Solution	NT	NT	NT	NT
VM&P Naphtha	NR	NR	80	R
Vodka, 190 Proof (95% Ethanol)	NR	NR	NR	NR
Voranol P-400 Polyol (see Ethylene Glycol)	80	R	NT	R
Waste Sulfide Liquid	NT	NT	NT	NT
Wastewater / Sewage	100	R	80	R
Waste, Organic	NT	NT	NT	NT
Water, Condensate Return	80	R	NT	NT
Water, Deionized (9)	80	R	80	R
Water, Demineralized (9)	80	R	80	R
Water, Distilled (9)	80	R	80	R
Water, Fresh (9)	80	R	80	R
Water, Salt	80	R	80	R
Water, Steam Condensate (9)	80	R	NT	NT
Water, Sea	80	R	80	R
Water, Tap Hard (9)	80	R	80	R
Water, Tap Soft (9)	80	R	80	R
Whiskey	NR	NR	NT	NT
White Liquor (Pulp Mill) (1, 2, 4, 7, 9)	NT	NT	NT	NT.
White Liquor, Clear or Amber	NT	NT	NT	NT
Wine, 13% Alcohol	NR	NR	NT	NT
Worchestershire Sauce	NT	NT	NT	NT
Xylene (Xylol)	NR	NR	80	R
Zinc Chloride	NT	NT	NT	NT
Zinc Chloride 70%	NT	NT	NT	NT
Zinc Electrolyte	NT	NT	NT	NT
Zinc Nitrate, All	NT	NT	NT	NT
Zinc Plating - Acid Fluoborate (1, 2, 4, 7)	NT	NT	NT	NT
Zinc Plating - Acid Sulfate	NT	NT	NT	NT
Zinc Plating - Cyanide (1, 2, 4, 7, 9)	NT	NT	NT	NT
Zinc Orthophosphate (see Polyphosphate)	NT	NT	NT	NT
Zinc Phosphate 15%	NT	NT	NT	NT
Zinc Sulfate, All	NT	NT	NT	NT

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	Magnalux 304 Vinyl Ester		Shor-Glass FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment
Turpentine	140	R	NT	NT
Tween Surfactant (see Ethylene Glycol)	NT	NT	NT	NT
Tychem Resin Emulsion	NT	NT	NT	NT
Tydex 12 Flocculant	NT	NT	NT	NT
Ultrawet Surfactant (see Sodium Dodecylbenzenesulfon	NT	NT	NT	NT
UCON Quenchants	NT	NT	NT	NT
Uran Fertilizer Urea	140	R	NT	NT
Uranium Extraction (see Kerosene)	NT	NT	NT	NT
Urea (Dry)	140	R	NT	NT
Urea 33%	140	R	NT	NT
Urea 50%	140	R	NT	NT
Urea Ammonium Nitrate	140	R	NT	NT
Urea Formaldehyde Resin	100	R	NT	NT
Urea:Ammonium:Nitrate 35:44:20	140	R	NT	NT
Urea Solutions	140	R	NT	NT
Uric Acid Solution	140	R	NT	NT
Urine (see Urea)	NT	NT	NT	NT
Valeric Acid 5%	NR	R	NT	NT
Vegetable Fat	NT	NT	NT	NT
Vegetable Juice	NT	NT	NT	NT
Vegetable Oil	NT	NT	NT	NT
Vegetable Shortening	NT	NT	NT	NT
VERSENE 100	140	R	NT	NT
Versene Chelating Agents	100	R	NT	NT
Vetran 650	140	R	NT	NT
Viddon D Fumigant (see Dichloropropane)	NT	NT	NT	NT
Vinegar (See Acetic Acid, 10-80%)	140	R	NT	NT
Vinyl Acetate 20%	80	R	NT	NT
Vinyl Acetate Ethylene Copolymer	100	R	NT	NT
Vinyl Acetate 100%	NR	NR	NT	NT
Vinyl Chloride	NR	NR	NT	NT
Vinyultoluene	NR	R	NT	NT
Vitamin D Solution	NT	NT	NT	NT
VM&P Naphtha	NT	NT	NT	NT
Vodka, 190 Proof (95% Ethanol)	80	R	NT	NT
Voranol P-400 Polyol (see Ethylene Glycol)	140	R	NT	NT
Waste Sulfide Liquid	NT	NT	NT	NT
Wastewater / Sewage	150	R	NT	NT
Waste, Organic	150	R	NT	NT
Water, Condensate Return	140	R	NT	R
Water, Deionized (9)	140	R	NT	NT
Water, Demineralized (9)	140	R	NT	NT
Water, Distilled (9)	140	R	NT	NT
Water, Fresh (9)	150	R	120	R
Water, Salt	NT	NT	80	R
Water, Steam Condensate (9)	140	R	NT	NT
Water, Sea	140	R	NT	R
Water, Tap Hard (9)	150	R	120	R
Water, Tap Soft (9)	150	R	120	R
Whiskey	120	R	NT	NT
White Liquor (Pulp Mill) (1, 2, 4, 7, 9)	140	R	NT	NT
White Liquor, Clear or Amber	NT	NT	NT	NT
Wine, 13% Alcohol	140	R	NT	NT
Worchestershire Sauce	NT	NT	NT	NT
Xylene (Xylol)	80	R	NT	NT
Zinc Chloride	140	R	NT	NT
Zinc Chloride 70%	140	R	NT	NT
Zinc Electrolyte	NT	NT	NT	NT
Zinc Nitrate, All	140	R	NT	NT
Zinc Plating - Acid Fluoborate (1, 2, 4, 7)	NR	R	NT	NT
Zinc Plating - Acid Sulfate	140	R	NT	NT
Zinc Plating - Cyanide (1, 2, 4, 7, 9)	140	R	NT	NT
Zinc Orthophosphate (see Polyphosphate)	NT	NT	NT	NT
Zinc Phosphate 15%	140	R	NT	NT
Zinc Sulfate, All	140	R	NT	NT

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	Cor-Cote VEN FF		Cor-Cote VEN GF		Cor-Cote HCR FF	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Zinc Sulfite, Saturated	150	R	150	R	NT	NT

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	Cor-Cote HP		Cor-Cote HP FF		Cor-Cote SC	
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion	Secondary Containment
Zinc Sulfite, Saturated	NT	NT	NT	NT	NT	NT

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	EnviroLastic AR425 and AR200 HD		Fast-Clad ER		Magnalux
Chemical Environment and Concentration (%)	Immersion	Secondary Containment	Immersion	Secondary Containment	Immersion
Zinc Sulfite, Saturated	NT	NT	NT	NT	140

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	304 Vinyl Ester	Sher-Glass FF	
Chemical Environment and Concentration (%)	Secondary Containment	Immersion	Secondary Containment
Zinc Sulfite, Saturated	R	NT	NT

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System Notes

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Notes

(1) When a vinyl ester system requires a topcoat, use Cor-Cote VEN GF graphite flake topcoat.
(2) Special carbon aggregate filler for mortar laminates and topping mortar for heavy duty mortar laminates. Contact your Sherwin-Williams representative.
(3) Acid resistant fabric in laminate, mortar laminate, and heavy duty mortar laminate systems. Contact your Sherwin-Williams representative.
(4) Double c-veil (Nexus) finish on laminate and mortar laminate systems.
(5) Double surface veil on vinyl ester laminate and mortar laminate systems.
(6) Double c-veil (Nexus) on mortar laminate and heavy duty mortar laminate systems.
(7) Resin topcoat for flake filled coatings.

(8) BPO catalyst and post cure of special vinyl esters is required. Contact your Sherwin-Williams representative.
(9) Post cure vinyl esters at 180°F and vinyl ester novolacs at 210°F for one (1) hour per 40 mils.

(10) For temperatures above 120°F use acid resistant fabric laminate. Contact your Sherwin-Williams representative.
(11) Some staining of lining by the commodity.
(12) The resin may discolor high purity acids.
*Not recommended with low temperature hardener.
**Recommended with low temperature hardener only.

Immersion Service (immersion, constant flow, or condensing vapors):
A number reference indicates the maximum temperature (°F) permitted
NR = Not recommended
NT = Testing data not yet available. Contact your Sherwin-Williams representative for recommendations.

Secondary Containment Service:
"R" = Recommended (immersion up to 72 hours). Chemicals rated "R" for secondary containment that are also recommended for immersion are rated for the same temperature as the immersion rating. When they are rated "R" for secondary containment and rated "NR" for immersion, they are rated for exposure at temperatures up to 80°F, unless indicated otherwise.

NR = Not recommended
NT = Testing data not yet available. Contact your Sherwin-Williams representative for recommendations.
Ratings are based on the entire system, not just the resin component.

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Attachment II - AKE, Inc. Chemical Compatiblity Chart

	Chemicals seen within Tank Farm	PVC Compatiblity Analysis	Cor-Cote HCR FF Epoxy Compatability Analysis
Often:	Acetate Solvents	Unsuitable	recommended
	Acetic Acid, 10%	?	recommended
	Acetone	Unsuitable	recommended
	Alcohol, Amyl	Suitable (80°F)	recommended
	Alcohol, Butyl	Suitable (140°F)	recommended
	Alcohol, Diacetone	Unsuitable	recommended
	Alcohol, Ethyl	Suitable (140°F)	
	Alcohol, Isopropyl	Suitable	
	Alcohol, Methyl	Suitable (140°F)	
	Alcohol, Propyl	Suitable (140°F)	
	Amines	Suitable	
	Ammonia Solutions	Suitable (140°F)	
	Ammonium Persulfate	Suitable (140°F)	
	Ammonium Phosphate	Suitable (140°F)	
	Ammonium Sulfate	Suitable (104°F)	recommended
	Barium Hydroxide	Suitable (140°F)	
	Benzene (Benzol)	Unsuitable	recommended
	Benzoic Acid	Suitable (180°F)	
	Brake Fluid	Suitable	
	Butyl Acetate	Suitable	
	Chlorinated Solvents	Unsuitable	?
	Chlorinated Water	Suitable	
	Copper Sulfate	Suitable (140°F)	
	Cresote Oil	Unsuitable	?
	Cresylic Acid	Unsuitable	recommended
	Cupric Nitrate	Suitable (140°F)	
	Cutting Oils, Water/Emulsions	Suitable	
	Cycloheanone	Unsuitable	recommended
	Cyclohexane	Unsuitable	recommended
	Detergents, Synthetic	Suitable (140°F)	
	Dichlroethane	Unsuitable	Not Tested
	Diesel Oil Fuels	Suitable (72°F)	recommended
	Dimethyl Formamide	Unsuitable	recommended
	Disodium Phosphate	Suitable (140°F)	
	Dry Cleaning Fluids	Unsuitable	?
	Enamel	?	?
	Ethyl Acetate	Unsuitable	recommended
	Ethyl Benzene	Unsuitable	recommended
	Ethylene Glycol	Suitable (140°F)	
	Ferrous Chloride	Suitable (140°F)	
	Ferrous Sulfate	Suitable (140°F)	
	Fluoboric Acid	Suitable (140°F)	
	Fluorosilicic Acid	Suitable	
	Formaldehyde, cold	Suitable (140°F)	
	Formaldehyde, hot	Suitable (140°F)	
	Freon 113, TF	Suitable	

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	Freon 12, 13, 32, 114, 115	Suitable	
	Gasoline, Aviation	?	recommended
	Gasoline, Leaded	Suitable (100°F)	recommended
	Gasoline, Motor	?	recommended
	Gasoline, Unleaded	Suitable (70°F)	recommended
	Grease	Suitable	
	Kerosene	Suitable (140°F)	
	Ketones	Unsuitable	recommended
	Lacquer (and Solvent)	Suitable	
	Lead Acetate	Suitable (140°F)	
	Lead Sulfate	Suitable (140°F)	
	LPG	Suitable	
	Lubricating Oil Petroleum Base	Suitable (104°F)	recommended
	Mercuric Chloride	Suitable (140°F)	
	Mercuric Cyanide	Suitable (140°F)	
	Mercurous Nitrate	Suitable (140°F)	
	Mercury	Suitable (140°F)	
	Methanol	Suitable (140°F)	
	Methyl Ethyl Ketone	Unsuitable	recommended
	Methyl Isobutyl Ketone	Unsuitable	recommended
	Methylene Chloride	Unsuitable	recommended
	Mineral Spirts	?	recommended
	Naptha	Suitable (140°F)	
	Napthalene	Unsuitable	recommended
	Nitric Acid 10%	Suitable (140°F)	
	Nitric Acid 30%	Suitable (140°F)	
	Oils, Water Mixture	Suitable (100°F)	Not Tested
	Other Ketones	Unsuitable	recommended
	Oxalic Acid	Suitable (73°F)	recommended
	Phosphoric Acid 10%	Suitable (140°F)	
	Phosphoric Acid 50% Cold	Suitable (140°F)	
	Sodium Hydroxied 20% Cold	Suitable (140°F)	
	Sodium Hydroxied 50% Cold	Suitable (140°F)	
	Sodium Hypochlorite (Bleach)	Suitable (140°F)	
	Sulfuric Acid 0 to 77%	Suitable (140°F)	
	Tuluol (Toluene)	?	recommended
	Varnish	Suitable	
Occasional:	Acetaldehyde	Unsuitable	recommended
	Air	Suitable	
	Alum (Aluminum Potassium Sulfate)	Suitable	
	Alum (Aluminum Sulfate)	Suitable (140°F)	
	Ammoium Chloride	Suitable (140°F)	
	Ammonia, Anhydrous Liquid	Unsuitable	recommended
	Ammonium Acetate	Suitable (140°F)	
	Ammonium Carbonate	Suitable (140°F)	
	Ammonium Hydroxide 28%	Suitable (140°F)	
	Ammonium Hydroxide Concentrated	Suitable (140°F)	
	Ammonium Nitrate	Suitable (140°F)	
	Aniline	Unsuitable	recommended
	Barium Carbonate	Suitable (140°F)	
	Barium Chloride	Suitable (140°F)	
	Barium Sulfate	Suitable (140°F)	

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Benzaldehyde	Unsuitable	recommended
Borax (Sodium Borate)	Suitable (140°F)	
Boric Acid	Suitable (140°F)	
Butadiene	Suitable (104°F)	Not Tested
Butane	Suitable (100°F)	recommended
Butylene	Suitable	
Butyric Acid	Unsuitable	recommended
Calcium Bisulfite	Suitable (100°F)	recommended
Calcium Carbonate	Suitable (140°F)	
Calcium Chlorate	Suitable (140°F)	
Calcium Chloride	Suitable (140°F)	
Calcium Hydroxide	Suitable (140°F)	
Calcium Nitrate	Suitable (140°F)	
Calcium Phosphate	Suitable	
Calcium Sulfate	Suitable (140°F)	
Carbon Bisulfide	Suitable	
Carbon Dioxide, Dry	Suitable (140°F)	
Carbon Monoxide	Suitable (140°F)	
Carbon Tetrachlride, wet	Unsuitable	recommended
Carbonic Acid	Suitable (140°F)	
Casein	Suitable	
Caustic Potash	Suitable	
Caustic Soda	Suitable	
Cellulose Acetate	Suitable	
Chlorobenzene, dry	Unsuitable	recommended
Chromic Acid <50%	Suitable (140°F)	
Citric Acid	Suitable (140°F)	
Copper Carbonate	Suitable (140°F)	
Copper Cyanide	Suitable (140°F)	
Copper Nitrate	Suitable (140°F)	
Diethyl Benzene	Unsuitable	recommended
Diethylene Gycol	Suitable (140°F)	
Dipentane (Pinene)	?	?
Epsom Salts (MgSo4)	Suitable (104°F)	Not Tested
Ferric Hydroxide	Suitable (140°F)	
Ferric Nitrate	Suitable (140°F)	
Ferric Sulfate	Suitable (140°F)	
Glucose	Suitable (140°F)	
Glue	Suitable (140°F)	
Glycerine (Glycerol)	Suitable	
Helium Gas	Suitable (140°F)	
Heptane	Suitable (100°F)	recommended
Hexane	Unsuitable	recommended
Hydrogen Gas, cold	Suitable (140°F)	
Hydrogen Peroxide, Dilute	Suitable (140°F)	
Hydrogen Sulfide, Dry	Suitable (140°F)	
Hydrogen Sulfide, Wet	Suitable (140°F)	
Hypo (Sodium Thiosulfate)	Suitable (104°F)	recommended
Isopropyl Acetate	Unsuitable	recommended
Isporopyl Ether	Unsuitable	recommended
Lactic Acid Dilute cold	Suitable	
Linoleic Acid	Suitable (140°F)	

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Linseed Oil	Suitable (140°F)	
Maganese Sulfate	Suitable	
Magnesium Carbonate	Suitable (140°F)	
Magnesium Chloride	Suitable (140°F)	
Magnesium Hydroxide	Suitable	
Magnesium Nitrate	Suitable (140°F)	
Magnesium Sulfate	Suitable	
Maleic Acid	Suitable (140°F)	
Maleic Anhydride	Suitable	
Malic Acid	Suitable (140°F)	
Melamine Resins	Suitable	
Methane	Suitable (140°F)	
Methyl Acetate	Unsuitable	recommended
Methyl Acetone	Suitable	
Mineral Oils	Suitable (140°F)	
Morpholine	Suitable	
Natural Gas, Sour	Suitable (140°F)	
Nickel Chloride	Suitable (140°F)	
Nicotinic Acid	Suitable	
Nitrogen	Suitable	
Oils & Fats	Suitable (140°F)	
Oleic Acid	Suitable (140°F)	
Palmitic Acid	Suitable (140°F)	
Paraffin	Suitable (120°F)	recommended
Pentane	Suitable	
Phenol 5%	Unsuitable	recommended
Phthalic Acid	Suitable	
Pine Oil	Suitable	
Polyvinyl Acetate	Suitable	
Potassium Bichromate	Suitable (140°F)	
Potassium Bisulfate	Suitable (140°F)	
Potassium Bromide	Suitable (140°F)	
Potassium Carbonate	Suitable	
Potassium Chlorate	Suitable (140°F)	
Potassium Chloride	Suitable (140°F)	
Potassium Chromate	Suitable (140°F)	
Potassium Cyanide	Suitable (140°F)	
Potassium Dichromate	Suitable (140°F)	
Potassium Ferricyanide	Suitable (140°F)	
Potassium Ferrocyanide	Suitable (140°F)	
Potassium Iodide	Suitable (140°F)	
Potassium Nitrate	Suitable (140°F)	
Potassium Permanganate	Suitable (140°F)	
Potassium Phosphate	Suitable	
Potassium Sulfate	Suitable (140°F)	
Potassium Sulfide	Suitable (100°F)	?
Potassium Sulfite	Suitable (104°F)	recommended
Pyidine	Unsuitable	recommended
Pyrolgalic Acid	Suitable (73°F)	
Resorcinol	?	?
Salicylic Acid	Suitable	
Salt (NaCl)	?	recommended

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Shellac	?	?
Silver Bromide	Suitable	
Silver Cyanide	Suitable (140°F)	
Silver Nitrate	Suitable (140°F)	
Sodium Acetate	Suitable (140°F)	
Sodium Benzoate	Suitable (140°F)	
Sodium Bicarbonate	Suitable (140°F)	
Sodium Bichromate	Suitable	
Sodium Bisulfate 10 %	Suitable (140°F)	
Sodium Carbonate (Soda Ash)	Suitable (140°F)	
Sodium Chlorate	Suitable (100°F)	
Sodium Chloride	Suitable (140°F)	
Sodium Chromate	Suitable	
Sodium Cyanide	Suitable (140°F)	
Sodium Ferricyanide	Suitable (140°F)	
Sodium Fluoride	Suitable (140°F)	
Sodium Metaphosphate	Suitable (140°F)	
Sodium Metasilicate Cold	Suitable (140°F)	
Sodium Nitrate	Suitable (140°F)	
Sodium Nitrite	Suitable (104°F)	recommended
Sodium Perborate	Suitable (140°F)	
Sodium Peroxide	Suitable (140°F)	
Sodium Phosphate	Suitable (104°F)	recommended
Sodium Phosphate Tri-basic	Suitable (140°F)	
Sodium Polyphosphate	Suitable (140°F)	
Sodium Silicate	Suitable (140°F)	
Sodium Sulfate	Suitable (140°F)	
Sodium Sulfide	Suitable (140°F)	
Sodium Sulfite	Suitable (140°F)	
Sodium Tetraborate	Suitable (140°F)	
Sodium Thiosulfate	Suitable (140°F)	
Stearic Acid	Suitable (140°F)	
Styrene	Unsuitable	recommended
Sulfur	Suitable	
Sulfur Chlorides	Suitable (140°F)	
Sulfur Dioxide, dry	Suitable (140°F)	
Sulfur Dioxide, wet	Suitable (100°F)	recommended
Sulfur Trioxide, dry	Unsuitable	recommended
Tar & Tar Oils	Unsuitable	recommended
Tartaric Acid	Suitable (140°F)	
Transformer Oil	Suitable	
Trichlorethylene	Suitable	
Trichloroacetic Acid	Suitable (73°F)	recommended
Triethylamine	Suitable	
Tung Oil	?	?
Turpentine	Suitable	
Urea	Suitable (140°F)	
Vinegar	Suitable (140°F)	
Xylene (Xylol), Dry	Unsuitable	recommended
Zinc Bromide	Suitable (104°F)	?

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EXHIBIT D-2

CHEMICAL COMPATIBLITY CHART FOR PVC WATER STOP

CHEMICAL RESISTANCE GUIDE

The chemical resistance data provided here on the following pages has been assembled from a wide variety of sources in our industry. This information is based on practical field experience and actual laboratory testing conducted by the manufacturers of various plastic resins and finished products. Keep in mind that this information should only be used as a guideline for recommendations and not a guarantee of chemical resistance. Some performance variations may be noticed between homopolymers and copolymers as well as emulsion and suspension type resins of the same general type. In addition, actual service conditions including temperature, concentration, and contaminant's will affect variances in chemical resistance.

In assembling the chemical resistance data presented here, several sources were checked. When conflicts were uncovered, we took a conservative approach and used the lower of two or more ratings. In addition, special consideration was given to the material as supplied by a particular vendor; i.e., our polyethylene ratings are based on information provided by tank manufacturers rather than pipe suppliers. This was done primarily because of the volume of tanks supplied as compared to polyethylene pipe.

In an attempt to make the recommendations more meaningful, we have given the maximum recommended use temperature for each plastic and elastomer in the specific chemicals listed. Lacking complete data in many cases we did leave those in question as blanks. Where a material is unsuitable for a specific chemical an "X" is used.

Metals are listed as:

A = Excellent
B = Good, minor effect
C = Fair, needs further tests
X = Unsuitable

To the best of our knowledge, the information contained in this publication is accurate. However, we do not assume any liability whatsoever for the accuracy or completeness of such information. Moreover, there is a need to reduce human exposure to many materials to the lowest physical limits in view of possible long term adverse effects. To the extent that any hazards may have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones which exist. Final determination of the suitability of any information or product for the use contemplated by any user, the manner of that use and whether there is any infringement of patents, is the sole responsibility of the user. We recommend that anyone intending to rely on any recommendation or use any equipment, processing technique, or material mentioned in this publication should satisfy themselves as to such suitability, and that they meet all applicable safety and health standards. We strongly recommend the user seek and adhere to manufacturers' or suppliers' current instructions for handling each material they use.

USE OF THE CHEMICAL RESISTANCE TABLES

The aggressive agents are classified alphabetically according to their most common designation. Further descriptions include trivial or common names as trade names.

If several concentrations are given for a particular material, the physical data, in general, relates to the pure product that is 100% concentration.

In listing the maximum use temperature for each plastic type in a given chemical, it can in general be assumed that the resistance will be no worse at lower temperatures.

HOW TO SELECT THE CORRECT MATERIAL:

1. Locate the specific chemical in the system or found in the surrounding atmosphere using the alphabetical chart of chemicals.

2. Select the material with a maximum use temperature that matches or exceeds the need. The Harrington philosophy has always been to suggest the least costly material that will do the job.

3. Where a material or elastomer appears to be marginal compared to the requirements, we encourage a call to our technical service group.

EXAMPLES:

1. Methylene chloride: in the tables PVDF, Halar, or Teflon are the only materials suitable. Carbon steel works well for chlorinated hydrocarbons of this sort and that would be our choice unless there was another reason to justify the higher cost of the PVDF, Teflon or Halar.

2. Sodium hypochlorite, 15% at 100°F, PVC is good to 140°F and is the least expensive of the materials available.

3. For nitric acid 40% ambient temperature, the tables recommend either CPVC or polypropylene at 73°F. In most cases CPVC will be the economical choice. Note that PVDF is rated for higher temperature use.

NOTE: The ratings shown for carbon and ceramic pump seals are approximate. Please contact your local Harrington service center for a recommendation on your specific application.

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PLASTIC / ELASTOMER / SEAL / METAL

CHEMICAL	FORMULAS	APPROX. SP.GRAVITY @ 100% CONC.		PVC	CPVC	POLYPROPYLENE (PP)	POLYVINYLIDENE FLUORIDE (PVDF)	POLYETHYLENE (PE)	POLYETHYLENE-CROSS LINKED (XLPE)	DURAPLUS ABS	RYTON	HALAR	PEEK	TEFLON	EPOXY	VINYLESTER	POLYSULFONE	VITON	EPDM	NEOPRENE	BUNA N (NITRILE)	CARBON	CERAMIC	304 STAINLESS STEEL	316 STAINLESS STEEL	TITANIUM	HASTELLOY C
Acetaldehyde	CH_3CHO	-	-	X	X	100	120	X	X	X	200	-	-	350	150	X	X	100	200	X	X	A	A	A	A	A	A
Acetaldehyde, Aqueous	-	40	-	X	X	100	120	X	X	-	200	-	-	350	150	X	X	100	200	X	X	A	A	A	A	A	A
Acetamide	CH_3CONH_2	-	-	-	-	100	73	150	-	-	-	-	-	-	-	-	-	200	200	X	100	-	A	B	A	-	-
Acetate Solvents, Crude		-	-	X	X	-	78	-	-	X	-	-	-	350	-	-	-	X	X	X	X	A	A	B	A	-	B
Acetate Solvents, Pure		-	-	X	X	-	X	-	-	X	-	-	-	350	-	-	-	X	X	X	X	-	-	B	A	-	-
Acetic Acid*	CH_3COOH	5	-	140	140	200	140	X	140	68	200	250	-	350	150	200	-	X	200	100	-	-	-	A	A	A	A
Acetic Acid*	CH_3COOH	10	-	140	140	200	140	X	140	68	200	250	-	350	150	200	-	180	200	X	X	-	-	A	A	A	A
Acetic Acid*	CH_3COOH	20	-	140	140	200	140	X	140	X	200	250	-	350	X	200	-	180	200	X	X	-	-	A	A	A	A
Acetic Acid*	CH_3COOH	30	-	140	140	200	140	X	140	X	200	250	-	350	-	100	-	180	200	-	-	-	-	A	A	A	A
Acetic Acid*	CH_3COOH	50	-	100	100	200	100	X	140	X	200	250	-	350	X	100	-	180	200	X	X	-	-	A	A	A	A
Acetic Acid*	CH_3COOH	60	-	73	73	150	100	X	140	X	200	-	-	350	X	X	-	180	100	X	X	-	-	A	A	A	A
Acetic Acid*	CH_3COOH	80	-	X	X	140	73	X	70	X	200	212	-	350	X	X	-	180	100	X	X	-	-	A	A	A	A
Acetic Acid*, Glacial	CH_3COOH	100	1.0	110	110	180	180	X	70	X	200	212	300	350	X	X	-	X	73	X	X	A	A	A	A	A	A
Acetic Anhydride	$(CH_3CO)_2O$	-	5	X	X	73	90	X	X	X	200	73	-	-	X	X	-	X	200	X	X	A	A	-	-	-	-
Acetic Ether (See Ethyl Acetate)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acetol (Hydroxy 2 Propanone)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	A	A	A	A
Acetone	CH_3COCH_3	-	-	X	X	-	-	-	-	-	200	150	-	-	-	-	-	-	-	-	-	-	-	A	A	A	A
Acetonitrile (Methyl Cyanide)	CH_3CN	-	-	X	X	X	150	X	X	X	200	212	-	400	X	X	-	X	-	X	X	-	-	A	A	A	A
Acetophenone	$C_6H_5COCH_3$	-	0.8	X	X	150	200	-	-	X	200	121	-	400	120	X	-	X	-	-	X	-	-	A	A	-	B
Acetyl Acetone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acetyl Benzene	$C_6H_5COCH_3$	-	-	X	X	73	73	-	-	X	-	-	-	-	X	X	-	X	-	X	X	-	-	-	A	-	-
Acetyl Bromide	-	-	1.0	X	X	-	-	-	-	X	-	-	-	-	X	X	-	X	-	X	X	-	-	-	A	-	-
Acetyl Chloride (dry)	$C_6H_5COCH_3$	-	3	-	-	-	100	X	X	X	200	150	-	-	X	X	-	-	X	-	-	-	-	-	A	-	-
Acetyl Oxide	CH_3COBr	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acetyl Propane	CH_3COCL	-	-	X	X	130	100	-	-	X	-	-	-	200	-	-	-	X	-	X	X	-	-	A	A	-	-
Acetylene	$(CH_3CO)_2O$	-	-	100	100	-	200	-	-	-	200	150	-	-	-	-	-	-	-	-	-	A	A	-	A	-	B
Acetylene Dichloride	CLHC:CHLC	-	-	X	X	-	X	-	-	X	-	-	-	300	-	-	-	150	-	-		-	-	-		-	-
Acetylene Tetrachloride	$(CHCL_2)_2$	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acid Mine Water	-	-	-	100	150	150	250	-	-	-	200	-	-	350	-	-	-	-	-	-	-	-	-	-	-	-	-
Acrylic Acid	$CH_2CHCOOH$	-	-	X	X	X	100	X	X	X	-	212	-	170	X	X	-	-		-	-	-	-	-	-	-	-
Acrylic Emulsions*		-	-	-	-	-	-	X	70	-		-	-	-		-	-	X	X	X	X	-		A	-	-	A
Acrylonitrile	H_2CCHCN	-	-	X	X	73	100	140	140	X	-	73	-	350	100	X	-	250	200	160	180	A	A	B	-	-	B
Adipic Acid Aqueous	-	-	-	140	180	100	250	140	140	-	-	150	-	350	-	-	-	-	-	-	-	-	-	A	A	A	A
Alcohol (See Ethyl Alcohol)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alcohol, Allyl	-	-	-	80	80	140	200	100	140	X	-	-	-	250	200	100	-	200	70	100	180	-	-	A	-	-	A
Alcohol, Amyl	$C_5H_{11}OH$	-	-	100	100	170	250	140	140	X	200	250	-	400	200	100	-	190	200	140	140	-	-	A	-	-	A
Alcohol, Benzyl	$C_6H_5CH_2OH$	-	-	X	X	140	180	-	-	X	-	250	-	-	-	-	-	140	X	140	X	-	-	A	-	-	A
Alcohol, Butyl	-	-	-	140	180	180	240	140	140	X	200	250	-	250	200	100	-	100	180	140	140	-	-	A	-	-	A
Alcohol, Diacetone	-	-	-	X	-	73	73	-	-	X	-	150	-	350	-	-	-	X	70	X	-	-	-	A	-	-	A
Alcohol, Ether	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alcohol, Ethyl	C_2H_5OH	-	-	140	*	180	750	140	140	X	-	250	-	300	180	-	-	170	170	170	200	A	A	A	-	-	A
Alcohol, Hexyl		-	-	100	70	70	-	-	-	X	-	73	-	-		-		160	X	70	70	A	A	A	-		A
Alcohol, Isobutyl	$(CH_3)_2CHCH_2OH$	-	-	-		-	250	-		X	-	-	-	300	180	100	-	140	140	70	70	A	A	A	-	-	A
Alcohol, Isopropyl	$(CH_3)_2CHOH$	-	-	140	*	150	230	140	140	X		250	-	300	180	100	-	200	140	70	200	A	A	A	-	-	-
Alcohol, Methyl	CH_3OH	-		140	150	150	230	140	140	X	-	250		300	150		-	100	100	140	140	A	A	A	-	-	A
Alcohol, Octyl	-	-	-	-	-		-	-		-		-	-		-	-	-		-	-	-	A	A	-	-	-	-
Alcohol, Polyvinyl	-	-	-	140	180	180	250	-	-	68	-	-	-	280	150	100	-	210	100	-	-	A	A	A	-	-	-
Alcohol, Propargyl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	A	-	-	-	-
Alkanes	-	-	-	140	100	100	250	-	-	-	-	-	-	300	-	-	-	210	X	X	X	-	-	A	-	-	-
Alkazene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Allyl Aldehyde	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Allyl Bromide	C_3H_5Br	-	-	X	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Allyl Chloride	C_3H_5CL	-	-	X	X	100	200	100	-	X	-	250	-	350	-	-	-	100	X	X	X	-	-	A	-	-	-
Alum (See Aluminum Sulfate)	$AL_2(SO_4)_3$		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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CHEMICAL RESISTANCE GUIDE

PLASTIC — ELASTOMER — SEAL — METAL

CHEMICAL	FORMULAS	APPROX. SP.GRAVITY @ 100% CONC.		PVC	CPVC	POLYPROPYLENE (PP)	POLYVINYLIDENE FLUORIDE (PVDF)	POLYETHYLENE (PE)	POLYETHYLENE-CROSS LINKED (XLPE)	DURAPLUS ABS	RYTON	HALAR	PEEK	TEFLON	EPOXY	VINYLESTER	POLYSULFONE	VITON	EPDM	NEOPRENE	BUNA N (NITRILE)	CARBON	CERAMIC	304 STAINLESS STEEL	316 STAINLESS STEEL	TITANIUM	HASTELLOY C
Alum, Ammonium	-	-	-	140	140	200	220	140	140	176	200	250	-	400	270	200	-	180	-	X	180	-	-	-	-	-	-
Alum, Chrome		-	-	120	160	180	250	140	140	176	-	150	-	-	270	200	-	180	140	80	180	-	-	B	-	-	-
Alum, Potassium	$ALK(SO_4)_2$	-	-	140	140	180	280	140	140	176	200	250	-	400	270	200	-	180	200	80	180	-	-	A	-	-	-
Aluminum, Acetate	-	-	-	100	100	100	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonium Sulfate	-	-	-	-	-	200	220	-	-	176	-	250	-	-	-	-	-	80	-	140	140	-	-	-	-	-	-
Aluminum, Bromide	$ALBr_3$	-	-	-	-	-	250	-	-	176	-	-	-	-	-	-	-	180	-	-	140	-	-	-	-	-	-
Aluminum, Chloride	$ALCL_3$	-	-	140	170	170	140	140	140	176	200	250	-	210	-	200	-	180	210	200	200	A	A	C	-	-	-
Aluminum, Citrate	-	-	-	-	-	-	-	140	140	-	-	-	-	-	180	180	-	-	-	-	-	-	-	-	-	-	-
Aluminum, Fluoride	ALF_3	-	-	140	160	200	280	160	-	176	-	250	-	-	-	-	-	180	-	200	200	-	-	-	-	-	-
Aluminum, Formate	$AL(HCOO)_3$	-	-	140	180	180	250	-	-	-	-	-	-	280	-	-	-	250	210	160	180	-	-	B	-	-	-
Aluminum, Hydroxide	$AL(OH)_3$	-	-	140	180	180	250	-	-	176	-	250	-	250	-	-	-	180	150	160	180	-	-	-	A	B	-
Aluminum, Nitrate	$AL(NO_3)_3$	-	-	140	180	180	200	140	140	176	-	250	-	210	250	180	-	200	200	200	200	A	A	-	-	-	-
Aluminum, Phosphate	$ALPO_4$	-	-	-	-	-	-	140	140	176	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum, Potassium Sulfate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(Known as Potash Alum)	-	-	-	140	140	180	280	140	140	176	-	250	-	400	270	200	-	-	200	150	180	-	-	-	-	-	-
Aluminum, Salts	-	-	-	-	-	-	-	140	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum, Sulfate	$AL_2(SO_4)_3$	10	-	140	180	180	280	-	-	176	-	250	-	250	270	300	-	-	210	160	200	A	A	-	-	A	A
Amines	-	15	-	-	-	-	-	-	-	176	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia	NH_3	25	-	140	180	180	210	-	-	176	200	-	-	250	-	-	-	70	-	-	140	-	-	-	-	-	-
Ammonia	NH_3	99	-	140	180	180	210	-	-	176	200	-	-	250	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia, Gas	NH_3	-	-	X	X	100	180	-	-	-	200	-	-	250	-	-	-	X	120	-	180	-	-	A	A	-	A
Ammonia, Anhydrous	-	-	-	X	X	180	250	160	-	-	200	-	-	400	X	-	-	-	-	200	180	C	A	-	-	-	-
Ammonium Hydroxide	NH_4OH	-	-	140	X	180	250	150	-	176	-	300	200	400	150	100	-	X	200	80	X	-	-	-	A	-	A
Ammonium, Nitrate	NH_4NO_3	-	-	140	190	180	250	140	140	176	200	250	-	350	230	200	-	X	200	160	180	-	-	-	-	-	-
Ammonium Phosphate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monobasic		-	-	140	180	180	250	140	140	176	200	250	-	250	200	150	-	180	120	140	100	-	-	A	-	-	A
Tribasic	-	-	-	140	180	180	250	140	140	-	-	-	-	250	200	150	-	180	200	140	100	-	-	A	-	-	A
Ammonium, Acetate	-	-	-	140	180	180	-	-	-	-	-	150	-	350	-	-	-	X	140	X	-	-	-	B	-	-	-
Ammonium, Alum (See Aluminum Ammonium Sulfate)		-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonium, Bichromate	$(NH_4)_2Cr_2O_7$	-	-	73	-	-	250	-		-	-	-	-	-	-	-	-	70	100	100	100	-	-	-	-	-	-
Ammonium, Bifluoride	NH_4HF_2	-	-	140	180	180	250	-	-	-	-	250	-	300	-	-	-	140	-	X	80	-	-	A	-	-	-
Ammonium, Bisulfide	NH_4HS	-	-	140	180	-	250	-		-	-	250	-	300	-	-	-	-	-	-	180	-	-	-	-	-	-
Ammonium, Carbonate	NH_4HCO_3	-	-	140	180	200	250	140	140	68	-	250	-	250	180	100		200	200	200	200	-	-	A	-	-	-
Ammonium, Casenite	-	-	-	-	-	-	-	140	140	-	-	-	-	-	180	100	-	-	-	-	-	-	-	-	-	-	-
Ammonium, Chloride	NH_4CL	-	-	140	180	180	250	140	140	176	-	250	-	250	270	200	-	220	-	200	180	A	A	B	-	-	-
Ammonium, Dichromate	$(NH_4)_2Cr_2O_7$	-	-	73	-	-	250	-	-	-	-	73	-	-	-	-	-	70	100	100	100	-	-	-	-	-	-
Ammonium, Fluoride	NH_4F	10	-	100	-	180	250	-	-	176	-	250	-	-	-	-	-	140	-	200	100	-	-	-	-	-	-
Ammonium, Fluoride	NH_4F	20	-	100	-	180	250	-	-	176	-	-	-	-	-	150	-	140	-	-	100	-	-	-	-	-	-
Ammonium, Fluoride	NH_4F	25	-	X	-	-	-	-	-	176	-	250	-	-	-	-	-	140	-	200	100	-	-	-	-	-	-
Ammonium, Fluoride	NH_4F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonium, Hydroxide	NH_4OH	-		140	X	180	250	150	-	176	-	300	-	400	150	100	-	X	200	80	X	A	A	A	-	-	A
Ammonium,		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metaphosphate	-	-	-	140	180		-	140	140	-	-	250		-	200	150	-	180	-	200	200	-	-	-	-	-	-
Ammonium, Nitrate	NH_4NO_3			140	180	180	160	140	140	176	-	400	-	250	230	200		180	-	200	180	A	A	A		-	-
Ammonium, Oxalate	$(NH_4)_2C_2O_4$	-	-	-	-	-	-	140	140	-			-	-	-	-	-	-	-		-	A	-	-	-	-	-
Ammonium, Persulfate	$(NH_4)_2S_2O_8$	-	-	140	150	180	200	140	140	176	-	150	-	-	-	180	73	76	-	200	200	-	-	X	A	-	-
Ammonium, Phosphate	$NH_4H_2PO_4$	-	-	140	180	180	250	140	140	176	-	250	-	250	200	150	-	180	-	200	200	A	A	A	-	-	-
Dibasic	$(NH_4)_2HPO_4$	-	-	140	180	180	250	140	140	-	-	-	-	300	-	200	150	180	210	100	100	A	A	A	-	-	-
Monobasic	$NH_4H_2PO_4$	-	-	140	180	180	250	140	140	-	-	-	-	-	350	200	150	190	210	100	100	A	A	A	-	-	A
Tribasic	-	-	-	140	180	180	250	140	140	-	-	-	-	-	200	150	-	190	210	100	100	A	A	A	-	-	A
Ammonium, Salts	-	-	1.8	140	180	180	250	140	140	-	-	-	-	350	200	150	-	180	210	160	180	A	A	B	-	-	-
Ammonium, Sulfate	$(NH_4)_2SO_4$	-	1.8	140	180	180	250	140	140	176	200	250	-	-	350	200	150	180	210	160	140	A	A	B	-	-	A
Ammonium, Sulfide	$(NH_4)_2S$	-	1.3	140	180	180	250	140	140	-	-	250	-	-	350	200	150	-	210	160	140	[illegible]	[illegible]	B	[illegible]	[illegible]	[illegible]

CHEMICAL RESISTANCE

ARIZONA DEPARTMENT OF
ENVIRONMENTAL QUALITY
JAN 15 2008
Waste Programs Div.
Permits Section

HARRINGTON

CHEMICAL RESISTANCE GUIDE

CHEMICAL	FORMULAS		APPROX. SP.GRAVITY @ 100% CONC.	PVC	CPVC	POLYPROPYLENE (PP)	POLYVINYLIDENE FLUORIDE (PVDF)	POLYETHYLENE (PE)	POLYETHYLENE-CROSS LINKED (XLPE)	DURAPLUS ABS	RYTON	HALAR	PEEK	TEFLON	EPOXY	VINYLESTER	POLYSULFONE	VITON	EPDM	NEOPRENE	BUNA N (NITRILE)	CARBON	CERAMIC	304 STAINLESS STEEL	316 STAINLESS STEEL	TITANIUM	HASTELLOY C
				PLASTIC											ELASTOMER							SEAL	METAL				
Ammonium, Thiocyanate	NH_4SCN	-	1.3	140	180	-	280	140	140	176	-	-	-	-	300	150	100	200	180	140	150	-	-	A	-	-	A
Ammonium, Thiosulfate	$(NH_4)_2S_2O_3$	-	0.86	140	180	-	250	140	140	-	-	-	-	-	300	150	100	200	180	140	150	A	A	A	-	-	-
Amyl, Acetate	$CH_3COOC_5H_{11}$	-	0.86	X	X	X	180	X	X	X	200	150	-	400	140	100	X	X	70	X	X	A	A	A	A	A	A
Amyl, Alcohol (See Alcohol Amyl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Amyl Bromate	-	-	-	-	-	-	-	-	-	X	-	-	-	-	250	-	-	X	X	-	70	-	-	-	-	-	-
Amyl Bromide	-	-	0.8	-	-	-	250	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Amyl Chloride	-	-	1.02	X	X	X	240	X	X	X	-	250	-	-	100	100	X	68	X	X	X	A	A	B	B	-	-
Aniline	$C_6H_5NH_2$	-	1.02	X	X	100	200	X	70	X	200	121	-	400	250	X	X	140	70	X	X	A	A	A	-	-	-
Aniline Chlorohydrate	-	-	-	X	X	-	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aniline Hydrochloride	$C_6H_5NH_2HCL$	20	-	X	X	100	140	-	-	-	-	-	-	400	X	140	-	180	-	-	-	-	-	X	X	A	X
Anisole	$C_2H_5OCH_3$	-	1	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anthraquinone Sulfonic Acid	-	-	-	100	180	X	240	100	-	X	-	150	-	400	-	-	-	180	-	-	-	-	-	-	-	-	-
Anti-Freeze (See Ethylene Glycol)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antichlor		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony Chloride (See	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony Trichloride)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony Pentachloride	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	-	-	-	-	-	-	-	-
Antimony Trichloride	$SbCL_3$	-	-	140	180	180	100	140	140	-	-	-	-	-	250	200	-	190	140	140	140	-	-	X	X	-	-
Aqua Ammonia (see Ammonia Hydroxide)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aqua Regia	80% HCL /20% HNO_3	-	-	X	X	X	200	X	X	X	X	250	-	380	X	X	150	140	X	X	X	-	X	X	-	-	C
Aroclor 1248	-	-	-	-	-	X	-	X	-	-	-	-	-	300	-	-	-	-	-	-	-	A	-	-	-	-	-
Aromatic Hydrocarbons	-	-	-	X	X	68	40	-	-	X	-	-	-	-	250	-	-	180	X	X	X	A	-	-	-	-	-
Arsenic Acid	H_3AsO_4	80	-	100	180	140	210	140	140	-	-	250	-	-	250	180	-	210	150	160	160	A	A	A	A	-	A
Aryl Sufonic Acid	-	-	-	X	X	X	X	-	-	X	-	-	-	-	-	-	180	-	-	-	-	-	-	-	-	-	-
Asphalt	-	-	-	X	X	140	250	-	-	X	200	-	-	-	250	-	-	180	X	X	70	-	A	A	-	-	-
Aviation Fuel	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	250	-	160	X	X	150	-	-	-	-	-	-
Aviation Turbine Fuel	-	-	-	-	-	-	-	-	-	X	-	-	-	250	180	50	180	-	-	-	-	-	-	-	-	-	-
Baking Soda (See	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium Bicarbonate)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium Acetate		-	-	-	-	-	-	140	140	-	-	-	-	-	-	180	150	-	-	-	-	-	-	-	-	-	-
Barium Carbonate	$BACO_3$	-	4.3	140	180	180	250	140	140	176	-	250	-	400	240	200	200	250	250	160	200	-	-	B	-	-	-
Barium Chloride	$BaCL_2$	-	3.1	140	180	180	250	140	140	176	200	250	-	400	-	200	200	300	250	160	200	-	-	B	-	-	-
Barium Cyanide	$Ba(CN)_2$	-	-	-	-	-	-	140	140	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium Hydrate	$Ba(OH)_2$	-	-	-	-	-	-	140	140	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium Hydroxide	$Ba(OH)_2$	-	2.2	140	180	180	250	140	140	176	200	250	-	400		200	150	200	200	140	200	A	A	A	-	-	-
Barium Nitrate	$Ba(NO_3)_2$	-	-	80	180	140	250	140	140	176	200	73	-	400	250	-	-	300	200	140	200	A	A	A	-	-	-
Barium Salts	-	-	4.4	140	180	180	250	140	140	-	-	-	-	-	250	200	180	250	200	140	200	A	A	A	-	-	-
Barium Sulfate	$BaSO_4$	-	4.3	140	180	180	250	140	140	176	200	-	-	400	-	200	200	200	200	150	200	A	B	A	A	A	A
Barium Sulfide	BaS	-	-	140	180	200	280	150	-	-	-	250	-	400	-	200	180	250	140	150	200	A	A	A	A	-	-
Beer	-	-	-	140	180	180	250	-	-	68	-	250	-	400	-	200	-	200	200	140	200	A	A	A	A	A	A
Beet Sugar Liquid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	A	-	-	-	-
Beel Sugar Liquors		-	1.0	100	150	180	230	-	-	-	-	150	-	-	80	180	-	180	-	80	80	-	-	-	-	-	-
Benzaldehyde	C_6H_5CHO	-	5	X	X	73	120	X	X	X	X	122		400	X	X	-	-	-		-	A	A	A	A	A	A
Benzalkonium Chloride	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	C_6H_6		0.9	X	X	100	150	X	X	X	200			350	180	X	-	140	X	X	X	A	A	A	B	A	B
Benzene Sulfonic Acid	$C_6H_5SO_3H$	10	-	100	180	180	100	150	-	X		150	-	400	220	200	-	140	-	-	-	-	-			-	-
Benzene Sulfonic Acid	-	100	-	X	X	X	73	X	-	X	-	-	-	400	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzoic Acid	C_6H_5COOH	-	1.3	180	180	250	250	150	140	-	-	250	-	400	200	200	-	180	-	140	-	-	-	A	B	A	A
Benzol (see Benzene)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzyl Alcohol (see	-	-	1.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alcohol, Benzyl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	250	-	-	-	-	-	-	-	-	-
Benzyl Benzoate	-	-	1.1	-	-	-	-	-	-	X	200	-	-	-	-	-	-	100	X	X	X	-	-	B	-	-	B
Benzyl Chloride	$C_6H_5CH_2CL$	-	6.8	-	-	73	250	-	-	X	200	-	-	400	-	73	-	200	X	-	X	-	-	-	-	-	-
Bismuth Carbonate	$(BiO)_2CO_3$	-	-	140	180	180	250	-	-	-	-	73	-	400	-	-	-	180	-	-	-	-	-	-	-	-	-

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ARIZONA DEPARTMENT OF
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Black Liquor	-	-	-	140	190	140	200	120	-	100	-	250	-	400	200	150	-	180	-	80	180	-	-	-	-	-	-
Bleach (See Sodium Hypochlorite)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Borax, Sodium Borate	$Na_2B_4O_7$	-	1.4	140	180	180	250	140	140	176	-	250	-	400	250	200	-	180	-	200	180	A	A	A	A	A	-
Boric Acid	H_3BO_3	-	-	140	190	180	250	140	140	176	-	250	-	400	230	200	-	200	210	X	180	A	A	B	-	A	A
Brake Fluid	-	-	-	-	-	-	-	-	-	-	-	-	-	300	-	-	-	X	140	-	X	-	-	-	-	-	A
Brewery Slop	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	A	A	-	-	-	-
Brine	-	-	-	140	190	180	280	140	140	176	-	-	-	-	270	200	-	300	250	-	180	A	A	A	-	-	-
Bromic Acid	$HBrO_3$	-	-	140	190	140	200	150	-	X	-	250	-	400	150	-	-	70	70	-	-	-	-	-	-	-	A
Bromine Dry	Br_2	-	-	-	-	X	200	X	X	X	-	-	-	-	X	X	-	X	-	-	-	-	-	-	-	-	-
Bromine Gas, Wet	-	-	3.1	-	-	-	-	X	X	X	X	-	-	-	-	-	-	X	-	X	-	X	-	-	-	-	-
Bromine Liquid	-	-	-	X	X	X	140	X	X	X	X	150	-	400	X	-	-	190	X	X	X	-	-	-	-	-	-
Bromine Water	-	-	-	100	X	X	180	X	-	X	X	250	-	X	-	-	-	100	X	X	X	-	-	X	X	A	A
Bromobenzene	C_6H_5Br	-	-	X	X	-	150	-	-	X	-	73	-	-	-	-	-	150	X	-	X	-	-	-	-	-	-
Bromotoluene	$C_6H_5CH_2Br$	-	-	X	X	X	180	-	-	X	-	121	-	-	-	-	-	-	-	140	-	-	-	-	-	-	-
Butadiene Gas	-	-	0.8	140	-	X	250	X	-	-	-	-	-	-	150	-	-	190	X	140	X	-	-	A	-	-	A
Butane	C_4H_{10}	-	-	100	70	70	200	X	-	-	200	250	-	400	100	-	-	180	X	-	140	-	-	A	A	-	B
Butanediol (Butylene glycol)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Butanol (See Alcohol, Butyl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Butter	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	A	-	
Buttermilk	-	-	-	-	-	-	-	-	-	68	-	-	-	-	-	-	-	-	-	X	-	-	-	A	A	-	-
Butyl Acetate	-	-	0.9	-	-	-	-	X	70	X	-	73	-	-	150	X	-	X	-	-	X	-	-	-	-	-	-
Butyl Acrylate Saturated	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Butylamine	$C_4H_9NH_2$	-	-	X	X	X	X	X	-	X	200	-	-	350	-	-	-	-	-	-	-	-	-	-	-	-	-
Butylbenzene	$C_6H_5C(CH_3)_3$	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Butyl Benzoate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Butyl Bromide	C_4H_9Br	-	-	-	-	-	230	-	-	X	-	-	-	250	-	-	-	100	-	-	-	-	-	-	-	-	-
Butyl Butyrate (Butyl Butanoate)	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	A	-	-	A
Butyl Carbitol	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Butyl Cellosolve (Ethylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Glycol Monobutyl Ether)	-	-	-	-	-	-	-	-	-	X	-	73	-	-	150	X	-	-	-		-	-	-	-	-	-	-
Butyl Chloride (Chlorobutane)	-	-	-	-	-	X	250	-	-	X	-	-	-	350	-	-	100	-			-	-	-	B	-	-	B
Butyl Ether	$C_4H_9OC_4H_9$	-	-	X	X	X	100	-		X	200	-	-	140	-	-	X	X	X	100	-	-	-	-	-	-	-
Butyl Formate	$HCOOC_4H_9$	-	-	-	-	-	-	-	-	X	-		-	-	-	-	-		-	-	-	-	-	-	-	-	-
Butyl Mercaptan	C_4H_9SH	-	-	-	-	-	230	-	-	X	-	-	-	350	-	-	-	-	-	-	-	-	-	-	A	-	-
Butyl Phenol	-	-	-	X	X	X	210	-	-	X	-	250	-	400	-	-	-	-	-	-	-	-	-	-	-	-	-
Butyl Phthalate	-	-	-	X	X	100	180	-	-	X	200	-	-	200	-	-	X	-	-	X	-	-	-	-	-	-	-
Butyl Stearate	-	-	-	-	-	-	250	-	-	-	-	73	-	250	-	-	190	100	X	100	-	-	-	A	-	-	-
Butylene (Liquified	-	-	-	-	-	X	250	-	-	-	-	-	-	250	-	-	140	X	X	100	-	A	-	A	-	-	-
Petroleum Gas)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Butyraldehyde	-	-	-	-	-	-	-	-	-	X	-	-	-	-	150	-	X	X	X	X	-	-	-	A	-	-	A
Butyric Acid	-	-	-	X	100	180	220	X	-	X	-	250	-	-	200	180	70	X	X	X	-	X	-	B	-	A	A
Cadmium Cyanide	$Cd(CN)_2$	-	-	140	180	-	-	140	140	-	-	150	-	-	-	-	-	-	70	-	-	-	-	-	-	-	-
Cadmium Salts	-	-	-		-	-	-	140	140	-	-	-	-	-	-	-		-	-		-	-	-	-	-	-	-
Caffeine Citrate	-	-		-	-	-	-		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-		-
Calamine			3.5		-	-			-	-		-		-	-						-	-	-		-	-	-
Calcium Acetate	-	-		140	180	180	250	140	140	-	-	-	-	-	-	-		-	-	-				-		-	-
Calcium Bisulfide	$Ca(HS)_2$	-	-	120	160	200	210	140	X	-	-	250	-	400	-	-	180	X	100	140	-	A	A	B	-	A	A
Calcium Bisulfite	$Ca(HSO_3)_2$	-	-	100	140	200	210	-	-	-	-	250	-	210	270	200	180	X	100	100	-	-	A	-	-	-	-
Calcium Carbonate	$CaCO_3$	-	2.7	140	200	200	250	140	-	176	-	250	-	300	-	200	180	140	100	100	-	A	A	A	A	A	A
Calcium Chlorate	$Ca(CLO_3)_2$	-	2.7	140	180	200	250	140	-	176	-	250	-	400	200	200	180	140	73	73	-	A	-	A	A	-	B
Calcium Chloride	$CaCL_2$	-	2.1	140	200	200	250	140	140	176	200	250	-	350	270	200	180	200	150	100	-	A	A	B	B	A	A
Calcium Cyanide	$CaCN_2$	-	-	-	-	-	-	140	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium Hydroxide	$Ca(OH)_2$	-	2.3	140	180	210	250	140	-	176	-	250	-	400	100	180	200	180	70	140	-	A	A	A	A	A	A
Calcium Hypochlorite	$Ca(OCL)_2$	-	2.3	140	180	180	200	140	140	100	-	250	-	380	150	200	180	100	X	X	-	A	A	B	-	-	B

CHEMICAL RESISTANCE

ARIZONA DEPARTMENT OF
ENVIRONMENTAL QUALITY
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CHEMICAL RESISTANCE GUIDE

PLASTIC — ELASTOMER — SEAL — METAL

CHEMICAL	FORMULAS		APPROX. SP.GRAVITY @ 100% CONC.	PVC	CPVC	POLYPROPYLENE (PP)	POLYVINYLIDENE FLUORIDE (PVDF)	POLYETHYLENE (PE)	POLYETHYLENE-CROSS LINKED (XLPE)	DURAPLUS ABS	RYTON	HALAR	PEEK	TEFLON	EPOXY	VINYLESTER	POLYSULFONE	VITON	EPDM	NEOPRENE	BUNA N (NITRILE)	CARBON	CERAMIC	304 STAINLESS STEEL	316 STAINLESS STEEL	TITANIUM	HASTELLOY C
Calcium Nitrate	$Ca(NO_3)_2$	-	1.82	140	180	180	250	140	140	140	200	250	-	400	250	200	-	210	180	100	180	-	-	A	-	-	-
Calcium Oxide	CaO	-	-	140	180	180	250	140	-	150	-	250	-	400	-	-	-	-	210	160	180	-	-	A	-	-	-
Calcium Phosphate	$CaH_4(PO_4)_2$	-	2.3	-	-	-	-	140	140	-	-	-	-	-	150	-	-	-	-	-	-	-	-	-	-	-	-
Calcium Sulfate	$CaSO_4$	-	2.9	140	180	180	210	140	140	150	200	250	-	400	250	200	-	200	210	150	180	A	A	A	A	A	B
Calcium Sulfide	CaS	-	-	140	140	180	180	140	140	-	-	-	-	400	200	200	-	200	150	100	150	-	-	-	-	-	-
Calcium Thiosulfate	CaS_2O_3	-	1 87	-	-	-	-	140	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calgon (Sodium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexametaphosphate)	-	-	-	-	-	-	-	140	140	-	-	-	-	-	-	-	-	-	-	-	-	A	A	-	-	-	-
Cane Sugar Liquors	-	-	-	140	180	140	250	140		150	-	150	-	350	-	-	-	200	250	150	150	A	A	A	A	-	A
Caprylic Acid (Octanic Acid)	$CH_3(CH_2)_6COOH$	-	-	140	180	150	220		-	X	-	150	-	350	X	200	-	-	-	-	-	A	A	-	-	-	-
Carbinol (See Alcohol, Methyl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbolic Acid (see Phenol)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Bisulfide (see	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Disulfide)	CS_2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A
Carbon Dioxide (wet or dry)	CO_2	-	-	140	180	180	250	140	140	90	-	250	-	350	200	200	-	210	170	150	180	-	-	A	A	A	A
Carbon Disulfide	CS_2	-	-	X	X	X	68	X	X	X	200	73	-	400	73	X	-	180	X	X	X	A	B	A	A	-	A
Carbon Monoxide	CO	-	-	140	180	180	250	140	140	140	-	150	-	400	200	200	-	180	-	200	180	A	A	A	A	-	-
Carbon Tetrachloride	CCL_4	-	1.6	X	X	X	140	X	X	X	-	250	-	350	150	-	-	190	X	X	X	A	A	A	C	A	A
Carbonic Acid	H_2CO_3	-	-	140	210	210	250	140	140	-	-	250	-	350	180	140	-	200	210	70	180	A	A	A	A	-	A
Casein	-	-	-	-	-	-	50	-	-	-	-	-	-	250	-	-	-	180	180	-	-	-	-	-	-	-	-
Castor Oil	-	-	0.95	140	-	150	250	140	140	140	-	250	-	350	220	200	-	140	140	100	140	-	-	A	A	-	A
Catsup	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	A	-	A
Caustic Lime -Calcium Hydroxide	$Ca(OH)_2$	-	-	140	180	200	250	-	-	176	-	250	-	250	100	180	-	210	210	70	140	A	A	A	-	-	A
Caustic Potash (Potassium	-	-	-	-	-	-	-	-	-	176	-	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydroxide)	KOH	-	2.04	140	180	200	140	-	-	-	-	-	-	200	180	150	-	X	200	150	70	-	-	A	-	-	-
Caustic Soda (Sodium	-	-	-	-	-	-	-	-	-	176	-	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydroxide)	$NaOH$	-	2.13	140	180	200	100	X	140	-	-	-	-	250	120	100	-	X	200	140	180	-	-	A	-	-	-
Cellosolve (See Butyl Cellosolve)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cetyl Alcohol	$C_{16}H_{33}OH$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloral Hydrate (knockout drops)	$CCL_3CH(OH)_2$	-	1.9	140	160	X	200	-	-		-	121	-	200	-	-	-	X	-	-	X	-		-	C	-	-
Chloroacetic Acid	$CH_2CLCOOH$	X	-	-	X	-	-	X	X	X	-	212	-	300	100	200	-	X	-	X	X			C	C	-	-
Chloric Acid	$HClO_3$	20	-	140	180	140		-	-	-	-	-	-	140	-	-	-	100	-	-	-	-	-	C	X	-	A
Chloric Acid	$HClO_3$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
Chlorinated Glue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorine Dioxide	CLO_2	15	-	73	73	X	200	-	-	X	-	150	-	140	X	150	-	140	X	X	X	-	-	-	X	-	-
Chlorine Gas Dry	CL_2	-	-	X	X	X	250	X	X	X	-	212	-	350	X	150	-	140	X	X	X	A	A	-	-	-	-
Chlorine Gas Wet	-	-	-	X	X	X	-	X	X	X	-	212	-	-	X	200	-	140	X	X	X	-	-	A	-	-	A
Chlorine Liquid	-	-	-	X	X	X	200	X	X	X	-	212	-	400		-	-	140	-	-	X	-	-	C	-	-	A
Chlorine Water	-	-	-	140	180	-	250	-	-	-	-	212	-	400	-	200	-	180	73	X	X	C	A	-	-	-	-
Chlorosulfonic Acid	$CLSO_2OH$	6	1 77	X	X	X	X	X	X		X	73	-	180	-	X	-	X	X	X	X	-	-	X	-	-	-
Chlorox Bleach	$NaOCL:H_2O$	5.5	-	140	140	140	140	140	140	-	-	212	-	350	X	150	-	140	100	73	73			X	B	X	-
Chocolate Syrup	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	100	-	100	-	-	-	-	A	-	B
Chrome Alum (Chr. Potass. Sulf.)	$CrK(SO_4)_2$	-	-	73	73	140	200	140	140	176	-	-	-	210	200	200	-	210	140	160	150	-	-	A	-	-	
Chromic Acid	H_2CrO_4	5	2.8	140	180	140	250	140	140	X	200	250	-	400	X	200	-	180	73	X	-	X	C	B	A	-	-
Chromic Acid	H_2CrO_4	10		140	180	140	250	140	140	X	200	212	-	400	X	100	-	180	73	X	-	X		A	-	-	A
Chromic Acid	H_2CrO_4	20		140	180	X	250	140	140	X	200	212	-	400	X	100	-	140	73	X	-	X	-	B	B	-	A
Chromic Acid	H_2CrO_4	30	-	100	180	X	200	100	140	X	200	212	-	400	X	X	-	300	-	-	140	X	-	B	-	-	A
Chromic Acid	H_2CrO_4	50	-	X	73	-	180	100	140	X	200	212	-	350	X	X	-	300	-	-	140	X	-	C	B	A	B
Chromium Alum.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Citric Acid	-	-	1.54	140	180	180	240	140	140	176	200	250	-	200	250	200	-	200	200	200	200	-	-	-	-	-	-
Citric Oils	-	-	-	-	-	-	-	-	-	-	200	-	-	-	-	-	-	-	-	-	-	A	A	-	-	-	-
Cobalt Chloride	$CoCL_2$	-	3.35	-	-	100	-	-	-	176	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-
Coconut Oil	-	-	-	-	-	100	250	140	140	-	200	250	-	250	-	-	-	340	-	-	200	-	-	-	-	-	-
Cod Liver Oil	-	-	-	-	-	-	-	-	-	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CHEMICAL RESISTANCE

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ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Waste Programs Div.
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CHEMICAL RESISTANCE GUIDE

Chemical	Formulas	Approx. Sp.Gravity @ 100% Conc.		PVC	CPVC	Polypropylene (PP)	Polyvinylidene Fluoride (PVDF)	Polyethylene (PE)	Polyethylene-Cross Linked (XLPE)	Duraplus ABS	Ryton	Halar	PEEK	Teflon	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
				Plastic														Elastomer				Seal		Metal			
Coffee	-	-	-	-	-	-	-	-	-	-	200	-	-	-	-	-	-	200	140	-	100	A	A	A	A	-	-
Coke Oven Gas	-	-	-	X	-	-	230	-	-	X	-	250	-	400	-	-	-	180	-	180	X	A	A	A	A	-	-
Cola Concentrates	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	A	-	-	-	-
Copper Acetate	$Cu(C_2H_3O_2)_2$	-	-	73	-	73	250	-	-	-	-	-	-	250	180	180	-	X	150	X	73	-	A	B	A	-	B
Copper Carbonate	$Cu_2(OH)_2CO_3$	-	-	140	170	180	250	140	-	176	-	150	-	350	-	-	-	190	210	-	-	-	A	A	-	-	-
Copper Chloride	$CuCL_3$	-	3.4	140	190	180	250	-	-	176	-	300	-	350	250	200		200	210	160	180	-	A	C	C	A	A
Copper Cyanide	$Cu(CN)_2$	-	-	140	190	180	200	140	-	176	-	300	-	300	220	200	-	190	200	160	180	A	A	A	A	B	A
Copper Fluoborate	-	-	-	100	190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper Fluoride	CuF_2	-	2.9	140	170	140	250	140	-	176	-	300	-	350	-	-	-	190	210	140	70	-	A	-	-	-	-
Copper Nitrate	$Cu(NO_3)_2$	-	2.3	140	140	180	210	140	-	176	-	300	-	350	250	200	-	200	210	160	70	-	A	A	-	-	-
Copper Salts	-	-	-	140	140	180	210	140	140	-	-	-	-	350	220	200	-	210	200	140	140	-	A	-	-	-	-
Copper Sulfate	$CuSO_4$	-	2.3	140	180	180	210	140	140	176	200	300	-	350	220	200	-	210	200	140	140	-	A	A	-	-	-
Copper Sulfate	$CuSO_4$	5	-	140	180	180	210	140	140	176	200	300	-	350	220	200	-	210	200	140	140	A	A	A	-	-	-
Corn Oil	-	-		73	180	100	250	-	-	X	-	-	-	400	-	-	-	200	X	200	180	-	A	A	-	-	-
Corn Syrup	-	-	-	140	73	150	250	-		-	-	-	-	400	220	180	-	210	100	100	100	-	A	A	-	-	-
Cottonseed Oil	-	-	-	140	180	180	250	X	140	X	200	-	-	400	-	-	-	300	X	150	180	-	A	A	-	-	-
Cream	-	-	-	-	190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Creosol	$CH_3C_6H_4OH$	-	1.05	X	-	X	180	X	70	-	200	-	-	400	-	-	-	100	X	X	X	A	A	A	-	-	-
Creosote	-	-	-	X	X	-	-	-	-	X		-	-	400	-	-	-	100	X	X	70	-	-	-	-	-	-
Cresols	-	-	-	X	X	X	180	-	-	X	200	-	-	400	-	-	-	100	X	X	X	-	-	A	-	-	-
Cresylic Acid	-	-	-	X	X	X	150	-	-	X	-	150	-	-	X	X	-	200	X	X	X	A	A	A	-	-	-
Croton Aldehyde	$CH_3CHCHCHO$	-	-	X	X	73	180	-		X		73	-	210	-	-	-	100	-		X	-	-	A	-	-	-
Crude Oil	-	-	-	140	X	73	250	-	-	-	200	250	-	350	250	200	-	300	X	70	70	-	-	A	-	-	-
Cryolite	Na_3ALF_6	-	-	140	190	180	250	-	-	-	-	-	-	300	-	-	-	200	100	100	70	-	-	-	-	-	-
Cupric Cyanide (See		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper Cyanide)	$Cu(CN)_2$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cupric Fluoride	CuF_2	-	-	140	-	180	250	-	-	176	-		-	250	250	-	-	200	210	-	-	-	-	-	-	-	-
Cupric Nitrate	$Cu(NO_3)_2$	-	-	140	170	180	250	140	-	176	-	-	-	-	-	-	-	200	210	160	180	-	A	-	-	-	-
Cupric Salts	-	-	-	140	170	150	250	-	-	-	-	-	-	-	-	-	-	200	210	-	180	-	A	-	-	-	-
Cupric Sulfate (See	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper Sulfate)	$CuSO_4$	-	-	-	-		-			-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cutting Oil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-
Cyanic Acid (Isocyanic Acid)	HN=C=O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	A	A	-	-
Cyclohexane	-	-	-	X	X	X	210	X	-	X	-	250	-	400	150	120	-	180	X	X	X	A	A	A	A	-	-
Cyclohexanol	C_6H_{12}	-	0.94	X	X	100	210	140	-	X		121	-	400	150	-	-	180	-	-	-	-	-	-	-	-	-
Cyclohexanone	$C_6H_{11}OH$	-	0.95	X	X	X	100	X	X	X	200	121	-	400	X	100	-	X	X	-	X	-	-	-	-	-	-
Decalin	$C_6H_{10}O$	-	-	X	X	180	250	-	-	X	-	-	-	-	-	-	-	73	X	X	X	-	-	-	-	-	-
Decanal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Decane	$CH_3(CH_2)_8CH_3$	-	-	-	-	-	250	-	-	-	-	-	-	250	-	-	-	100	X	X	X	-	-	-	-	-	-
Detergents	-	-	-	140	180*	180	250	X	140	-	200	250	-	400	180	150	-	210	200	160	180	A	A	-	A	-	-
Detergents, Heavy Duty	-	-	-	140	180*	150	150	X	140	-	-	250	-	400	180	150	-	180	-	-	180	A	A	-	-	-	-
Developers (Photo)	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dextrin, Starch Gum	-	-	-	140	200	180	250	140	140	176	-	250		400	-	-	-	210	200	200	180	-	-	-	A	-	-
Dextrose (Glucose)	-	-	-	140	200	180	250	140	140	176	-	250	-	400	-	-	-	210	200	70	180	-	-	-	A	-	-
Diacetone Alcohol	-			X	X	100	100	-	-		-	121		350	-	-		X	70	X	X		-	-	A	-	A
Diallyl Phthalate				-	-	-	-	-	-	X			-	-	180	180	-		-	-	-	-		-	-	-	
Diazo Salts	-	-	-	140	190	180	240	140	140	-	-	-	-	350	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibenzyl Ether	-	-	-	X	X	X	100	-	-	X	-	-	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-
Dibutylamine	$(C_4H_9)_2NH$	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibutyl Ether	-	-	-	-	-	-	100	-	-	X	-	73	-	350	-	-	-	X	X	X	68	-	-	-	-	-	-
Dibutyl Phthalate	$C_6H_4(COOC_4H_9)_2$	-	-	X	X	73	150	-	-	X	-	73	-	350	180	180	-	X	70	X	X	-	-	-	A	-	-
Dibutyl Sebacate	-	-	-	-	-	-	-	-	-	X	-	212	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-
Dicalcium Phosphate	$CaHPO_4$	-	-	-	-	-	-	-	-	-	-	-	-	-	150	120	-	-	-	-	-	-	-	-	-	-	-
Dichlorethane (ethylene dichloride)	$ClCH_2CH_2CL$	-	-	X	X	X	210	X	X	X	-	73	-	400	-	-	-	150	-	X	-	C	A	-	A	-	-

CHEMICAL RESISTANCE

HARRINGTON

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
JAN 15 2008
Waste Programs Div.
Permits Section

CHEMICAL RESISTANCE GUIDE

CHEMICAL	FORMULAS	APPROX. SP.GRAVITY @ 100% CONC.		PLASTIC														ELASTOMER				SEAL	METAL				
				PVC	CPVC	POLYPROPYLENE (PP)	POLYVINYLIDENE FLUORIDE (PVDF)	POLYETHYLENE (PE)	POLYETHYLENE-CROSS LINKED (XLPE)	DURAPLUS ABS	RYTON	HALAR	PEEK	TEFLON	EPOXY	VINYLESTER	POLYSULFONE	VITON	EPDM	NEOPRENE	BUNA N (NITRILE)	CARBON	CERAMIC	304 STAINLESS STEEL	316 STAINLESS STEEL	TITANIUM	HASTELLOY C
Ethyl Cellosolve	-	-	-	-	-	-	-	-	-	X	-	-	-	-	150	X	-	-	-	-	-	-	-	-	-	-	-
Ethyl Chloride (Chlroethane)	C_2H_5CL	-	0.92	X	X	X	250	X	X	X	200	250	-	350	X	X	-	140	70	70	X	A	A	A	-	-	-
Ethyl Ether	$(C_2H_5)_2O$	-	-	X	X	X	100	X	X	X	200	121	-	200	100	X	-	X	X	X	X	-	-	A	A	-	-
Ethyl Formate	$HCOOC_2H_5$	-	-	X	X	X	X	-	-	X	-	73	-	200		-	-	X	70	-	X	-	-	-	-	-	-
Ethyl Hexanol	-	-	-	-	-	-	250	-	-	-	-	-	-	250	-	-	-	-	X	X	-	-	-	-	-	-	-
Ethyl Sulfate	$(C_2H_5)_2SO_4$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	X	-	-	X	-	-	-
Ethylcellulose	-	-	-	-	-	-	-	-	-	176	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylene Bromide	$(CH_2)_2Br_2$	-	-	X	X	X	150	X	X	X	-	250	-	400	-	-	-	73	X	X	X	-	-	A	A	B	A
Ethylene Chlorohydrin	$(CH_2)_2CLOH$	-	-	X	X	140	150	X	X	X	-	73	-	-	150	100	-	150	-	-	X	-	-	-	-	-	-
Ethylene Diamine	$(CH_2)_2(NH_2)_2$	-	-	X	X	190	90	100	-	-	-	73	-	350	X	X	-	150	-	80	150	-	-	-	A	-	-
Ethylene Dichloride	$CLCH_2CH_2CL$	-	1 25	X	X	X	200	X	X	X	-	73	-	-	120	X	-	150	X	X	X	C	A	A	-	-	-
(Dichloroethane)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylene Glycol	CH_2OHCH_2OH	-	1.12	140	*	180	200	140	140	176	200	250	-	400	270	200	-	300	180	150	200	-	-	A	-	-	-
Ethylene Oxide	$(CH_2)_2O$	-	0.9	X	X	X	200	70	70	X	-	250	-	400	X	X	-	X	X	X	X	-	-	-	-	-	-
Fatty Acids	-	-	-	140	140	140	250	X	140	-	-	250	-	250	230	200	-	180	X	-	180	-	-	-	-	-	-
Ferric Acetate (Iron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acetate, Basic)	$Fe(C_2H_3O_2)_2OH$	-	-	-	-	-	-	140	140	-	-	-	-	-	200	180	-	X	-	-	X	-	-	-	-	-	-
Ferric Chloride	$FeCL_3$	-	2.9	140	190	180	250	140	140	X	200	250	-	400	220	200	-	210	200	160	180	A	A	X	X	A	C
Ferric Hydroxide	$Fe(OH)_3$	-	-	140	180	180	-	140	-	-	-	-	-	250	-	-	-	180	180	100	180	-	-	-	-	-	-
Ferric Nitrate	$FeNO_3$	50	1 7	140	190	180	250	140	140	176	-	250	-	400	220	200	-	180	180	100	100	-	-	B	A	-	-
Ferric Sulfate	$Fe(SO_4)_3$	-	3.1	140	180	180	250	140	140	68	-	250	-	400	220	200	-	190	210	200	180	C	A	B	-	-	-
Ferrous Chloride	$FeCL_2$	-	3.2	140	180	180	250	140	140	-	200	250	-	400	220	200	-	200	200	80	200	A	A	X	X	A	A
Ferrous Nitrate	-	-	-	140	180	180	250	140	-	-	-	250	-	0	220	200	-	200	180	200	200	-	-	-	-	-	-
Ferrous Sulfate	$FeSO_4$	-	1 9	140	190	180	280	140	140	140	-	250	-	400	220	200	-	200	180	200	200	A	A	A	A	B	A
Fish Solubles	-	-	-	140	190	180	250	X	140	140	-	-	-	400	-	-	-	-		-	200	-	-	-	-	-	-
Fluoboric Acid	HBF_4	-	1.8	140	190	140	200	140	140	-	-	73	-	400	200	200	-	200	160	100	170	-	-	B	-	-	-
Fluorine Gas, wet	F_2	-	-	X	X	X	80	X	X	X	-	73	-	250	X	X	-	X	-	-	-	X	-	-	-	-	-
Fluorine, Liquid	F_2	-	-	X	X	X	-	X	X	X	-	-	-	X	X	X	-	100	X	X	X	X	-	X	-	-	A
Fluosilicic Acid (Hydro-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluosilic Acid)	H_2SiF_6	25	1.11	X	170	180	210	140	140	176	200	250	-	250	-	100	-	200	140	140	140	A	X	B	-	-	A
Formaldehyde	HCHO	-		140	150	150	140	X	70	-	200	121	-	250	150	150	-	X	140	140	X	-	-	A	-	-	-
Formaldehyde	HCHO	35	0.82	140	150	150	140	X	70	-	200	121	-	250	150	150	-	X	140		X	-	-	A	-	-	-
Formaldehyde	HCHO	50	-	140	100	73	140	X	-	-		73	-	250	-	-	-	X	140	80	X	A	-	A	-	-	-
Formic Acid	HCOOH	25	-	100	120	100	210	X	140	X		212	-	300	X	100	-	100	200	100	X	-	-	A	-	-	-
Freon 11 (MF)	CCL_3F	-	1.22	72	72	73	250	-	-	-	200	121	-	250	-	-	-	180	X	200	180	-	-	A	A	-	-
Freon 113 (TF)	CL_3CCF_3	-	-	-	-	-	250	-		-	200	121	-	250	-	-	-	70	X	130	73	-	-	-	A	-	-
Freon 114	$C_2CL_2F_4$	-	-	-	-	-	250	-	-	-	200	121	-	250	-	-	-	100	X	130	100	-	-	-	A	-	-
Freon 12	CL_2CF_2	-	-	-	-	-	250	70	70	-	200	121	-	250	-	-	-	180	73	200	180	-	-	-	-	-	-
Freon 12 (Wet)	CL_2CF_2	-	-	-	-	-	-	-	-	-	X	-	-	250	-	-	-	-	-	-	-	-	-	-	-	-	-
Freon 22	$HCClF_2$	-	-	X	X	73	150	-	-	-	200	121	-	X		-	-	X	X	130	X	-	-	A	A	-	A
Freon TF	-	-	-	-	-	-	-	-	-	68	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fructose	-	-	-	140	190	180	250	140	140	176	200	-	-	400	220	200	-	180	75	160	180	-	-	A	-	-	-
Fruit Juice	-	-	-	140	190	180	250	140	140	-	200	121	-	400		-	-	210	-	200	180	-	-	A	-	-	-
Fruit Pulp		-	-	140	190	180	250	140	140	-	200	-	-	400	-	-	-	210	-	200	180	-	-	-	-	-	-
Fuel Oil	-		-	-		X	250	X	70	X	200	-		400	220	180		80	X	140	200			A	A	B	A
Fumaric Acid (Boletic Acid)		-	-	-		-	-		-	-	-	-			-	-	-	-	-	-	-	-	-	-		-	-
Furan	-	-	-	-	-	-	X	-	-	-	200	-	-	-	-	-	-	X	X	-	X	-	-	-	-	-	-
Furfural (Ant Oil) Bran Oil	-	-	0.94	X	X	X	80	X	X	X	200	121	-	400	X	X	-	X	-	200	X	-	-	A	-	-	-
Furfuryl Alcohol	-	-	1.2	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gallic Acid	-	-	-	140	190	73	100	X	140	-	-	121	-	400	-	-	-	190	70	70	70	-	-	A	-	-	-
Gas, Natural	CH_4	-	-	140	190	73	250	-	-	-	-	250	-	400	-	-	-	180	-	-	200	-	-	-	-	-	-
Gasoline, Leaded	-	-	-	100	-	X	250	X	70	X	200	250	-	400	230	150	-	180	X	80	180	-	-	A	-	-	-
Gasoline, Sour	-	-	-	140	150	X	250	X	70	X	200	250	-	400	230	150	-	180	X	80	200	-	-	A	-	-	-
Gasoline, Unleaded (1. Dry)	-	-	-	70	-	X	280	X	70	X	200	250	-	400	250	150	-	180	X	200	200	-	-	A	-	-	-

HARRINGTON

ARIZONA DEPARTMENT OF
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CHEMICAL RESISTANCE GUIDE

PLASTIC | ELASTOMER | SEAL | METAL

CHEMICAL	FORMULAS		APPROX. SP.GRAVITY @ 100% CONC.	PVC	CPVC	POLYPROPYLENE (PP)	POLYVINYLIDENE FLUORIDE (PVDF)	POLYETHYLENE (PE)	POLYETHYLENE-CROSS LINKED (XLPE)	DURAPLUS ABS	RYTON	HALAR	PEEK	TEFLON	EPOXY	VINYLESTER	POLYSULFONE	VITON	EPDM	NEOPRENE	BUNA N (NITRILE)	CARBON	CERAMIC	304 STAINLESS STEEL	316 STAINLESS STEEL	TITANIUM	HASTELLOY C
Gelatin	-	-	-	140	190	180	250	-	140	176	200	212	-	300	-	-	-	180	200	200	180	-	-	A	A	-	-
Gin	-	-	-	140	190	120	250	X	70	X	200	250	-	300	-	-	-	-	-	-	-	-	-	-	A	-	-
Gluconic Acid	-	50	-	-	-	-	-	-	-	-	-	-	-	-	180	100	-	-	-	-	-	-	-	-	-	-	-
Glucose	$C_6H_{12}O_6$	-	-	140	190	180	280	140	140	176	200	250	-	400	220	200	-	300	250	160	180	-	-	A	A	-	-
Glue	-	-	-	140	190	120	-	-	-	-	-	-	-	250	-	-	-	250	100	160	140	-	-	A	-	-	-
Glycerine (see Glycerol)	$C_3H_5(OH)_3$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	A	-	A
Glycerol (Glycyl Alcohol)	$C_3H_5(OH)_3$	-	1.3	140	190	180	280	X	140	176	200	-	-	400	300	200	-	250	200	160	70	-	-		-	-	A
Glycolic Acid (see	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydroxyacetic Acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	A	-	B
Glycols	-	-	-	140	190	120	250	X	140	-	200	250	-	300	250	200	-	250	200	160	140	-	-	A	-	-	-
Glyoxal	OHCCHO	30	1.26	-	-	-	-	-	-	-	-	-	-	120	-	-	-	-	-	70	X	-	-	A	-	-	-
Gold (Auric Cyanide)	$Au(CN)_4$	-	-	-	-	-	-	-	-	-	-	-	-	250	-	-	-	180	-	140	140	-	-	-	-	-	-
Grape Juice	-	-	-	140	140	-	250	-	140	-	-	-	-	250	-	-	-	210	140	160	180	-	-	A	-	-	-
Grape Sugar	-	-	-	140	140	140	250	140	140	-	-	-	-	250	-	-	-	210	140	160	180	-	-	A	-	-	-
Grease	-	-	-	-	-	-	-	70	140	-	-	-	-	-	-	-	-	200	X	100	150	-	-	A	-	-	-
Green Liquor (Alkaline pulp)	-	-	-	100	140	150	-	100	-	120	-	-	-	-	180	X	-	70	-	140	140	-	-	A	-	-	-
Helium	He	-	-	140	190	73	150	-	-	X	-	-	-	-	-	-	-	-	150	70	150	-	-	-	-	-	-
Heptane	$CH_3(CH_2)_5CH_3$	-	-	100	150	73	250	-	-	X	200	250	-	300	200	180	-	340	X	200	180	-	-	-	-	-	-
Hexane	$CH_3(CH_2)_4CH_3$	-	0.66	X	72	73	250	X	70	X	200	250	-	300	150	120	-	340	X	80	180	-	-	A	-	-	-
Hexene	-	-	0.67	X	X	X	-	-	-	-	-	-	-	300	-	-	-	-	X	X	70	-	-	A	-	-	-
Hexyl Alcohol (Hexanol)	$C_6H_{11}OH$	-	-	140	190	73	180	-	-	-	-	73	-	250	-	-	-	250	-	X	140	-	-	-	-	-	-
Honey	-	-	-	140	190	180	300	140	140	-	-	-	-	400	-	-	-	210	150	140	150	-	-	-	-	-	-
Hydraulic Oil	-	-	-	-	-	X	-	-	70	-	-	-	-	300	250	200	-	250	X	70	160	-	-	A	-	-	-
Hydraulic Oil (synthetic)	-	-	-	-	-	X	-	-	-	-	200	-	-	300	250	200	-	250	X	X	X	-	-	-	-	-	-
Hydrazine	H_2NNH_2	-	1	X	X	X	200	-	140	-	-	-	-	250	-	-	-	X	70	X	70	-	-	A		-	-
Hydrobromic Acid	HBr	48	1.5	140	180	180	250	140	140	-	-	-	-	250	100	120	-	190	140	X	X	-	-	A	-	-	-
Hydrobromic Acid	HBr	20	-	140	180	180	250	140	140	-	-	-	-	250	100	120	-	190	140	X	X	-	B	C	X	-	-
Hydrobromic Acid	HBr	48	-	140	180	180	250	140	140	-	-	-	-	400	100	120	-	190	140	X	X	-	-	C	-	-	-
Hydrochloric Acid (Dry Gas)	HCL	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrochloric Acid	HCL	10	-	140	180	160	250	140	140	176	X	-	-	400	150	200	-	200	150	80	X	-	-	-	X	-	-
Hydrochloric Acid	HCL	20	-	140	180	160	250	140	140	176	X	-	-	400	120	200	-	200	100	80	180	-	-	X	-	-	-
Hydrochloric Acid	HCL	25	-	140	180	160	250	140	140	104	X	-	-	400	X	150	-	200	100	X	X	-	-	-	X	-	-
Hydrochloric Acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(Muriatic Acid)	HCL	37	1.19	140	180	160	210	140	140	68	X	212	-	400	X	150	-	200	100	X	X	A	C	X	X	-	-
Hydrocyanic Acid	-	-	-	-	-	-	-	-	-	-	-	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(Prussic Acid)	HCN	-	-	140	160	140	250	140	140	120	-	-	-	400	-	-	-	190	200	X	200	A	A	A	A	-	-
Hydrocyanic Acid	HCN	10	-	140	140	140	250	140	140	-	-	-	-	400	-	-	-	190	200	X	200	-	-	A	-	-	-
Hydrofluoric Acid	HF	10	-	100	X	150	250	70	140	-	-	-	-	300	X	-	-	150	100	70	-	-	-	-	-	-	-
Hydrofluoric Acid	HF	20	-	100	X	150	250	70	140	-	-	-	-	300	X	X	-	150	100	70	X	B	C	C	-	-	A
Hydrofluoric Acid	HF	30	-	100	X	120	250	70	140	-	-	212	-	300	X	-	-	200	100	X	X	-	-	C	-	-	A
Hydrofluoric Acid	HF	40	-	68	X	120	250	70	140	-	-	212	-	300	X	X	-	200	70	X	X	-	-	C	-	-	A
Hydrofluoric Acid	HF	50	-	68	X	100	250	70	140	-	-	212	-	300	X	X	-	200	X	X	X	-	-	C	-	-	A
Hydrofluoric Acid	HF	65	-	X	X	100	200	-	140	-	-	-		250	X	X	-	100	X	X	X	-	-	-	-	-	-
Hydrofluoric Acid	HF	75	0.99	X	X	100	200	-	140	-	-	-		250	X	X		100	X	X	X	X	X	X	-	-	-
Hydrofluosilicic Acid	H_2SiF_6	-		73	73	180	250	140	140	176	-	250	-	300	-	100	-	200	140	X	170	-		X	-	-	-
Hydrofluosilicic Acid	H_2SiF_6	20	-	73	73	180	250	140	140	176	-	-	-	300	-	100	-	200	140	X	170	-	-	X	-	-	
Hydrogen	H	-	-	140	X	180	280	140	140	176	200	250	-	300	-	-	-	200	250	200	180	-	-	A	-	-	-
Hydrogen Chloride Gas Dry	HCL	-	1.27	73	-	140	180	140	-	-	-	-	-	300	150	150	-	70	-	70	-	-	-	-	-	-	-
Hydrogen Cyanide	HCN	-	-	140	190	150	280	-	-	-	-	250	-	300	-	-	-	150	100	200	70	-	-	A	-	-	-
Hydrogen Fluoride	HF	-	-	X	X	73	200	-	-	-	-	-	-	250	-	-	-	180	X	X	X	-	-	X	-	-	-
Hydrogen Peroxide	H_2O_2	5	-	140	160	180	250	140	140	68	X	73	-	250	X	150	-	180	100	-	-	-	-	-	-	-	-
Hydrogen Peroxide	H_2O_2	10	-	140	160	73	250	140	140	68	X	-	-	250	X	150	-	180	100	X	X	A	A	C	-	-	-
Hydrogen Peroxide	H_2O_2	30	-	140	73	X	250	140	140	68	X	-	-	250	X	150	-	200	100	X	X	-	-	-	-	-	-
Hydrogen Peroxide	H_2O_2	50	-	100	X	X	250	-	-	-	X	121	-	250	X	-	-	200	X	X	X	-	-	-	-	-	-

CHEMICAL RESISTANCE

HARRINGTON

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Waste Programs Div.
Permits Section

CHEMICAL RESISTANCE GUIDE

CHEMICAL	FORMULAS	APPROX. SP.GRAVITY @ 100% CONC.		PLASTIC: PVC	CPVC	POLYPROPYLENE (PP)	POLYVINYLIDENE FLUORIDE (PVDF)	POLYETHYLENE (PE)	POLYETHYLENE-CROSS LINKED (XLPE)	DURAPLUS ABS	RYTON	HALAR	PEEK	TEFLON	EPOXY	VINYLESTER	POLYSULFONE	ELASTOMER: VITON	EPDM	NEOPRENE	BUNA N (NITRILE)	SEAL: CARBON	CERAMIC	METAL: 304 STAINLESS STEEL	316 STAINLESS STEEL	TITANIUM	HASTELLOY C
Hydrogen Peroxide	H_2O_2	90	-	X	X	X	68	-	-	-	X	121	-	400	X	-	-	100	X	X	X	-	-	-	-	-	-
Hydrogen Peroxide	H_2O_2	-	-	X	X	X	68	-	-	-	X	-	-	400	-	-	-	100	X	X	X	-	-	-	-	-	-
Hydrogen Phosphide	-	-	-	-	-	-	-	-	-	-	-	121	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(See Phosphine)	PH_3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrogen Sulfide	H_2S	-	-	140	190	150	280	140	140	-	-	-	-	400	250	180	-	180	100	X	100	-	-	-	A	-	B
Hydrogen Sulfide (Aq Sol)	H_2S	-	1.19	140	180	150	200	140	140	-	200	121	-	400	250	180	-	140	100	X	100	A	A	A	A	-	B
Hydrogen Sulfide (dry)	H_2S	-	-	140	180	150	80	140	140	-	-	250	-	400	250	180	-	180	100	X	100	-	A	A	A	-	B
Hydroquinone	$C_6H_4(OH)_2$	-	-	140	190	150	250	140	140	X	-	212	-	400	-	-	-	180	X	X	70	-	-	-	-	-	-
Hydroxyacetic Acid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(Glycolic Acid)	$CH_2OHCOOH$	-	1.27	140	190	150	100	-	-	-	-	-	-	400	-	-	-	X	-	X	70	-	-	-	-	-	-
Hydroxyacetic Acid	-	1	-	140	190	150	100	-	-	-	-	-	-	400	-	-	-	X	-	X	70	-	-	-	-	-	-
Hydroxylamine Sulfate	$(NH_2OH)_2H_2SO_4$	-	-	140	190	120	150	-	-	-	-	-	-	-	-	-	-	-	70	70	-	-	-	-	-	-	-
Hypochlorous Acid	HOCL	-	10	140	180	120	250	140	140	-	-	250	-	400	-	-	-	180	70	X	X	-	-	X	X	B	B
Ink	-	-	-	-	-	-	-	X	140	-	-	-	-	-	-	-	-	70	70	70	70	-	-	A	-	-	-
Iodine Solution	I_2	0	-	X	X	X	150	X	X	X	-	212	-	400	120	100	-	180	70	X	70	-	-	C	-	-	-
Isobutyl Alcohol (see	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alcohol, Isobutyl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isoctane	-	-	0.7	72	72	73	250	-	-	X	-	73	-	-	-	-	-	190	X	70	70	-	-	A	-	-	-
Isophorone	-	-	0.92	X	X	-	180	-	-	X	-	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-	-
Isopropanol-see Alcohol,Isopropyl	-	-	-	140	140	140	250	X	140	X	-	250	-	300	180	100	-	140	140	70	70	-	-	A	-	-	-
Isopropyl Acetate	$(CH_3)_2CHOH$	-	0.92	X	-	-	-	-	-	X	-	-	-	200	-	-	-	X	70	X	X	-	-	B	-	-	-
Isopropyl Alcohol (See	$CH_3COOCH(CH_3)_2$	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alcohol, Isopropyl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropyl Chloride (See	$(CH_3)_2CHOH$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorpropene)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropyl Ether	$CH_3CHCLCH_3$	-	0.72	X	X	X	130	-	-	X	-	73	-	140	-	-	-	X	X	X	70	-	-	A	-	-	-
Jet Fuel JP-3	-	-	-	-	-	-	-	-	-	X	200	-	-	200	250	180	-	190	X	X	70	-	-	A	-	-	-
Jet Fuel JP-4	-	-	-	140	72	X	250	-	-	X	200	250	-	400	250	180	-	300	X	X	200	-	-	A	-	-	-
Jet Fuel JP-5	-	-	-	140	72	X	250	-	-	X	200	250		400	250	180	-	300	X	X	200	-	-	A	-	-	-
Kerosene	-	-	0.81	140	72	X	250	X	70	X	200	250	-	400	250	180	-	300	X	X	200	-	-	A	-	-	-
Ketone	-	-	-	X	X	100	100	X	X	X	200	-	-	350		X	-	X	X	X	X	-	-	A	-	-	-
Kraft Liquor	-	-	-	140	190	73	70	140	-	100	-	-	-	400	-	-	-	100	-	70	70	-	-	A	-	-	-
Lacquer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	-	-	A	-	-	-
Lacquer Thinner	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-	-	A	-	-	-
Lactic Acid (Milk Acid)	-	-	1.2	100	120	180	140	X	140	68	200	-	-	400	230	200	-	210	70	70	X	-	-	A	-	-	-
Lard	-	-	-	140	190	73	250	-	140	-	-	-	-	250	-	-	-	190	X	70	140	-	-	A	-	-	-
Lard Oil	-	-	-	140	190	73	48	-	140	-	-	250	-	250	-	-	-	190	X	70	140	-	-	A	-	-	-
Latex	-	-	-	-	-	-	-	-	-	-	-	-	-	-	220	200	-	70	70	100	70	-	-	-	-	-	-
Lauric Acid	$CH_3(CH_2)_{10}COOH$	-	0.83	140	190	150	230	140	-	140	-	212	-	400	220	200	-	100	-	-	70	-	-	-	-	-	-
Lauryl Chloride	$C_{12}H_{25}CL$	-	-	140	72	X	250	X	-	120	-	212	-	400	-	-		200	140	-	70	-	-	-	-	-	-
Lead Acetate (Sugar of Lead)	$Pb(C_2H_3O_2)_2$	-	-	140	190	180	250	140	140	176	-	250	-	400	250	200	-	X	210	160	70	-	-	B	B	A	B
Lead Chloride	$PbCL_2$	-	5.88	140	140	140	250	-	-	176	-	250	-	400	-	-	-	210	140	70	100	-	-	-	-	-	
Lead Nitrate	$Pb(NO_3)_2$	-	4.53	140	180	180	210	-	-	176	-	250	-	400	220	200	-	210	180	-	-	-	-	-	-	-	-
Lead Sulfate	$PbSO_4$	-	6.39	140	190	150	100	150	-	176	-	250	-	400			-	80	210	140	200	-	-		B		B
Lemon Oil				72	72	X	250	-				212		400	-	-		200	-	100	140	A			-	-	
Levulinic Acid	-		-	-	-	-	-	-	-	-	-	-	-		220	200	-	-	-	-	-	-	-				-
Ligroin (Benzene)	-	-	-	X	X	X	200	-	-	X	-	-	-	250	-	-	-	100	X	70	100	-	-	A	-	-	-
Lime (Calcium Oxide)	CaO	-	-	-	-	-	-	-	-	176	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lime-Sulfur Solution	-	-	-	140	190	10	150	-	-	-	-	121	-	-	-	-	-	190	210	100	X	-	-	-	-	-	-
Linoleic Acid (Linolic Acid)	-	-	0.91	140	190	73	250	X	-	-	-	212	-	400	-	-	-	70	X	X	70	-	-	-	-	-	-
Linseed Oil (Flaxseed Oil)	-	-	-	140	190	150	250	X	70	X	-	212	-	400	250	100	-	250	70	70	180	-	-	-	-	-	-
Lithium Bromide	LiBr	-	3.46	140	190	-	230	-	-	-	-	121	-	400	-	-	-	200	-	200	140	-	-	-	-	-	-
Lithium Chloride	LiCL	-	-	140	190	-	250	-	-	-	-	-	-	400	230	200	-	140	100	-	70	-	-	A	-	-	-
LPG	-	-	-	-	-	-	-	-	-	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

HARRINGTON

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
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Permits Section

CHEMICAL RESISTANCE GUIDE

PLASTIC | ELASTOMER | SEAL | METAL

CHEMICAL	FORMULAS		APPROX. SP.GRAVITY @ 100% CONC.	PVC	CPVC	POLYPROPYLENE (PP)	POLYVINYLIDENE FLUORIDE (PVDF)	POLYETHYLENE (PE)	POLYETHYLENE-CROSS LINKED (XLPE)	DURAPLUS ABS	RYTON	HALAR	PEEK	TEFLON	EPOXY	VINYLESTER	POLYSULFONE	VITON	EPDM	NEOPRENE	BUNA N (NITRILE)	CARBON	CERAMIC	304 STAINLESS STEEL	316 STAINLESS STEEL	TITANIUM	HASTELLOY C
Lubricants	-	-	-	-	-	-	-	-	-	-	200	250	-	-	-	-	-	-	-	-	-	A	A	A	-	-	-
Lubricating Oil	-	-	-	140	190	73	250	X	X	-	200	250	-	350	250	200	-	180	X	70	180	A	A	-	-	-	-
Lye Solution (See Sodium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydroxide & Potassium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydroxide)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Machine Oil	-	-	-	140	190	120	210	X	-	-	-	-	-	400	-	-	-	140	-	-	140	-	-	A	-	-	-
Magnesium Acetate	$(MgOOCCH_3)_2$	-	1.42	-	-	-	-	140	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium Carbonate	$MgCO_3$	-	3	140	180	180	210	140	140	176	-	250	-	400	220	200	-	210	170	140	180	-	-	A	-	-	-
Magnesium Chloride	$MgCL_2$	-	2.3	140	190	180	280	140	140	176	200	250	-	400	270	200	-	180	180	170	180	-	-	-	-	-	-
Magnesium Citrate	$MgHC_6H_5O_7$	-	-	140	180	180	250	140	140	-	-	-	-	400	-	-	-	210	180	-	180	-	-	-	-	-	-
Magnesium Hydroxide	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A
(Milk of Magnesia)	$Mg(OH)_2$	-	2.36	140	190	180	250	140	-	176	200	250	-	400	270	150	-	230	170	160	180	A	A	A	A	-	-
Magnesium Nitrate	$Mg(NO_3)_2$	-	2.03	140	190	180	250	140	140	176	-	250	-	400	250	200	-	230	140	160	70	-	A	A	-	-	-
Magnesium Oxide	MgO	-	3.6	-	-	-	-	-	-	176	-	-	-	-	-	-	-	-	140	160	140	-	A	-	-	-	-
Magnesium Sulfate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A
(Epsom Salts)	$MgSO_4$	-	2.6	140	190	180	250	140	140	176	-	250	-	400	270	200	-	200	180	160	180	A	A	A	-	-	-
Maleic Acid	-	-	1.59	140	190	180	250	70	70	-	-	212	-	400	220	200	-	200	70	X	X	A	A	-	-	-	-
Maleic Anhydride	-	-	0.93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	A	A	-	-	-	-
Malic Acid (Apple Acid)	-	-	1.6	140	190	73	250	-	-	-	-	212	-	400	-	-	-	200	X	70	100	-	A	B	B	-	B
Manganese Sulfate	$MnSO_4$	-	2.11	140	180	180	250	-	-	-	-	-	-	400	-	-	-	230	180	160	140	-	-	-	-	-	-
Mash	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mayonnaise	-	-	-	-	-	-	-	-	-	-	-	-	-	400	-	-	-	-	-	-	180	-	-	A	-	-	-
Melamine (Trizane)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercuric Chloride	$HgCL_2$	-	5.4	140	190	180	250	140	-	X	-	212	-	400	220	200	-	190	210	140	140	-	-	X	-	-	-
Mercuric Cyanide	$Hg(CN)_2$	-	4	140	180	180	250	140	-	X	-	212	-	400	-	-	-	70	70	70	140	-	-	A	-	-	-
Mercuric Nitrate	$Hg(NO_2)_2$	-	4.3	140	180	180	250	140	-	-	-	-	-	-	-	-	-	70	-	70	-	-	-	-	-	-	-
Mercuric Sulfate	$HgSO_4$	-	6.47	140	180	180	230	-	-	-	-	212	-	300	-	-	-	70	70	-	70	-	-	-	-	-	-
Mercurous Chloride	Hg_2CL_2	-	6.99	-	-	-	-	-	-	-	-	212	-	400	220	200	-	200	100	140	100	-	-	-	-	-	-
Mercurous Nitrate	$HgNO_3$	-	4.79	140	190	120	250	-	-	-	-	212	-	400	-	-	-	200	100	140	100	-	-	-	B	-	C
Mercury (Quicksilver)	Hg	-	13.6	140	190	150	250	140	140	68	-	250	-	400	270	200	-	200	70	100	100	-	-	A	A	A	A
Methacrylic Acid Glacial	-	-	1.02	X	X	-	-	-	-	X	-	-	-	-	X	X	-	-	-	-	-	-	-	-	-	-	-
Methane (Methyl Hydride)	CH_4	-	-	140	72	120	280	-	-	-	-	212		400	250	200	-	300	X	200	180	-	-	A	-	-	-
Methanesulfonic Acid	CH_3SO_3H	-	1.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methanol (See Alcohol, Methyl)	-	-	0.8	140	210	180	250	X	140	X	-	250	-	400	150	-	-	X	100	140	140	-	-	A	A	-	-
Methoxyethyl Oleate	-	-	0.9	-	-	-	-	-	-	X	-	73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl "Cellosolve"	-	-	-	X	X	73	250	-	-	X	-	212	-	400	-	-	-	X	70	70	X	-	-	A	-	-	-
Methyl Acetate	$CH_3CO_2CH_3$	-	0.92	X	X	68	100	-	-	X	-	-	-	-	-	-	-	X	-	X	X	-	-	A	-	-	-
Methyl Acetone	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	X	-	X	X	-	-	A	-	-	-
Methyl Acrylate	-	-	-	-	-	-	100	-	-	X	-	-	-	300	-	-	-	X	70	X	X	-	-	A	-	-	-
Methyl Alcohol	CH_3OH	-		140	210	180	250	X	140	X	-	250	-	400	150	-	-	100	100	140	140	A	A	A	-	-	-
Methyl Benzene (See Toluene)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl Bromide	CH_3Br		1.73	X	X	X	250	X	X	X	-	250	-	350	-	-	-	180	X	X	X	-	-	-	-	-	-
Methyl Butanol (See	-	-	-	-	-	-		-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alcohol, Amyl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl Butyl Ketone	$CH_3COC_4H_9$		0.83	X	X	X	100		-	X		-	-	400	-	-	-	X	70	X	X	A	A	A	-	-	-
Methyl Chloride				-	-	-	-	-	-	X		250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(Chloromethane)	CH_3CL	-	1.3	X	X	X	250	X	X	X	-	-	-	400	X	X	-	150	X	X	X	-	-	A	A	-	C
Methyl Chloroform	-	-	-	-	-	-	-	-	-	X	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(Trichloroethane)	-	-	-	X	X	X	120	-	-	-	-	-	-	-	X	X	-	80	X	X	X	-	-	A	-	-	-
Methyl Ether (See	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dimethyl Ether)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl Ethyl Ketone (MEK)	$CH_3COC_2H_5$	-	0.82	X	X	73	X	X	X	X	200	121	-	-	100	X	-	X	70	X	X	A	A	-	B	-	-
Methyl Formate	$HCOOCH_3$	-	0.98	-	-	-	-	-	-	X	-	73	-	-	-	-	-	X	100	70	X	-	-	-	-	-	-
Methyl Isobutyl Alcohol	-	-	-	-	-	-	-	-	-	X	-	-	-	-	180	120	-	-	-	-	-	-	-	-	-	-	-

CHEMICAL RESISTANCE

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CHEMICAL RESISTANCE GUIDE

				PLASTIC											ELASTOMER					SEAL	METAL						
CHEMICAL	FORMULAS		APPROX. SP.GRAVITY @ 100% CONC.	PVC	CPVC	POLYPROPYLENE (PP)	POLYVINYLIDENE FLUORIDE (PVDF)	POLYETHYLENE (PE)	POLYETHYLENE-CROSS LINKED (XLPE)	DURAPLUS ABS	RYTON	HALAR	PEEK	TEFLON	EPOXY	VINYLESTER	POLYSULFONE	VITON	EPDM	NEOPRENE	BUNA N (NITRILE)	CARBON	CERAMIC	304 STAINLESS STEEL	316 STAINLESS STEEL	TITANIUM	HASTELLOY C
Methyl Isobutyl Ketone	-	-	0.8	X	X	X	X	-	-	X	200	73	-	400	150	X	-	X	-	X	X	A	A	A	-	-	-
Methyl Isopropyl Ketone	$CH_3COCH(CH_3)_2$	-	0.82	X	X	X	X	-	-	X	-	-	-	400	-	-	-	X	-	X	X	A	A	A	-	-	-
Methyl Methacrylate	-	-	0.94	X	X	X	100	-	-	X	-	121	-	300	100	X	-	X	X	X	X	A	A	-	-	-	-
Methyl Propanol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl Salicylate	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(Wintergreen Oil)	-	-	1.18	72	72	73	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl Sulfate	-	-	-	72	72	X	-	-	-	-	-	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylamine	CH_3NH_2	-	-	X	X	X	X	-	-	X	-	73	-	400	-	-	-	100	70	70	X	-	-	A	-	-	-
Methylene Bromide	CH_2Br_2	-	2.47	X	X	X	150	-	-	X	-	73	-	350	-	-	-	70	X	X	X	-	-	-	-	-	-
Methylene Chloride	CH_2CL_2	-	1.34	X	X	X	100	X	X	X	-	73	-	350	X	X	-	X	X	X	X	A	A	A	-	-	-
Methylene Iodine	CH_2I_2	-	3.33	X	X	X	200	-	-	-	-	73	-	350	-	-	-	200	-	-	-	-	-	-	-	-	-
Methylhexane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylisobutyl Carbinol	-	-	-	72	72	120	150	-	-	X	-	-	-	200	120	-	-	70	70	70	70	-	-	-	-	-	-
Methylmethacryate	-	-	-	-	-	-	180	-	-	-	-	-	-	150	100	X	-	X	X	X	X	-	-	-	-	-	-
N-Methyl Pyrrolidone	-	-	-	X	X	X	X	X	X	X	-	-	-	200	X	X	-	X	X	X	X	-	-	-	A	-	-
Methylsulfuric Acid	CH_3HSO_4	-	1 35	140	190	120	70	-	-	-	-	121	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Milk	-	-	-	140	190	180	280	140	140	176	-	212	-	400	-	-	-	190	190	150	140	A	A	A	-	-	-
Mineral Oil	-	-	-	140	190	72	250	X	70	-	200	250	-	400	270	200	-	300	X	70	140	-	-	A	-	-	-
Molasses	-	-	-	140	190	180	250	140	140	176	-	121	-	400	-	-	-	300	100	150	140	A	A	-	-	-	-
Monochloracetic Acid	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(See Chloracetic Acid)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monochlorobenzene	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(Chlorobenzene)	C_6H_5CL	-	-	X	X	X	140	X	X	-	-	-	-	400	-	-	-	70	X	X	X	-	-	A	-	-	
Monoethanolamine	$HOCH_2CH_2NH_2$	-	-	X	X	150	X	-	-	-	-	-	-	100	-	-	-	190	70	X	150	-	-	-	A	-	-
Morpholine	$C_{17}H_{19}NO_3$	-	1	-	-	-	75	-	-	-	X	-	-	200	-	-	-	X	70	X	X	-	-	B	-	-	-
Motor Oil	-	-	-	140	190	X	250	X	70	-	200	250	-	250	-	-	-	250	X	-	180	-	-	A	-	-	-
Mustard	-	-	-	140	190	150	250	-	-	-	-	-	-	400	-	-	-	150	150	X	100	-	-	A	-	-	-
Naphtha	-	-	-	140	-	100	210	X	X	X	200	-	-	400	230	180	-	150	X	X	140	-	-	A	-	-	-
Naphthalene (Tar Camphor)	$C_{10}H_8$	-	1.15	X	X	X	200	X	X	X	200	-	-	400	200	200	-	170	X	X	X	-	-	A	-	-	-
Natural Gas	-	-		140	73	73	250	-	-	-	-	121	-	300	-	-	-	190	X	140	140	-	-	A	-	-	-
Neon	Ne	-	-	190	140	180	250	-	-	176	-	-	-	300		-	-	200	190	150	140	-	-	A		-	-
Nickel	Ni	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel Acetate	-	-	1.74	180	140	180	210	140	140	-	-	73	-	-	-	-	-	X	70	-	70	-	-	-	-	-	
Nickel Chloride	$NiCL_2$	-	3.5	140	180	180	250	140	140	176	-	250	-	400	270	200	-	210	210	160	180	-	-	A	-	-	-
Nickel Cyanide	$Ni(CN)_2$	-	-	-	-	-	-	140	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel Nitrate	$Ni(NO_3)_2$	-	2.1	140	180	180	250	140	140	176	-	250	-	400	220	200	-	250	210	200	180	-	-	-	-	-	-
Nickel Sulfate	$NiSO_4$	-	3.7	140	180	180	250	140	140	176	-	250	-	400	-	-	-	180	210	200	200	-	-	-	-	-	A
Nicotine	$C_{10}H_{14}N_2$	-	-	140	180	X	100	X	140	-	-	121	-	400	-	-	-	-	-	X	X	-	-	A	-	-	-
Nicotine Acid (See Niacin)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitric Acid	HNO_3	10	-	140	180	180	250	100	140	68	X	250	-	400	X	100	-	190	X	X	X	C	B	A	-	-	-
Nitric Acid	HNO_3	20	-	140	180	140	210	140	140	X	X	-	-	400	X	100	-	190	X	X	X	X	C	-		-	-
Nitric Acid	HNO_3	30	-	X	73	120	150	70	70	X	X	212	-	400	X	-	-	190	X	X	X	X	-	-	-	-	-
Nitric Acid	HNO_3	40	-	X	73	73	150	70	70	X	X	212	-	400	X	-	-	73	X	X	X	X	-	-	-	-	-
Nitric Acid	HNO_3	50	-	X	73	73	120	X	X	X	X	121	-	350	X	-		100	X	X	X	X		A	-		-
Nitric Acid	HNO_3	70		X	X	X	100	X	X	X	X	121		300	X		-	X	X	X	X	X		A	-	-	
Nitric Acid Concentrate	HNO_3		1.5	X	X	X	73	X	X	X	X	-	-	300	X	-		X	X	X	X	X		A	-	-	-
Nitric Acid Fuming (Red)	HNO_3	-	-	X	X	X	X	-	-	X	X	-	-	300	-	-	-	X	-	-	-	-	-	-	-	-	-
Nitrobenzene (Oil of Mirbane)	$C_6H_5NO_2$	-	1.2	X	X	73	140	X	X	X	X	121	-	400	-	-	-	70	X	X	X	A	-	A	-	-	-
Nitroethane	$CH_3CH_2NO_2$	-	1.13	-	-	-	68	-	-	X	-	-	-	200	-	-	-	X	-	X	X	-	-	-	-	-	-
Nitrogen	N	-	-	-	-	-	-	-	-	176	200	-	-	-	-	-	-	190	-	140	140	-	A	A	-	-	-
Nitrogen Dioxide	NO_2	-	-	-	-	-	140	-	-	-	-	-	-	400	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrogen Sulutions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	100	-	-	-	-	-	-	-	-	-	-	-
Nitroglycerine	-	-	1.6	X	X	X	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitromethane	CH_3NO_2	-	-	-	-	-	100	-	-	-	X	-	-	180	-	-	-	-	70	X	X	-	-	-	-	-	-

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CHEMICAL	FORMULAS		APPROX. SP.GRAVITY @ 100% CONC.	PVC	CPVC	POLYPROPYLENE (PP)	POLYVINYLIDENE FLUORIDE (PVDF)	POLYETHYLENE (PE)	POLYETHYLENE-CROSS LINKED (XLPE)	DURAPLUS ABS	RYTON	HALAR	PEEK	TEFLON	EPOXY	VINYLESTER	POLYSULFONE	VITON	EPDM	NEOPRENE	BUNA N (NITRILE)	CARBON	CERAMIC	304 STAINLESS STEEL	316 STAINLESS STEEL	TITANIUM	HASTELLOY C
Nitrous Oxide	N_2O	-	-	100	140	X	X	X	-	-	-	121	-	400	-	-	-	80	-	X	X	-	A	-	-	-	-
Ocenol (Oleyl Alcohol)	-	-	140	100	140	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Octane	C_8H_{18}	-	-	X	X	X	250	73	-	-	-	-	-	400	-	-	-	68	X	-	70	-	A	-	-	-	-
Octanoic (Caprylic Acid)	$CH_3(CH_2)_6COOH$	-	0.91	-	-	-	250	-	-	X	-	-	-	400	-	-	-	-	-	-	X	-	A	-	-	-	-
Octylamine	$CH_3(CH_2)_7NH_2$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oils	-	-	-	140	190	120	250	140	-	140	-	-	-	400	-	200	-	-	-	-	100	-	-	-	-	-	-
Oils, Aniline	-	-	-	X	X	100	120	-	-	-	-	-	-	250	-	-	-	X	140	X	X	A	A	-	-	-	A
Oils, Anise	-	-	-	-	-	-	-	-	-	-	-	-	-	300	-	-	-	-	-	-	-	A	A	-	-	-	-
Oils, Bay	-	-	-	-	-	-	-	-	70	-	-	-	-	300	-	-	-	140	-	-	-	A	A	-	-	-	-
Oils, Bone	-	-	-	-	-	-	-	-	70	-	-	-	-	300	-	—	-	140	-	-	-	A	A	-	-	-	-
Oils, Castor	-	-	-	-	*	-	-	-	70	-	-	-	-	300	-	-	-	140	-	-	-	A	A	-	-	-	-
Oils, Cinnamon	-	-	-	-	-	-	-	-	70	-	-	-	-	300	-	-	-	X	-	-	-	A	A	-	-	-	-
Oils, Citric	-	-	-	-	-	72	-	-	70	-	-	-	-	300	-	-	-	140	-	-	-	A	A	-	-	-	-
Oils, Clove	-	-	-	-	-	72	-	-	70	-	-	-	-	300	-		-	-	-	-	140	A	A	-	-	-	-
Oils, Coconut	-	-	-	140	72	150	250	-	70	-	-	-	-	350	-	—	-	140	X	100	70	A	A	-	-	-	-
Oils, Cod Liver	-	-	-	-	-	72	-	-	70	-	-	-	-	300	-	-	-	140	108	100	140	A	A	-	-	-	-
Oils, Corn	-	-	-	68	68	100	-	250	70	X	-	-	-	250	-	-	-	140	X	X	140	A	A	-	-	-	-
Oils, Cotton Seed	-	-	-	140	-	150	-	250	70	X	-	-	-	300	-	-	-	140	X	X	180	A	A	-	-	-	-
Oils, Creosote	-	-	-	X	X	X	-	-	70	X	-	-	-	300	-	-	-	73	X	X	73	A	A	-	-	-	-
Oils, Crude Sour	-	-	-	140	-	73	-	250	70	-	-	-	-	250	250	200	-	180	X	-	70	A	A	-	-	-	-
Oils, Diesel Fuel	-	-	-	72	72	73	-	250	70	X	-	-	-	300	250	180	-	140	X	X	100	A	A	-	-	-	-
Oils, Fuel	-	-	-	140	-	73	-	250	70	X	-	-	-	300	250	180	-	140	X	X	100	A	A	-	-	-	-
Oils, Linseed	-	-	-	140	*	180	-	250	70	X	-	-	-	300	250	100	-	220	X	70	180	A	A	-	-	-	-
Oils, Mineral	-	-	-	140	*	100	-	250	70	-	-	-	-	300	270	200	-	300	X	70	140	A	A	-	-	-	-
Oils, Olive	-	-	-	140	*	180	-	250	70	X	-	-	-	300	220	200	-	150	-	140	140	A	A	-	-	-	-
Oils, Pine	-	-	-	140	-	-	-	-	70	X	-	-	-	300	150	150	-	70	-	-	70	A	A	-	-	-	-
Oils, Silicone	-	-	-	-	-	150	250	-	70	-	-	-	-	350	-	-	-	190	140	70	140	A	A	A	A	-	-
Oils, Vegetable	-	-	-	-	*	73	250	-	70	-	-	250	-	350	90	200	-	200	X	70	200	A	A	A	A	-	-
Oleic Acid (Red Oil)	-	-	0.9	140	190	73	250	-	-	-	-	212	-	250	200	200	-	190	70	70	100	-	-	A	A	A	-
Oleum (Fuming Sulfuric Acid)	H_2SO_4	100	-	X	X	X	X	X	X	X	-	73	-	200	X	X	-	73	X	X	X	-	-	A		A	-
Orange Extract	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oxalic Acid	-	-	1.7	73	73	150	150	140	-	110	-	121	-	400	270	200	-	180	150	100	X	-	-	A	A	A	-
Oxygen Gas	O_2	-	-	73	180	150	-	-	-	150	-	250	-	400	-	-	-	180	200	200	100	-	-	A	A	A	-
Ozonized Water	O_3	-	-	73	73	X	250	X	X	X	-	250	-	400	-	-	-	220	180	80	X	-	-	A	A	A	-
Palmitic Acid	-	-	0.84	140	72	180	240	70	70	-	-	212	-	400	220	200	-	190	70	X	100	-	-	A	-	-	-
Palmitic Acid	-	10	-	X	72	180	240	70	70	-	-	-	-	400	220	200	-	190	70	X	100	-	-	A	-	-	-
Paraffin	-	70	-	120	X	120	-	X	-	-	-	121	-	400	-	-	-	250	X	73	140	-	-	A	A	-	-
Pentane (Amyl Hydride)	$CH_3(CH_2)_3CH_3$	-	-	-	-	-	-	-	-	X	-	-	-	400	-	-	-	100	X	70	100	-	-	A	-	A	-
Peracetic Acid	CH_3COOOH	-	-	X	X	X	-	70	-	-	-	-	-	400	-	-		100	-	-	-	-	-	-	-	-	-
Perchloric Acid	$HCLO_4$	10	1.8	140	140	100	-	-	-	-	-	121	-	400	-	-	-	70	70	70	X	-	-	A	-	-	-
Perchloric Acid	$HCLO_4$	40	-	X	X	X	140	X	X	-	-	121	-	400	X	X	-	180	70	X	X	-	-	B	-	-	-
Perchloroethylene	CL_2CCCL_2	70	1.6	X	X	X	150	-	X	X	200	-	-	-	120	X		200	X	X	X	-	-	A	-	-	-
Petrolatum (Petroleum Jelly)	-	-	-	140	190	120		-	-	176	-	-	-	300	-	-	-	100	X	140	100	-	-	A	-	-	-
Petroleum (Sour)	-	-	-	100	150	73	250	X	70	-	200	121	-	300	250	200		180	X	X	180	-	-	-	-	-	
Petroleum Oils	-	-	-	140	150	73		-	70		200	121		-	250	200	-	180	X	100	180			-		-	
Phenols (Carbolic Acid)	C_6H_5OH	-	1.1	X	72	73	200	X		X	200	121	-	350	X	X	-	200	70	X	X	A	X	A	-	A	-
Phenyl Acetate	$C_6H_5OOCCH_3$	100	1.07	-	-	-	-	-	-	X	-	-	-	-	-	-	-	X	-	X	X	-	-	-	-	-	-
Phenylhydrazine	$C_6H_5NHNH_2$	-	1.1	X	X	X	100	X	X	X	-	73	-	400	-	-	-	180	X	X	X	-	-	-	-	-	-
Phosgene Gas	$COCL_2$	-	-	X	X	X	X	X	X	-	-	-	-	350	-	-	-	X	-	X	X	-	-	-	-	-	-
Phosgene Liquid	-	-	1.39	X	X	X	-	X	-	-	-	-	-	-	-	-	-	X	-	X	X	-	-	-	-	-	-
Phosphoric Acid	H_3PO_4	-	1.8	140	190	180	140	140	140	68	X	250	-	400	100	200	-	200	100	120	X	-	-	A	-	-	-
Phosphoric Acid	H_3PO_4	10	-	140	190	180	140	140	140	68	X	250	-	400	100	200	-	200	100	70	X	-	-	A	-	-	-
Phosphoric Acid	H_3PO_4	20	-	140	190	180	140	140	140	68	X	250	-	400	100	200	-	200	70	70	X	-	-	A	-	-	-
Phosphoric Acid	H_3PO_4	40	-	140	190	180	250	140	140	-	X	250	68	300	100	200	-	200	70	X	X	-	-	A	-	-	-

CHEMICAL RESISTANCE

HARRINGTON

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Waste Programs Div.
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CHEMICAL RESISTANCE GUIDE

PLASTIC | ELASTOMER | SEAL | METAL

CHEMICAL	FORMULAS	APPROX. SP.GRAVITY @ 100% CONC.		PVC	CPVC	POLYPROPYLENE (PP)	POLYVINYLIDENE FLUORIDE (PVDF)	POLYETHYLENE (PE)	POLYETHYLENE-CROSS LINKED (XLPE)	DURAPLUS ABS.	RYTON	HALAR	PEEK	TEFLON	EPOXY	VINYLESTER	POLYSULFONE	VITON	EPDM	NEOPRENE	BUNA N (NITRILE)	CARBON	CERAMIC	304 STAINLESS STEEL	316 STAINLESS STEEL	TITANIUM	HASTELLOY C
Phosphoric Acid	H_3PO_4	80	-	140	190	180	250	70	70	-	X	250	68	350	100	200	-	200	70	X	X	-	-	A	-	-	-
Phosphoric Acid	H_3PO_4	85	-	140	-	180	200	70	70	X	X	250	-	350	100	200	-	200	70	X	X	-	-	A	-	-	-
Phosphoric Acid	H_3PO_4	100	1.8	-	-	-	-	-	-	X	X	-	-	350	-	-	-	100	70	X	X	-	-	A	-	-	-
Phosphoric Acid Crude	H_3PO_4	-	1.83	-	-	-	-	-	-	-	X	-	-	250	-	-	-	100	70	X	X	-	-	-	-	-	-
Phosphorus Oxychloride	$POCL_3$	-	1.68	73	73	X	200	X	X	X	-	-	-	250	X	-	-	-	-	X	-	-	-	X	X	-	B
Phosphorus Red	-	-	-	70	68	68	250	-	-	-	-	-	-	350	-	X	-	-	-	-	-	-	-	A	-	-	-
Phosphorus Trichloride,dry	PCL_3	-	1.57	X	X	X	250	X	X	X	200	-	-	300	-	-	-	150	100	X	X	-	-	-	-	-	-
Phosphorus Yellow	-	-	-	68	68	68	250	-	-	-	-	73	-	350	-	-	-	-	-	-	-	-	-	-	-	-	-
Photographic Developer	-	-	-	140	190	150	250	X	140	-	-	-	-	350	-	-	-	190	-	100	-	A	A	-	-	-	-
Photographic Solutions	-	-	-	140	190	150	250	X	140	-	-	121	—	400	-	-	-	180	-	200	200	-	-	-	-	-	-
Phthalic Acid	-	-	-	-	-	-	-	-	-	-	-	-	68	400	-	-	-	-	-	-	-	-	-	-	-	-	-
(Terephthalic Acid)	$C_6H_4(COOH)_2$	-	1.59	X	X	X	200	-	-	-	-	-	-	-	-	-	-	140	100	X	X	-	-	A	A	-	B
Phthalic Anhydride	$C_6H_4(CO)_2O$	-	1.53	X	X	X	-	-	-	X	-	-	-	350	220	200	-	-	-	-	-	-	-	-	-	-	-
Pickle Brine	-	-	-	140	180	140	250	-	-	-	-	-	-	-	-	-	-	70	100	X	100	-	-	-	-	-	-
Pickling Solutions	-	-	-	140	180	180	250	X	140	-	-	-	-	400	-	-	-	-	X	X	X	-	-	-	-	-	-
Picric Acid	$C_6H_2(NO_2)_3OH$	-	1.77	X	X	73	70	X	100	-	-	73	-	400	100	100	-	190	140	200	X	-	-	A	-	-	A
Pine Oil	-	-	1.48	-	-	-	-	-	-	X	-	-	-	400	150	150	-	70	X	X	70	-	-	A	-	-	-
Plating Solutions,	-	-	-	-	-	-	-	-	-	-	-	-	-	300	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony	-	-	-	140	190	250	240	140	140	-	-	-	-	-	-	-	-	140	-	100	100	-	-	A	-	-	-
Plating Solutions, Arsenic	-	-	-	140	190	150	240	140	140	-	-	-	-	300	-	-	-	100	-	100	100	-	-	A	-	-	-
Plating Solutions, Brass	-	-	-	140	180	180	240	140	140	-	-	121	-	300	-	-	-	150	70	200	180	-	X	B	-	-	-
Plating Soltuions, Bronze	-	-	-	140	180	180	200	140	140	-	-	121	-	250	-	-	-	70	70	100	-	-	-	A	-	-	-
Plating Solutions, Cadmium	-	-	-	140	180	X	240	140	140	-	-	121	-	250	-	-	-	180	70	200	180	-	-	A	-	-	-
Plating Solutions, Chrome	-	-	-	140	180	X	250	140	140	-	-	121	-	250	-	-	-	250	-	100	X	-	-	A	-	-	-
Plating Solutions, Copper	-	-	-	140	180	180	210	140	140	-	-	121	-	250	-	-	-	180	70	80	180	-	-	-	-	-	-
Plating Solutions, Gold	-	-	-	100	180	X	250	140	140	-	-	121	-	250	-	-	-	180	70	80	180	-	-	-	-	-	-
Plating Solutions, Indium	-	-	-	140	180	120	200	140	140	-	-	-	-	350	-	-	-	100	-	130	-	-	-	-	-	-	-
Plating Solutions, Iron	-	-	-	140	180	140	200	140	140	-	-	-	-	400	-	-	-	-	-	X	180	-	-	-	-	-	-
Plating Solutions, Lead	-	-	-	140	180	140	250	140	140	-	-	121	-	350	-	-	-	180	70	100	180	-	-	-	-	-	-
Plating Solutions, Nickel	-	-	-	140	140	140	250	140	140	-	-	121	-	350	-	-	-	180	70	200	180	-	-	A	-	-	-
Plating Solutions, Rhodium	-	-	-	140	140	140	250	140	140		-	121	-	350	-	-	-	180	-	80	180	-	-	-	-	-	-
Plating Solutions, Silver	-	-	-	140	100	180	250	140	140	-		121	-	350	-	-	-	180	70	100	180	-	-	A	-	-	-
Plating Solutions, Tin	-	-	-	140	180	180	250	140	140	-	-	121	-	350	-	-	-	180	100	100	180	-	-	-	C	-	-
Plating Solutions, Zinc	-	-	-	140	180	180	250	140	140	-	-	121	-	350	-	-	-	180	70	200	180	-	-	-	-	-	-
Polyethylene Glycol	-	-	-	140	180	180	250	-	-	-	-	121	-	350	150	-	-	200	100	-	-	-	-	-	-	-	-
Polyvinyl Acetate	-	-	1.19	-	-	-	250	-	-	-	-	-	-	350	150	100	-	68	-	200	68	-	-	-	-	-	-
Emulsion	-	-	-	-	-	-	-	-	-	68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polyvinyl Alcohol	$(CH_2CHOH)_2$	-	-	140	140	180	250	-	-	-	-	-	-	400	150	100	-	140	-	-	100	-	-	-	-	-	-
Potash (Potassium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(Carbonate)	K_2CO_3	-	-	140	180	180	250	-	-	176	-	-	-	400	100	150	-	200	-	-	150	-	-	-	-	-	-
Potassium Acetate	$KC_2H_3O_2$	-	1.6	70	180	100	250	-	-	-	-	-	-	400	-	-	-	68	100	-	68	-	-	-	-	-	-
Potassium Alum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(Aluminum Potassium	-	-	-	140	180	180	250	140	140			250	-	400	270	200	-	200	180	160	180	-	-	-	-	-	-
Sulfate)	-	-	-	-	-	-	-	-	-	176	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
Potassium Bicarbonate	$KHCO_3$	-	2.2	140	200	180	250			176	-			400	100	150	-	200	170	160	70	A	A	A		-	
Potassium Bichromate	-	-	-	-	-	-	-		-	-	-	212	-	-						-	-			-	-	-	
(see Potassium Dichromate)	$K_2Cr_2O_7$	-	2.7	140	180	180	250	-	-	-	-	-	-	300	200	200	-	250	170	-	180	-	-	-	-	-	-
Potassium Bisulfate	$KHSO_4$	-	-	140	180	180	250	-	-	176	-	212	-	300	-	-	-	200	170	140	180	-	-	-	-	-	-
Potassium Bromate	$KBrO_3$	-	3.3	140	180	180	250	-	-	176	-	-	-	350	-	-	-	220	-	140	180	-	-	-	-	-	-
Potassium Bromide	KBr	30	2.7	140	180	180	250	-	-	176	-	250	-	300	220	200	-	200	150	160	180	-	-	-	-	-	-
Potassium Carbonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(Potash)	K_2CO_3	-	2.4	140	180	180	250	-	-	176	-	250	-	300	100	150	-	200	160	160	180	-	-	A	-	-	-
Potassium Chlorate Aqueous	$KCLO_3$	30	2.3	140	180	180	250	-	-	176	-	250	-	300	-	-	-	180	140	100	100	-	-	-	A	-	-
Potassium Chloride	KCl	-	2.0	140	180	180	250	-	-	176	200	250	-	350	200	200	-	200	200	140	180	-	-	-	-	-	-

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				PLASTIC										ELASTOMER				SEAL	METAL								
Potassium Chromate	K_2CrO_4	-	2.7	140	180	180	250	-		-	-	250	-	-	-	-	-	100	170	70	140	A	X	-	-	-	-
Potassium Copper	-	-	-	-	-	-	-	-	-	-	-	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide	KCuCN	-	-	140	180	200	250	-	-	-	-	-	-	350	-	-	-	200	140	-	140	-	-	-	-	-	-
Potassium Cyanide	KCN	-	1 5	140	180	180	250	-	-	176	-	-	-	350	230	180	-	190	140	160	180	C	A	A		-	-
Potassium Dichromate	$K_2Cr_2O_7$	10	2 7	140	180	180	250	-	-	176	-	250	-	350	200	200	-	180	170	160	180	-	-	-	-	-	-
Potassium Ferricyanide	$K_3Fe(CN)_6$	-	-	140	180	140	250	-	-	176	-	250	-	350	220	200	-	140	140	150	70	-	-	-	-	-	-
Potassium Ferrocyanide	$K_4Fe(CN)_6$	-	1.9	140	180	140	250	-	-	176	-	250	-	350	220	200	-	180	140	200	180	-	-	-	-	-	-
Potassium Fluoride	KF	-	2.5	140	180	180	250	-	-	176	-	250	-	350	-	-	-	180	140	-	180	-	-	-	-	-	-
Potassium Hydroxide	KOH	-	2.0	-	-	-	-	-	-	176	-	-	-	-	-	-	-	-	200	160	70	-	-	A	-	-	-
(Caustic Potash)	-	-	-	-	-	-	-	-	-	-	-	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium Hydroxide	KOH	25	-	140	180	180	140	-	-	176	200	-	-	350	100	120	-	-	200	160	100	-	-	A	-	-	-
Potassium Hydroxide	KOH	10	-	140	180	100	X	-	-	176	200	250	-	350	-	-	-	-	200	160	70	-	-	A	-	-	-
Potassium Hypochlorite	KHOCL	-	-	140	180	73	250	X	-	-	-	250	-	300	-	-	-	100	70	X	X	-	-	A	-	-	-
Potassium Iodide	KI	-	3.12	140	180	180	48	-	-	176	-	-	-	350	-	-	-	100	140	160	80	-	-	-	-	-	-
Potassium Nitrate (Salt Peter)	KNO_3	-	2 1	140	180	150	250	-	-	176	-	-	-	350	270	200	-	180	210	200	180	-	-	A	-	-	A
Potassium Perbotate	-	-	-	140	180	180	250	-	-	-	-	-	-	350	-	-	-	-	-	70	70	-	-	-	-	-	-
Potassium Perchlorate	$KCLO_4$	-	2.5	140	180	180	250	-	-	-	-	-	-	350	-	-	-	150	140	X	X	-	-	-	-	-	-
Potassium Permanganate	$KMNO_4$	20	2.7	140	*	120	250	-	-	-	200	73	-	350	X	150	-	150	210	100	X	A	A	B	B	-	B
Potassium Persulfate	$K_2S_2O_8$	-	2.5	140	180	120	250	-	-	-	-	300	-	400	-	180	-	200	210	140	X	A	A	-	A	-	-
Potassium Phosphate	K_2HPO_4	-	-	-	180	-	-	-	-	-	-	121	-	400	180	100	-	140	100	100	100	-	-	-	-	-	-
Potassium Salts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium Sulfate	K_2SO_4	-	2.7	140	180	180	250	-	-	176	-	-	-	400	250	180	-	200	180	140	140	A	A	-	-	-	-
Potassium Sulfide	K_2S	-	1.8	100	120	-	250	-	-	-	-	250	-	300	-	-	-	100	-	70	100	-	-	-	-	-	-
Potassium Thiosulfate	$K_2S_2O_3$	-	-	-	-	-	-	-	-	176	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propane (Dimethyl- Methane)	C_3H_8	-	-	72	72	73	250	-	-	X	-	-	-	300	150	100	-	300	X	70	100	-	-	-	-	-	-
Propanol (see Alcohol, Propyl)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propargyl Alcohol	$HC:CCH_2OH$	-	-	72	72	120	150	-	-	-	-	-	-	350	-	-	-	140	-	X	X	-	-	-	-	-	-
Propyl Acetate	$C_3H_7OOCCH_3$	-	0.89	-	-	-	100	-	-	X	-	73	-	140	-	-	-	X	70	X	100	-	-	-	-	-	-
Propyl Alcohol	$CH_3CH_2CH_2OH$	-	0.8	120	160	150	150	-	-	X	-	250	-	400	-	-	-	200	140	200	-	-	-	-	-	-	-
Propylene	$CH_3CH\ CH_2$	-	0.51		-			-	-	-	-	-	-	-	-	-	-			-	X	-	-	-	-	-	-
Propylene Dichloride	$CH_3CHCLCH_2CL$	-	1.58	X	X	X	150	-	-	X	-	-	-	400	-	-	-	70	X	X	100	-	-	-	-	-	-
Propylene Glycol	$CH_3CHOHCH_2OH$	-	1.0	-	-	-	250	X	140			-	-	400	200			200	-	100	X	-	-	-	-	-	-
Pyridine	$N(CH)_4CH$	-	1.0	X	X	73	X	-	-	X	200	-	-	350	-	-	-	X	70	X	80	-	-	-	B	-	-
Pyrogallic Acid (Pyrogallol)	$C_6H_3(OH)_3$	-	1.47	73	-	-	150	-		-	-	121	-	350	-	-	-	80	-	200	-	-	-	-	-	-	-
Quaternary Ammonium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Salts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	A	-	-	-	-
Rayon Coagulating Bath	-	-	-	140	180	73	73	X	140	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Rhodan Salts (Thiocyanates)	-	-	-	140	140	140	250	-	-	-	-	-	-	-	-	-	-	180	-	-	-	-	-	-	-	-	-
Rosins	-	-	-	-	-	-	-	-	-	-	-	-	-	350	-	-	-	-	-	-	-	-	-	-	-	-	-
Rum	-	-	-	100	100	100	-	-	-	-	-	-	-	-	-	-	-	70	-	-	-	-	-	-	-	-	-
Rust Inhibitors	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Salad Dressings	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	A	-	-	-	-
Salicylaldehyde	C_6H_4OHCHO	-	1.17	X	X	-	140	-		-	-	73	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-
Salicylic Acid	$C_6H_4(OH)(COOH)$	-	1.44	-	-	-	210	-	-	-	-	-	-	250		-		200	-	-	68	A	A	-	-	-	-
Saline Solutions (Brine)		-	-	140	190	180	250	140	140	-		250		400	200	-	-	280	250	160	180		-	B	-		
Salt Brine		-		140	190	180	250	140	140	-	-	250	-	400	200	-	-	280	250	160	180	A	A	B	-		B
Sea Water	-	-	-	140	190	180	250	140	140	176	-	250	-	400	200	-	-	280	250	160	180	A	A	C	-	-	A
Salenic Acid	H_2SeO_4	-	22.6	140	190	73	70	70	70	-	-	-	-	350	-	-	-	-	-	-	-	-	-	-	-	-	A
Sewage	-	-	-	140	180	180	250	-	-	-	-	-	-	350	-	-	-	180	140	140	150	A	A	A	-	-	-
Shellac Bleached	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shellac Orange	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Salicic Acid	SiO_2H_2O	-	-	140	180	180	250	140	140	-	-	-	-	250	-	-	-	200	140	140	180	-	-	-	-	-	-
Silicone Oil	-	-	-	140	150	150	250	-	-	-	-	73	-	350	-	-	-	190	140	70	140	A	A	A	-	-	-
Silver Bromide	AgBr	-	6.47	-	-	-	-	140	140	-	-	-	-	-	-	-	-	-	-	-	-	A	-	-	-	-	-

CHEMICAL RESISTANCE

HARRINGTON

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

JAN 15 2008

Waste Programs Div.
Permits Section

CHEMICAL RESISTANCE GUIDE

PLASTIC — ELASTOMER — SEAL — METAL

CHEMICAL	FORMULAS	APPROX.	SP.GRAVITY @ 100% CONC.	PVC	CPVC	POLYPROPYLENE (PP)	POLYVINYLIDENE FLUORIDE (PVDF)	POLYETHYLENE (PE)	POLYETHYLENE-CROSS LINKED (XLPE)	DURAPLUS ABS	RYTON	HALAR	PEEK	TEFLON	EPOXY	VINYLESTER	POLYSULFONE	VITON	EPDM	NEOPRENE	BUNA N (NITRILE)	CARBON	CERAMIC	304 STAINLESS STEEL	316 STAINLESS STEEL	TITANIUM	HASTELLOY C
Silver Cyanide	AgCN	-	3.95	140	180	180	250	140	140	-	-	250	-	350	-	-	-	140	140	70	X	-	-	-	-	-	-
Silver Nitrate	$AgNO_3$	-	4.32	140	180	180	280	140	140	-	-	250	-	350	-	-	-	250	200	160	140	A	A	A	-	-	-
Silver Salts	-	-	-	140	180	180	280	140	140	-	-	-	-	350	-	-	-	140	140	100	-	-	-	A	-	-	-
Silver Sulfate	Ag_2SO_4	-	5.45	140	180	140	250	140	140	-	-	250	-	250	-	-	-	200	170	100	100	-	-	-	-	-	-
Soap Solutions	-	-	-	140	180	180	280	X	140	-	-	121	-	350	-	-	-	200	200	140	180	A	A	A	-	-	-
Soda Ash (Sodium Carbonate)	Na_2CO_3	-	1.55	140	180	180	280	-	-	176	-	250	-	400	100	150	-	250	140	140	140	-	-	A	-	-	-
Sodium	Na	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium Acetate	$NaC_2H_3O_2$	-	1.5	140	180	180	250	140	140	176	-	250	-	350	220	200	-	X	170	200	X	A	A	A	-	-	A
Sodium Alum	-	-	-	140	180	180	250	140	140	-	-	250	-	350	-	-	-	210	160	140	180	-	-	-	-	-	-
Sodium Aluminate	$Na_2AL_2O_4$	-	-	-	-	-	-	-	-	176	-	-	-	-	-	-	-	200	200	140	180	A	A	-	-	A	A
Sodium Benzoate	C_6H_5COONa	-	-	140	180	180	250	140	140	-	-	250	-	300	200	180	-	200	210	-	140	-	-	-	-	-	-
Sodium Bicarbonate	$NaHCO_3$	-	2.2	140	180	180	280	140	140	176	200	250	-	400	250	150	-	300	210	160	180	A	A	-	-	A	A
Sodium Bichromate (see	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium Dichromate)	$Na_2Cr_2O_7$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium Bisulfate	$NaHSO_4$	-	2.4	140	180	180	280	140	140	176	200	250	-	250	250	200	-	250	200	140	180	A	A	-	-	A	-
Sodium Bisulfite	$NaHSO_3$	-	1.5	140	180	180	250	140	140	176	200	250	-	350	-	-	-	250	200	140	180	-	-	-	-	A	A
Sodium Borate (Borax)	$Na_2B_4O_7$	-	1.7	100	180	200	250	140	140	176	-	-	-	300	-	-	-	180	140	200	180	A	A	-	-	A	A
Sodium Bromate	$NaBrO_3$	-	3.34	-	-	-	-	140	140	176	-	-	-	-	140	-	-	-	-	-	-	-	-	-	-	-	-
Sodium Bromide	NaBr	-	3.2	140	180	180	250	-	-	176	-	250	-	300	250	200	-	250	210	70	70	-	-	-	-	A	-
Sodium Carbonate (Soda Ash)	Na_2CO_3	-	1.55	140	180	180	250	-	-	176	200	250	-	350	100	150	-	200	140	200	200	B	A	-	-	A	A
Sodium Chlorate	$NaCLO_3$	-	2.5	100	180	180	250	-	-	176	-	250	-	350	-	180	-	180	140	70	180	A	A	-	-	A	-
Sodium Chloride (Salt)	NaCL	-	2.2	140	180	180	280	140	140	176	200	250	-	350	270	200	-	200	140	160	140	-	-	-	-	B	A
Sodium Chlorite	$NaCLO_2$	25	-	140	180	73	140	-	-	-	-	212	-	400	-	-	-	X	X	-	X	-	-	-	-	-	-
Sodium Chromate	Na_2CrO_4	-	-	-	-	-	200	-	-	-	200	-	-	-	-	-	-	70	70	70	70	-	-	-	-	A	-
Sodium Cyanide	NaCN	-	-	140	170	180	250	-	-	176	-	250	-	350	230	200	-	200	140	140	140	-	-	-	-	A	-
Sodium Dichromate	$Na_2Cr_2O_7$	-	2.5	140	140	140	250	-	-	176	200	121	-	350	200	200	-	200	140	70	140	-	-	-	-	-	-
Sodium Ferricyanide	$Na_3Fe(CN)_6$	-	1.5	140	180	150	250	-	-	176	-	-	-	300	270	200	-	140	140	-	70	-	-	A	-	-	-
Sodium Ferrocyanide	$Na_4Fe(CN)_6$	-	1.5	140	180	150	250	-	-	176	-	-	-	350	270	200	-	140	140	-	70	-	-	-	-	-	-
Sodium Fluoride	NaF	-	2.6	140	180	180	250	-	-	176	-	250	-	350	-	-	-	140	140	70	70	-	-	A	-	-	-
Sodium Hydrosulfide	NaSH	-	-	-	-	-	-	-	-	-	-	250	-	-	120	-	-	-	-	-	-	-	-	-	-	-	-
Sodium Hydrosulfite	$Na_2S_2O_6$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium Hydroxide	NaOH	15	-	140	180	180	150	X	140	176	200	250	-	400	120	100	-	100	210	160	140	-	-	A	-	-	-
Sodium Hydroxide	NaOH	20	-	140	180	180	73	X	140	176	200	-	-	350	120	100	-	100	210	160	100	-	-	A	-	-	-
Sodium Hydroxide	NaOH	30	-	140	180	180	X	X	140	176	200	212	-	350	120	100	-	100	210	160	100	-	-	A	-	-	-
Sodium Hydroxide	NaOH	50	2.1	140	180	180	X	X	140	176	200	212	-	350	150	X	-	X	180	160	X	-	-	A	-	-	-
Sodium Hydroxide	NaOH	70	-	140	180	180	X	X	140	176	-	-	-	350	-	-	-	X	70	100	X	-	-	-	-	-	-
Sodium Hydroxide Conc.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(Caustic Soda)	NaOH	-	-	140	180	120	X	X	140	176	-	-	-	70	-	-	-	X	100	X	X	-	-	-	-	-	-
Sodium Hypochlorite (Bleach)	NaOCL	-	-	140	180	120	100	140	140	X	X	250	-	300	X	150	-	140	70	X	X	-	-	A	-	-	-
Sodium Hypochlorite Conc	NaOCL	15	-	140	100	72	100	-	-	X	X	-	-	300	X	-	-	180	X	70	X	-	-	-	-	-	-
Sodium Hyposulfate	$Na_2S_2O_3$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium Iodide	NaI	-	-	-	-	-	280	-	-	-	-	121	-	-	-	-	-	-	-	160	-	-	-	-	-	-	-
Sodium Metaphosphate	$(NaPO_3)n$	-	-	140	180	150	250	-	-	68	-	250	-	-	-	-	-	180	70	100	150	-	-	A	-	-	-
Sodium Metasilicate	Na_2SiO_3			140	180	180	250	-	-	176	-	-		350	-	-	-	200	-	-	170			-	-	-	-
Sodium Nitrate	$NaNO_3$	-	2.3	140	180	180	250	-	-	-	-	-	-	400	270	200	-	210	200	190	170	A	A	A	-	-	-
Sodium Nitrate	$NaNO_3$		2.2	140	180	180	250	-	-	176	-	250	-	400	270	200		200	170	140	X	A	A	A		-	
Sodium Palmitate	-	-	-	140	180	120	250	-	-	-	-	-	-	400	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium Perborate	$NaBO_3$	-	-	140	180	180	250	-	-	-	-	-	-	350	-	-	-	180	70	200	200	-	-	A	-	-	-
Sodium Perchlorate	$NaCLO_4$	-	2.02	140	180	180	250	-	-	-	-	73	-	350	-	-	-	-	-	-	70	-	-	-	-	-	-
Sodium Peroxide	Na_2O_2	10	2.8	140	180	180	200	-	-	-	-	250	-	350	-	-	-	180	140	200	200	-	-	A	-	-	-
Sodium Phosphate Acid	Na_2HPO_4	-	1.7	140	180	140	280	-	-	-	-	250	-	350	-	-	-	200	170	140	140	-	-	A	-	-	-
Sodium Phosphate Alkaline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(Mono Basic	NaH_2PO_4	-	2.04	140	180	180	250	-	-	-	-	250	-	350	-	-	-	200	170	140	140	-	-	A	-	-	-
Sodium Phosphate Neutral (Tri Basic)	Na_3PO_4	-	1.62	140	180	180	250	120	-	-	200	250	-	350	-	-	-	200	170	140	140	-	-	-	-	-	-

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Sodium Polyphosphate	-	-	-	140	180	180	250	120	-	-	200	-	-	350	-	-	-	200	150	140	140	A	A	A	-	-	-
Sodium Silicate (Water Glass)	Na_2OSiO_2	-	-	140	180	180	250	-	-	176	200	250	-	350	220	200	-	200	200	140	140	A	A	A	-	-	-
Sodium Sulfate	Na_2SO_4	-	2.7	140	180	150	280	140	140	176	200	250	-	400	270	200	-	200	140	140	140	A	A	A	-	-	-
Sodium Sulfide	Na_2S	50	1.4	140	180	180	250	140	140	-	200	250	-	350	-	150	-	200	140	140	140	A	A	A	-	-	-
Sodium Sulfite	Na_2SO_3	-	2.6	140	180	180	250	140	140	176	-	250	-	350	200	200	-	200	140	140	140	A	A	A	A	-	B
Sodium Tetraborate	$Na_2B_4O_7$	-	-	140	180	120	250	140	140	176	-	-	-	300	-	-	-	140	100	100	70	A	A	A	-	-	-
Sodium Thiocyanate	NaSCN	-	-	140	140	140	240	140	140	-	-	-	-	250	200	180	-	180	140	-	100	A	A	-	-	-	-
Sodium Thiosulfate (HypO)	$Na_2S_2O_3$	-	1.7	140	180	180	250	140	140	176	200	250	-	350	150	200	-	200	-	160	200	A	A	-	B	-	-
Sorghum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soy Sauce	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soybean Oil	-	-	-	140	180	180	250	X	70	-	-	-	-	250	-	-	-	200	X	70	140	A	A	A	-	-	-
Stannic Chloride (Tin Chloride)	Na_2SnCL_6	-	2.3	140	180	150	280	-	-	-	-	250	-	350	250	200	-	200	100	X	140	A	A	C	X	-	-
Stannic Salts	-	-	-	140	180	150	280	-	-	-	-	-	-	350	250	200	-	200	100	X	140	-	-	C	X	-	-
Stannous Chloride (Tin Salts)	$SnCL_2$	-	-	140	180	180	250	-	-	-	-	250	-	350	220	200	-	200	100	X	140	-	-	C	A	-	-
Starch (Amylum)	-	-	1.51	140	180	180	250	140	140	176	-	121	-	350	-	-	-	200	140	140	170	A	A	A	-	-	-
Stearic Acid	-	-	0.84	140	180	120	250	-	-	176	-	121	-	350	220	200	-	80	X	70	200	-	-	A	A	-	-
Stoddard Solvent (Dry	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cleaning Solvent)		-	-	X	X	70	250	-		X	200	250	-	300	-	-	-	180	X	X	180	A	A	A	B	-	-
Strontium Carbonate	$SrCO_3$	-	3.62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	$C_6H_5CH:CH_2$	-	0.9	X	X	X	200	-	-	X	-	-		250	100	180	-	X	X	X	X	-	-	A	-	-	-
Succinic Acid (Butaned-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ioic Acid)	-	-	1.55	140	170	150	150	-	-	-	-	212	-	200	-	-	-	70	70	-	70	-	-	A	-	-	-
Sugar Solutions	-	-	-	140	200	180	270	-	-	-	-	-	-	350	220	180	-	200	140	140	100	-	-	-	-	-	-
Sulfamic Acid	HSO_3NH_2	25	2.1	-	180	X	X	-	-	176	-	-	-	-	100	180	-	-	-	-	-	-	-	-	-	-	-
Sulfate Liquors (Paper Pulp)	-	-	-	140	190	150	150	-	-	-	-	73	-	200	-	-	-	80	70	140	80	-	-	A	-	-	-
Sulfonated Detergents	-	-	-	140	190	150	200	-	-	-	-	-	-	300	-	-	-	100	-	-	-	-	-	-	-	-	-
Sulfur	S	0	-	-	73	-	248	70	70	68	-	212	-	350	-	-	-	73	X	80	X	-	-	A	A	-	A
Sulfur Dioxide	SO_2	-	-	-	-	-	-	-	-	X	200	-	-	-	180	200	-	-	-	-	-	-	-	-	-	-	-
Sulfite Liquor (Sulfite	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paper Process)	-	-		140	180	180	250	-		-	-	73	-	-	150	200	-	140	140	70	70	-	-	A			-
Sulfur Chloride	S_2CL_2	-	1.69	140		X	250	-	-			73	-	-	X	X	-	180	X	X	X	-	-	C	-		-
Sulfur Dioxide Dry	SO_2	-	-	140	180	180	250	70	70	X	-	212	-	300	X	200	-	100	70	X	X	-	-	A	-	-	-
Sulfur Dioxide Wet	SO_2	-	-	100	150	180	250	70	70	X	-	121	-	300	-	-	-	140	140	X	X	-	-	A	-	-	-
Sulfur Slurries	-	-	-	140	180	X	250	-	-	-	-		-	350	-	-	-	200	X	70	X	-	-	A	-	-	-
Sulfur Trioxide Dry	SO3	-	-	X	X	X	X	-	-	-	-	-	-	-	X	X	-	150	X	X	X	-	-	B	-	-	
Sulfuric Acid	H_2SO_4	10	-	140	180	180	250	140	140	176	200	212	-	350	100	200	-	200	140	100	100	A	A	X	X	X	A
Sulfuric Acid	H_2SO_4	30	-	140	180	150	250	140	140	176	200	212	-	350	100	180	-	200	140	100	100	-	-	X	X	X	A
Sulfuric Acid	H_2SO_4	50	-	140	180	150	200	140	140	68	200	212	-	350	100	180	-	200	140	100	100	-	-	X	X	X	A
Sulfuric Acid	H_2SO_4	60	-	140	180	140	200	X	70	X	200	212	-	350	*	120	-	200	140	100	X	-	-	X	X	X	A
Sulfuric Acid	H_2SO_4	70	-	140	180	140	200	X	70	X	200	212	-	350	X	X	-	200	140	X	X	-	-	X	X	X	B
Sulfuric Acid	H_2SO_4	80	-	140	180	X	200	X	70	X	200	212	-	350	X	X	-	200	70	X	X	-	-	X	C	X	B
Sulfuric Acid	H_2SO_4	90	-	73	150	X	200	X	70	X	200	212	-	350	X	X	-	200	X	X	X	-		X	C	X	B
Sulfuric Acid	H_2SO_4	95		X	150	X	180	X	70	X	200	212	-	350	X	X	-	200	X	X	X		-	C	B	X	B
Sulfuric Acid	H_2SO_4	98	1.84	X	100	X	140	X	X	X	200	212		350	X	X	-	200	X	X	X	-	-	C	B	X	B
Sulfuric Acid	H_2SO_4	100		X	X	X	X	X	X	X			-	-	X	X		100	X	X	X			C	B	X	B
Sulfurous Acid	H_2SO_3		1.03	140	170	170	250	140	-	-	-	212	-	350		-	-	180	X	X	X	-	-	A	B	-	B
Sulfuryl Chloride	SO_2CL_2	-	1.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	B
Syrup (Sucrose in water)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tall Oil	-	-	-	140	180	180	250	X	70	-	-	250	-	250	200	200	-	300	X	70	200	-	-	A	B	-	-
Tallow (Animal Fat)	-	-	0.86	-	-	-	-	X	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tannic Acid	$C_{76}H_{52}O_{46}$	-	-	140	200	180	250	X	140	-	-	212	-	250	225	200	-	100	70	100	100	-	-	A	B	-	-
Tanning Liquors	-	-	-	140	190	73	68	-	-	-	-	212	-	250	-	-	-	200	-	70	180	A	A	A	B	-	-
Tar	-	-	-	X	X	-	250	-	-	-	-	250	-	250	-	-	-	190	X	70	X	-	-	A	-	-	-
Tartaric Acid (DihydroxySuccinic Acid)	-	-	1.8	140	180	140	250	140	140	176	-	212	-	250	250	200	-	180	X	180	70	-	-	A	-	-	-

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Tertiary Butyl Alcohol	-	-	-	68	68	68	250	-	-	X	-	-	-	250	-	-	-	70	-	-	X	-	-	A	-	-	-
Tetrachlorethane	$CHCL_2CHCL_2$	-	-	X	X	X	250	-	-	X	-	-	-	350	-	-	-	70	X	X	X	-	-	A	-	-	-
Tetraethyl Lead	$Pb(C_2H_5)_4$	-	1.65	72	72	73	250	-	-	-	-	250	-	350	-	-	-	150	X	X	X	-	-	-	-	-	-
Tetrahydrofuran	-	-	-	X	X	X	X	X	X	X	200	X	-	350	120	100	-	X	X	X	X	-	-	-	X	-	-
Tetralin (Tetrahydro-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene)	$C_{10}H_{12}$	-	-	X	X	X	-	X	X	X	-	-	-	300	-	-	-	68	X	X	X	-	-	-	-	-	-
Thionyl Chloride	$SOCL_2$	-	1.64	X	X	X	X	X	X	X	-	121	-	350	X	X	-	73	X	X	X	-	-	X	X	-	-
Thread Cutting Oils	-	-	-	140	72	120	150	-	-	-	-	250	-	400	-	-	-	70	X	-	70	-	-	B	B	-	-
Titanium Tetrachloride	$TiCL_4$	-	-	X	X	X	X	-	-	-	-	-	-	400	-	-	-	150	X	X	X	-	-	C	C	A	C
Titanous Sulfate	$Ti_2(SO_4)_3$	-	1.47	140	180	180	250	-	-	-	-	-	-	350	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	$CH_3C_6H_5$	-	0.9	X	X	X	150	X	X	X	200	121	-	350	150	X	-	70	X	X	-	A	A	A	A	A	A
Tomato Juice	-	-	-	140	180	150	250	70	140	68	200	-	-	400	-	-	-	200	200	100	150	-	-	C	B	-	B
Toxapnene-Xylene		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transformer Oil (Liquid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Insulators) Mineral Oil Type	-	-	-	140	190	73	200	X	70	176	-	212	-	400	150	X	-	180	X	100	180	-	-	A	-	-	-
Tributyl Phosphate	$(C_4H_9)_3PO_4$	-	-	X	X	70	100	-	-	X	-	73	-	400	-	-	-	X	70	X	X	A	A	-	-	A	-
Trichloroacetic Acid	CCL_3COOH	-	1.6	73	72	120	100	-	-	-	200	121	-	400	-	-	-	180	70	70	70	-	-	X	X	B	-
Trichloroethane (Methyl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform)	$CHCL_2CH_2CL$	-	-	X	X	X	-	-	-	X	-	-	-	350	-	-	-	-	X	X	X	-	-	-	-	A	-
Trichloroethylene	$CHCL.CCL_2$	-	1.1	X	X	68	170	X	X	X	-	73	-	350	120	X	-	200	X	X	X	-	-	-	-	A	-
Trichloropropane	-	-	1.39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-		-	A	-
Tricresyl Phosphate (TCP)	$(CH_3C_6H_4O)_3PO$	-	1.16	X	X	-	-	-	-	X	-	212	-	-	-	-	-	-	-	X	X	-	-	-	-	A	-
Triethanolamine	$(HOCH_2CH_2)_3N$	-	1.12	X	X	X	X	-	-	73	-	73	-	-	150	X	-	X	70	70	70	-	-	C	C	A	-
Triethyl Phosphate	$(C_2H_5)_3PO_4$	-	0.73	-	-	-	-	-	-	X	200	73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triethylamine	$(C_2H_5)_3N$	-	-	73	72	72	70	-	-	-	-	121	-	-	100	X	-	200	73	70	140	-	-	-	-	-	-
Trimethylpropane	$(CH_2OH)_3C_3H_5$	-	-	73	-	-	250	-	-	-	-	-	-	300	-	-	-	200	-	150	150	-	-	-	-	-	-
Trisodium Phosphate	Na_3PO_4	-	-	140	180	180	250	-	-	-	-	250	-	350	-	-	-	180	70	200	200	-	-	A	-	-	-
Turbine Oil	-	-	-	72	72	70	-	-	-	-	-	-	-	350	-	-	-	140	X	X	68	A	A	A	-	-	-
Turpentine	$C_{10}H_{16}$	-	0.9	X	X	X	250	X	X	X	200	250	-	300	150	X	-	180	X	X	100			A	A	-	B
Urea	$CO(NH_2)_2$	-	1 3	140	180	180	250	X	140	176	-	212	-	250	200	150	-	180	140	140	140	-	-	-	-	-	-
Urine	-	-	-	140	180	180	250	140	140	68	-	121		350	-	-	-	180	140	140	100	-	-	A		-	-
Vanilla Extract (Vanillin)	-	-	-	-	-	-	-	X	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Varnish	-	-	-	-	-	-	250	-	-	68	-	-	-	250	-	-	-	68	X	X	68	-	-	A	-	-	-
Vaseline	-	-	-	140	180	180	250	-	-	176	-	121	-	400	-	-	-	70	X	140	140	-	-	-	-	-	-
Vegetable Oil	-	-	-	140	150	140	200	-	70	-	-	-	-	400	-	-	-	300	140	200	100	-	-	A	A	-	B
Vinegar (4-8% Acetic Acid)	-	-	-	140	180	140	200	140	140	68	200	212	-	400	200	200	-	180	140	200	X	-	-	A	B	-	C
Vinyl Acetate	-	-	0.93	X	X	-	250	-	-	X	-	73	-	350	150	X	-	X	70	X	X	-	-	A	A	-	-
Vinyl Chloride	$CH_2.CHCL$	-	-	X	X	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Ether	$CH_2.CHOCH:CH_2$	-	0.77	X	X	X	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Acid Mine	-	-	-	140	180	150	280	-	-	-	200	250	-	400	-	-	-	180	250	160	180	A	A	A	A	-	A
Water Deionized	H_20	-	-	140	180	180	280	140	140	176	200	250		400	250	180	-	140	250	160	180	A	A	A	-	-	A
Water Demineralized	H_20	-	-	140	180	180	280	140	140	176	200	250	-	400	250	200	-	180	250	160	200	A	A	A	-	-	A
Water Distilled	H_20	-	-	140	180	180	280	140	140	176	200	250	-	400	250	200		140	250	160	180	A	A	A		-	A
Water Potable	H_20			140	180	180	280	140	140	176	200	250	-	400	270	200	-	140	250	160	180	A	A	A		-	A
Water Salt	H_20	-		140	180	180	280	140	140		200	250	-	400	270	200		180	250	160	180	A	A	B			A
Water Sewage	H_20	-		140	180	180	280	140	140	-	200	250		400	250	200		180	250	160	180	A	A	A		-	A
Whey	-	-	-	-	-	-	-	-	-	-	200	-	-	-	-	-	-	-	-	-	-	A	A	-	-	-	-
Whiskey	-	-	0.9	140	180	180	250	X	140	X	200	250	-	350	-	-	-	180	200	200	180	A	A	A	-	-	-
White Acid	NH_4HF_2HF	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	A	-	-	-	-
White Liquor	-	-	-	140	180	180	250	-	-	-	-	212	-	350	100	150	-	180	-	140	140	A	A	B	B	-	-
Wines	-	-	-	140	180	140	250	140	140	-	-	212	-	300	-	-	-	180	170	200	180	A	A	A	A	-	-
Xenon	Xe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene	$C_6H_4(CH_3)_2$	-	0.9	X	X	X	250	X	X	X	200	-	200	350	150	X	-	180	X	X	X	A	A	-	-	-	-
Yeast	-	-	-	-	-	-	-	-	-	68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CHEMICAL RESISTANCE

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
JAN 15 2008
Waste Programs Div.
Permits Section

CHEMICAL RESISTANCE GUIDE

CHEMICAL	FORMULAS		APPROX. SP.GRAVITY @ 100% CONC.	PVC	CPVC	POLYPROPYLENE (PP)	POLYVINYLIDENE FLUORIDE (PVDF)	POLYETHYLENE (PE)	POLYETHYLENE-CROSS LINKED (XLPE)	DURAPLUS ABS	RYTON	HALAR	PEEK	TEFLON	EPOXY	VINYLESTER	POLYSULFONE	VITON	EPDM	NEOPRENE	BUNA N (NITRILE)	CARBON	CERAMIC	304 STAINLESS STEEL	316 STAINLESS STEEL	TITANIUM	HASTELLOY C
				PLASTIC														ELASTOMER				SEAL		METAL			
Zeolite	-	-	·	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc Acetate	$Zn(C_2H_3O_2)_2$	-	1.7	140	180	180	250	140	140	-	-	-	·	350	180	-	-	70	180	160	-	·	-	-	-	-	-
Zinc Carbonate	$ZnCO_3$	-	4.45	-	-	-	-	140	140	176	-	-	-	-	-	-	-	-	-	-	100	A	A	-	-	-	-
Zinc Chloride	$ZnCL_2$	-	2.9	140	190	180	250	140	140	X	200	250	-	350	250	200	-	200	180	160	70	A	A	-	-	-	-
Zinc Chromate	$ZnCrO_4$	-	3.4	-	-	-	·	140	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc Nitrate	$Zn(NO_3)_2$	-	2.06	140	190	180	250	140	140	176	-	250	-	350	-	-	·	200	180	100	140	-	-	-	-	-	-
Zinc Phosphate	$Zn_3(PO_4)_2$	-	4	-	-	-	-	140	140	176	-	-	-	-	180	200	-	-	-	-	-	-	-	-	-	-	-
Zinc Salts		-	·	140	190	180	250	140	140	-	·	-	-	350	-	-	·	200	180	-	140	-	-	-	-	-	-
Zinc Sulfate	$ZnSO_4$	-	2	140	190	180	50	140	140	176	-	250	-	400	250	200	-	200	180	140	140	A	A	-	-	-	-

* Caution: Further testing needed, suspect with certain stress levels.

The Teflon included in the tables is PFA or PTFE which are similar in chemical resistance and temperature. For data on FEP Teflon, please call Harrington's technical service department.

NOTE: Recent studies have shown that surfactants and detergents even in trace quantities can adversely affect the performance of certain thermoplastics in applications like sodium hydroxide, e.g. cross-linked polyethylene and CPVC.

MIXED CHEMICALS

Table 6

CHEMICALS	CONCENTRATION (%)	PVC*	CPVC*	PP*	PVDF*	TEFLON*	VITON*	EPT*
Sulfuric Add Chromic Add Sodium Silicon–fluoride	0.7 250 g/l 1	140	176	_	248	248	_	_
Sulfuric Add Hydrofluoric Acid	20 10	140	140	_	248	248	104	104
Sulfuric Acid Hydrofluoric Add	25 15	140	140	_	248	248	_	_
Sulfuric Add Nitric Acid Chlorine Gas	75 5 Little	140	176	104	176	248	_	_
Sulfuric Acid Sulfurous Acid	75 4	140	176	176	248	248	104	140
Sulfuric Acid Spelter Manganese Sulfate	150 g/l 80 2	140	176	176	248	248	176	176
Sodium Sulfide Sulfuric Acid Formaldehyde	225 g/l 225 g/l 50	104	176	176	212	212	212	140

NOTE: * Temperature at °F.

CHEMICAL RESISTANCE

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
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MIXED CHEMICALS

Table 6 (cont'd)

CHEMICALS	CONCENTRATION (%)	PVC*	CPVC*	PP*	PVDF*	TEFLON*	VITON*	EPT*
Hydrochloric Acid Allyl Chloride	36 12 PPM	104	104	140	248	248	176	104
Hydrochloric Acid Benzene	36 54 PPM	140	176	176	248	248	140	68
Hydrochloric Acid Chlorobenzene	18 490 PPM	140	176	176	248	248	140	68
Hydrochloric Acid Chlorobenzene	36 890 PPM	104	—	104	212	248	104	—
Hydrofluoric Acid Chromium Sulfate Sodium Silico-fluoride	220 g/l 1 g/l 12 g/l	140	176	—	248	248	—	—
Hydrofluoric Acid Sodium Silico-fluoride Oxalic Acid	350 g/l 17 g/l 1 g/l	104	104	—	248	248	—	—
Hydrochloric Acid Ferrous Chloride	35 28	—	—	—	248	248	—	176
Hydrochloric Acid Hydrofluoric Acid	10 15	140	140	—	248	248	—	—
Hydrochloric Acid Hydrofluoric Acid	18 20	140	176	—	248	248	—	—
Hydrochloric Acid Nitric Acid	20 50	140	140	—	68	248	248	—
Hydrochloric Acid Ortho-chlorophenal	36 170 PPM	140	140	140	248	248	176	104
Hydrochloric Acid Sulfuric Acid	36 g/l 98 g/l	68	68	—	176	248	—	—
Hydrochloric Acid Sulfuric Acid	20 5	140	176	176	248	248	176	176
Hydrochloric Acid Sulfuric Acid	36 98	140	176	176	248	248	—	—
Hydrofluoric Acid Ammonium Fluoride	250 g/l 8 g/l	140	140	—	248	248	—	—

NOTE: * Temperature at °F

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
JAN 15 2008
Waste Programs Div.
Permits Section

MIXED CHEMICALS

Table 6 (cont'd)

CHEMICALS	CONCENTRATION (%)	PVC*	CPVC*	PP*	PVDF*	TEFLON*	VITON*	EPT*
Hydrochloric Acid Ferric Chloride	25 28	140	212	212	248	248	176	176
Hydrochloric Acid Ferrous Chloride	20 28	—	—	—	248	248	176	176
Nitric Acid Hydrofluoric Acid	15 3	140	140	140	248	248	—	—
Nitric Acid Hydrofluoric Acid	15 5	140	104	104	248	248	176	104
Nitric Acid Hydrofluoric Acid	15 10	140	68	104	248	248	—	—
Nitric Acid Hydrofluoric Acid	15 15	140	68	104	248	248	—	—
Nitric Acid Hydrofluoric Acid	5 20	140	176	—	248	248	—	—
Nitric Acid Sulfuric Acid	50 100g 50 100g	68	68	68	248	248	—	—
Sulfuric Acid Chromic Acid	2 1	140	176	68	248	248	104	68
Sulfuric Acid Chromic Acid	10 10	104	104	—	248	248	104	68
Sulfuric Acid Chromic Acid	10 25	104	104	—	248	248	68	—
Sulfuric Acid Chromic Acid	4 g/l 400 g/l	140	140	—	248	248	—	—
Sulfuric Acid Chromic Acid Phosphoric Acid	15 5 80	140	176	—	248	248	140	104
Sulfuric Acid Chromic Acid Water	2 10 80	140	176	—	248	248	104	—

NOTE: *Temperature at °F

RELATIVE PROPERTIES

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
JAN 15 2008
Waste Programs Div.
Permits Section

EXHIBIT D-3

CHEMICAL COMPATIBILITY CHART FOR CARBON STEEL

CHEMICAL COMPATIBILITY

FNW™

	Aluminum	Brass	Carbon Steel	Ductile Iron/Cast Iron	316 Stainless Steel	17-4PH	Alloy 20	Monel	Hastelloy C	Buna N (Nitrile)	Delrin	EPDM/EPR	Viton	Hypalon	Neoprene	Nylon	Grafoil	Teflon
Acetaldehyde	B	C	C	C	A		A	A	A	D	A	B	C	D	D	B		A
Acetamine	B	B	B	B	B				A	A				B	B			A
Acetate Solvents	A	B	A	B	A			A	A	D	D		D	D	D			A
Acetic Acid, aerated	B	D	D	D	A			A	A	C	D		C		C	B	A	A
Acetic Acid, Air Free	B	B	D	D	A	A	A	A	A	C	D		D		C	B	A	A
Acetic Acid, crude	C	C	C	C	A	A	A	B	A	D	D		D		D	B	A	A
Acetic Acid, glacial						A			A	D		B	C	C	C	B	A	A
Acetic Acid, pure	C	C	D	D	A	A	A	D	A	D	D		D	A	D	B	A	A
Acetic Acid, 10%	C	C	C	C	A	A	A	B	A	D	B	B	D	C	C	B	A	A
Acetic Acid, 80%	C	C	C	C	A	A	A	B	A	D	D	C	D	D	D	B	A	A
Acetic Acid Vapors	B	D			D	D	B	C	A	D						B	A	A
Acetic Anhydride	B	D	D	D	B	B	B	B	A	D	C	C	D	B	C		A	A
Acetone	A	A	A	A	A	A	A	A	A	D	A	A	D	D	D	A	A	A
Other Ketones	A	A	A	A	A	A	A	A	A	D	A	D	D	D	D			A
Acetyl Chloride	D	A		D	C			B	A	D	D	D	D	D	D			A
Acetylene	A	B	A	A	A	A	A	A	A	B	A	A	A	C	C	A		A
Acid Fumes	B	D	D	D	B		B			C	D			C	B			A
Acrylonite	B	A	A	C	A		B	A	A	D	D	D	C	D	D	A		A
Air	A	A	A	A	A		A	A	A	A	A	A	A	A	A	A		A
Alcohol, Amyl	B	B	B	C	A		B	B	B	C	A	A	B	B	C	A	A	A
Alcohol, Butyl	B	B	B	C	A		A	A	A	B	A	C	A	B	B	A	A	A
Alcohol, Diacetone	A	A	A	A	A		A	B	A	D	A	B	D	C	C	A	A	A
Alcohol, Ethyl	B	B	B	B	B		A	B	A	A	A	A	A	B	B	A	A	A
Alcohols, Fatty	B	B	B	B	A		A		A	B	A			B	B	A	A	A
Alcohol, Isopropyl	B	B	B	B	B		A	B	B	C	A	A	A	B	B	A	A	A
Alcohol, Methyl	B	B	B	B	A		A	A	A	B	A	A	C	A	A	A	A	A
Alcohol, Propyl	A	A	B	B	A		A	A	A	B	A	A	A	B	B	A	A	A
Alumina	A	A							A	A	A	A			A	A		A
Aluminum Acetate	C	D		D	A	B	B	C	B	D	D	A	D	D	D			A
Aluminum Chloride dry	B	B	C	D	C		D	B	B	B	A	A	A	B	B	A	A	A
Aluminum Chloride solution	C				D	C	B	B	A	B	D		A	B	B	A	A	A
Aluminum Fluoride	C		D	D	C		C	B	A	A	C	A	A	B	A			A
Aluminum Hydroxide	A	A	D	D	A	B	B	B	B	A	C	A	A		A			A
Aluminum Nitrate	D	D		D	C		B	C	B	B	D	B	D	B	B			A
Aluminum Oxalate	B						A	B	A									A
Alum (Aluminum Potassium Sulfate)	D	D		D	B	C	B	C	A	B	D		B	B	B		A	A
Alum (Aluminum Sulfate)	C	C	D	D	B	A	B	C	A	A	D	A	A	B	A	A	A	A
Amines	B	B	B	C	A	A	A	B	B	D	C	C	D	D	D	B		A
Ammonia, Alum	C				A		A		A	B	C				B	D	A	A
Ammonia, Anhydrous Liquid	A	D	A	B	A	A	A	B	A	B	D	B	D	B	C	A	A	A
Ammonia, Aqueous	B	D	A	A	A		A	B	B	B	D		A	B	B	B	A	A
Ammonia, Gas, hot	A	D		B	A		A	B	B	C	D	A	D	C	A		A	A
Ammonia Liquor					A		A		B							B	A	A
Ammonia Solutions	C	D	B	B	A		A	B	B	B	D	B	D	D	B	B	A	A
Ammonium Acetate	B	D		B	B		A	B	B	B	D	A	D	D	B			A
Ammonium Bicarbonate	B	B	C	B	B		B	B		B	A	A	A	B	A	B		A
Ammonium Bromide 5%	D				B		B	B			A							A
Ammonium Carbonate	B	B	B	B	B		B	B		C	D	A	B	B	A			A
Ammonium Chloride	D	D	D	D	C	C	B	B	B	B	C	A	A	A	A	D		A
Ammonium Hydroxide 28%	C	D	C	C	B	A	A	D	B	B	D	B	A		A	B	A	A
Ammonium Hydroxide Concentrated	C	D	C	C	B	A	A	C	B	C	D	A	A	A	A		A	A
Ammonium Monosulfate	D					A		B	B	B		D						A
Ammonium Nitrate	B	D	D	D	A	A	B	D	B	A	D	A	A	A	A	C		A
Ammonium Oxiale 5%	A				A		A	B			A							A
Ammonium Persulfate	C	C			A		A	D		D	D	B	B	B	C			A
Ammonium Phosphate	C	D	D	D	B		B	C		A	C	A	A	A	A	A		A
Ammonium Phosphate Di-basic	B	C	D	D	B		B	C	B	A	A		A		A	A		A
Ammonium Phosphate Tri-basic	C	C	D	D	B		B	C	B	A	A		A		A	A		A
Ammonium Sulfate	C	C	C	D	B	B	B	B	B	A	B	A	B	B	A	A	A	A
Ammonium Sulfide	C	D	D	D	B		B	B		A	A	A	D	B	B			A
Ammonium Sulfite	C	C	C	C	A		B	D		B	A	B	A		A			A
Amyl Acetate	B	B	C	C	B	A	A	B	A	D	A	B	D	D	D	D		A
Amyl Chloride	D	B		B	A		A	B	B	D	A	D	D	D	C	B		A
Aniline	C	D	C	C	B		A	B	B	D	D	C	C	D	D	B	A	A
Aniline Dyes	C	C	C	C	A		A	A		C	A	C	B	C	C			A
Apple Juice	B	C	D	D	B		A	A		A	A	B	A	B	A			A
Aqua Regia (Strong Acid)	D	D	D	D	B		B			D	D	D	D	D	D		D	A
Aromatic Solvents	A	A	C	B	A		A	B		D	A	D		A	D			A

Ratings: A-Excellent **B**-Good **C**-Poor **D**-Do not use **Blank**-No information

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ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
JAN 15 2008
Waste Programs Div.
Permits Section

FNW™

CHEMICAL COMPATIBILITY

	Aluminum	Brass	Carbon Steel	Ductile Iron/Cast Iron	316 Stainless Steel	17-4PH	Alloy 20	Monel	Hastelloy C	Buna N (Nitrile)	Delrin	EPDM/EPR	Viton	Hypalon	Neoprene	Nylon	Grafoil	Teflon
Arsenic Acid	D	D	D	D	B		B	D	B	A	D	B	A	B	A		A	A
Asphalt Emulsion	C	A	B	B	A		A	A	A	D	A	D	A	D	C	A		A
Asphalt Liquid	C	A	B	B	A		A	A	A	C	A	D	A	D	C			A
Barium Carbonate	C	B	B	B	B		B	B	A	B	A	A	A	A	A			A
Barium Chloride	D	B	C	C	B	B	C	B		A	A	A	A	B	A			A
Barium Cyanide	D	C		C	B		B	D		B	A	B	B	B	B			A
Barium Hydrate	D	D			A		A	B			A							A
Barium Hydroxide	D	C	C	B	B	A	A	B		A	A	B	A	B	A	A		A
Barium Nitrate	B				A		A				A				B			A
Barium Sulfate	D	C	C	C	A		A	B		A	A	B	A	B	A			A
Barium Sulfide	D	D	C	D	B		B	C		A	A	A	A	B	B	B		A
Beer	A	B	D	D	A	A	A	A		B	A	B	A	C	B	A		A
Beet Sugar Liquors	A	A	B	B	A		A	A		A	A	B	A	C	A	A		A
Benzaldehyde	A	A	A	C	A		A	B	B	D	A	A	D	D	D	A		A
Benzene (Benzol)	B	B	B	B	B	B	A	A	B	D	C	D	B	D	D	A	A	A
Benzoic Acid	B	B	D	D	B	A	B	B	A	C	A	D	B	D	C	D		A
Berryllium Sulfate	B	B		B	B		A	B		B	A	B	B	B	B			A
Bleaching Powder wet		B			C		B	D	A	D	D	B	B	B	A	D		A
Blood (Meat Juices)	B	B		D	A	A	A	B		B	A	B	B	B	B			A
Borax (Sodium Borate)	C	D	C	C	A			A	A	B	A	A	A	B	D			A
Bordeaux Mixture					A		A				A							A
Borax Liquors	C	A	C	C	B		A	A	B		A	A	A	D	C			A
Boric Acid	B	C	D	D	B		B	B	A	B	A	B	A	B	B	D	A	A
Brake Fluid	B	B		B	B	A		B		D	B	B	D	B	C			A
Brines, saturated	C	B	D	C	B		B	B	A	A	A	A	A	B	B	C		A
Bromine, dry	C	B	D	D	D		B	A	A	D	D	D	B	D	D	D	B	A
Bunker Oils (Fuel)	A	B	B	B	A		A	A		B	A		A		B			A
Butadiene	B	C	B	B	A		A	C	B	C	A	C	B	D	C			D
Butane	A	A	B	B	A		A	B	A	B	A	D	A	A	B	A		A
Butter					A		A			B	A			D	B			A
Buttermilk	A	D	D	D	A		A	D		A	A	B	A	D	A			A
Butyl Acetate	B	B		B	B		A	B	B	D	B	D	D	D	D			A
Butylene	A	A	A	A	A		A	A		D	A	D	D	D	D	A		A
Butyric Acid	B	C	D	D	B		B	B	A	C	A	C	C	C	C	D		A
Calcium Bisulfite	C	C	D	D	B		B	D	B	A	D	D	A	B	A			A
Calcium Carbonate	C	C	D	D	B		B	B	B	A	A	B	A	B	A	A		A
Calcium Chlorate	B	D		C	B		B	B		B	D	B	B	B	B		B	A
Calcium Chloride	C	B	C	C	B	B	B	B	A	A	A	B	A	B	A	D		A
Calcium Hydroxide	D	C	C	C	B		B	A	A	A	A	A	A	B	B	A		A
Calcium Nitrate	B				B		B			B	C	B		B	B			A
Calcium Phosphate	D	C		C	B		B			B	B	B	B	B	B			A
Calcium Silicate	D	C		C	B		B			B	A	B	B	B	B			A
Calcium Sulfate	B	C	C	C	B	B	B	B	B	A	A	B	A	B	A			A
Caliche Liquor			B		A		A			B	A			B	B			A
Camphor	C	C		C	B		C	C		B	A	B	B	B	B			A
Cane Sugar Liquors	A	B		B	A		A	B		B	A	B	B	C	B			A
Carbonated Beverages	B	B	D	B	B	B	B	C		B	A	B	B	D	B		A	A
Carbonated Water	A	B	B	A	A	B	A	B		A	A	A	A	D	A		A	A
Carbon Bisulfide	A	C	B	B	B		B	B		D	A	D	A	D	D			A
Carbon Dioxide, Dry	A	A	A	B	A	A	A	A		C	A	B	B	B	B		A	A
Carbonic Acid	A	D	D	D	B	B	A	B		B	A	B	A	B	B		A	A
Carbon Monoxide	A	A		B	A	A	A	A	A	B	A	B	B	C	D	A		A
Carbon Tetrachloride, dry	B	C	B	C	A	A	A	A	A	D	A	D	B	D	D	A	A	A
Carbon Tetrachloride, wet		D	D	D	B		B	B	B	D	B	D	B	D	D	A	A	A
Casein	C	C		C	B		B	C		B	A	B	B	B	B			A
Caster Oil	A	A	B	B	A		A	A	A	A	A	B	A	B	B	A		A
Caustic Potash					A		A	B		B	D			B	B			A
Caustic Soda	D		B	B	A		A	A		C	D	B	B	B				A
Cellulose Acetate	B	B		B	B			B	B	D	C	B	D	D	D			A
China Wood Oil (Tung)	A	C	C	C	A		A	A	A	A	A	D	A	B	B	A		A
Chlorinated Solvents	D	C	C	C	A		A	B		D	A	D	C	D	D			A
Chlorinated Water	C				C	D	A	D	D	B	D		A	B	A	D	B	A
Chlorine Gas, dry	B	C	B	B	B	C	A	A	A	C	D	D	B	C	D	D	A	A
Chlorobenzene, dry	B	B	B	B	A		A	B	B	D	B	D	A	D	D	A		A
Chloroform, dry	D	B	B	C	A	B	A	A	B	D	A	D	B	D	D	B		A
Chlorophyll, dry	B	B		B	B		A	B		B		B	B	B	B			A
Chlorosulfonic Acid, dry	B	C	B	B	B		B	B	A	D	D	D	D	D	D	D		A
Chrome Alum	C	C	B	C	A		A	B		B	B	B	B	B	B	D		A
Chromic Acid < 50%	C	D	D	D	C	C	B	C	B	D	D	C	C	B	D	D		A
Chromic Acid > 50%	D	D	D	C	C	D	B	D	B	D	D	C	C	B	D	D		A
Chromium Sulfate	B	C		D	B		C	B		B	C	B	B	B	B			A
Cider	B				A		B	A			A			D				A
Citric Acid	B	C	D	D	B	C	A	B	A	B	A	B	A	A	A	B	A	A
Citrus Juices	C	B	D	D	B		A	A		A	A		A	D	A			A
Coca-Cola Syrup					A		A			B	A		B	D	B			A
Coconut Oil	B	B	C	C	B		A	B		A	A				C			A

Ratings: **A**-Excellent **B**-Good **C**-Poor **D**-Do not use **Blank**-No information

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CHEMICAL COMPATIBILITY

FNW™

	Aluminum	Brass	Carbon Steel	Ductile Iron/Cast Iron	316 Stainless Steel	17-4PH	Alloy 20	Monel	Hastelloy C	Buna N (Nitrile)	Delrin	EPDM/EPR	Viton	Hypalon	Neoprene	Nylon	Grafoil	Teflon
Coffee	A	A		D	A		A	B		A	A				A			B
Coffee Extracts, hot	A	B	C	C	A		A	A			A					D		A
Coke Oven Gas	A	C	B	B	A		A	B		C	D	D	B	C	D	C		A
Cooking Oil	B	B	B	B	A		A	A		A	A	D	A	C	B			A
Copper Acetate	D	D	D	D	A		A	C	B	C	D	B	D	D	C			A
Coppper Carbonate	D				A		A				A							A
Copper Cyanide	D	D		D	A		A	C		A	A	B	B	B	A			A
Copper Nitrate	D	D	D	D	B		B	D		A	A	B	A		A			A
Copper Sulfate	D	D	D	D	B	B	B	C	A	A	A	A	A	A	A	A	A	A
Corn Oil	B	B	C	C	B		B	B		A	A	C	A	C	C			A
Cottonseed Oil	B	B	C	C	B		B	B		A	A	C	B	C	B			A
Cresol					B		B			D	D	D	D	D	D			A
Cresote Oil	B	B	B	B	B	B	A	B	B	C	D	D	A	D	D			A
Cresylic Acid	C	C	C	D	B		B	B		D	D	D	B	D	D			A
Crude Oil, sour	B	C	B	C	A		A	B		A	A	D	A	C	B			A
Crude Oil, sweet	A	B	B	B	A		A	A		A	A		A		B			A
Cupric Nitrate	D				A		A	D			D							A
Cutting Oils, Water/Emulsions	A	A	B	B	A		A			A	A		A		B			A
Cyanide Plating Solution	D	D		D	B		B	D		B	D	B	B	B	B			A
Cyclohexane	A	A	A	A	A		A	B	B	C	A	D	A	D	D	A		A
Cyclohexanone	B	B			A		A	B	B	D	A				D	A		A
Detergents, synthetic	B	B		B	B		A	B		B	A	B	A	B	B			A
Dextrin	B	B		B	B		B	B		B	A	B	B	B	B			A
Dichloroethane				C	C		B	B		D	D	D			D			A
Dichloroethyl Ether	B	B		B	B		B			D	D	D	D	D	D			A
Diesel Oil Fuels	A	A	A	A	A		A	A		A	A	D	A	D	C			A
Diethylamine	B	B	A	B	A		A	B		B	A	C	D	C	C	B		A
Diethyl Benzene					B		B			D	C	D			D			A
Diethylene Gycol	B	B		A	A		A	B		A	A	A	B	B	A			A
Diethyl Sulfate	B	B		B	B		B	B		C	A	C	B	D	C			A
Dimethyl Formamide	B	B		B	A		A	B		B	A	D	D	D	D			A
Dimethyl Phthalate										B	C		D	B	B			A
Dioxane	B	B		B	B		B	B		D	C	C	D	D	D		A	A
Dipentane (Pinene)	A	A		A	A		A			B	A	D	B	D	D			A
Disodium Phosphate	B				B		B	C		B	A		B	B	B			A
Dowtherm	A	A	B	B	A		A	A		D	A	D	A	D	D	C	A	A
Drilling Mud	B	B	B	B	A		A	B		A	A	A	A	B	C			A
Dry Cleaning Fluids	A	C	B	B	A		A	B		D	A		B		D			A
Drying Oil	C	C	C	B	B		B	B		A	A				B			A
Enamel		A								B	A	D			B			A
Epsom Salts (MgSo4)	A	B	C	C	B		B	B		A	A		A	D	A	B		A
Ethane	A	B	C	C	B		B	B		A	A	D	A		B			A
Ethers	A	B	A	B	A	B	A	B		D	C	C	C	D	D			A
Ethyl Acetate	A	C	B	C	B	A	B	B	B	D	C	C	D	D	D	A		A
Ethyl Acrylate	C	B	C	C	A		A	B	A	D	B	C	D	D	D	A		A
Ethyl Benzene							A		A	C	A	D			D	B		A
Ethyl Bromide	B	A		B	B		C	B		B	A	B	B	D	B			A
Ethyl Chloride, dry	B	B	B	B	A	A	A	B	B	C	A	C	B	D	C	A		B
Ethyl Chloride, wet	D	C	D	D	B		B	B	B	C	A	B	B	D	C	A		A
Ethylene Chloride	C				A		A	B	B	D	A		D		A			A
Ethylene Dichloride					B		A	B		D	C	D	D	D	D	A	A	A
Ethylene Gylcol	A	B	B	B	B	A	A	B	A	A	A	A	A	B	B	A		A
Ethylene Oxide	C	C	B	B	B		B	B	A	D	A	D	D	D	D	D		A
Ethyl Ether	B	B		C	A		A	A	B	D	A	D	D	D	D			A
Ethyl Silicate	A	B		B	B		B	B		B	A	B	B	B	C			A
Ethyl Sulfate					B		B			B	A	C	A		B			A
Fatty Acids	B	C	D	D	A		A	B	A	B	A	D	A	D	B	A	A	A
Ferric Hydroxide					A		A	A		B	A							A
Ferric Nitrate	D	D	D	D	C	B	A	D	B	A	A	A	A	B	A			A
Ferric Sulfate	D	D	D	D	B	B	A	D		A	A	A	A	A	A	C		A
Ferrous Ammonium Citrate	B				B		B				A							A
Ferrous Chloride	D	B	D	D	D		D	D	D	A	A	A	A	B	A	C	A	A
Ferrous Sulfate	C	B	D	D	B		B	B	B	A	A	A	A	B	A		A	A
Ferrous Sulfate, Saturated	C	C	C	C	A		A	B	B	C	A	B	B	B	C			A
Fertilizer Solutions	B	C	B	B	B		B	B		B					B			A
Fish Oils	C	B	B	B	A		A	A		A	A	D	A	D	B			A
Flue Gases	C	B		B	A		A	B		C	C	D	C	B	C			A
Fluoboric Acid	B				B		A			A	D			B	B			A
Fluorosilicic Acid	D	B	D	D	B		B	A	B	C	C	C	C	C	C			A
Formaldehyde, cold	A	A	A	B	A	A	A	A	B	B	A	B	D	C	C	A		A
Formaldehyde, hot	B	B	D	D	C		B	B	B	B	A			B	B			A
Formic Acid, cold	D	B	D	D	B	B	A	B	A	D	D		B	C	B	A	A	A
Formic Acid, hot	D	B	D	D	B	D	B	B	B	D	D		A		A	D	A	A
Freon Gas, dry	B	B	B	B	A	A	A	A	B	C	A	C	C	B	C	A	A	A
Freon 11, MF, 112, BF	B	B		C	A		A	B	B	C	A	C	D	B	C	A	A	
Freon 12, 13, 32, 114, 115	A	A		B	A		A	B	B	B	A	A	D	B	A	A	A	

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Freon 21, 31	B	B		C	A		A	B	B	D	A	D	D		D	A	A	
Freon 22	A	A		B			A		B	D	A	D	D		B	A	A	
Freon 113, TF	B	B		C	A		A	B	B	B	A	C	C		C	A	A	
Freon, wet	D	D		D	C	B	B	B	B	B	A	B	D	B	B	D	A	A
Fruit Juices	B	B	D	D	A		A	B		A	A	A	A	C	A			A
Fuel Oil	A	B	B	B	A		A	B		A	A	D	A	C	C			A
Fumaric Acid							A			B	A				B			A
Furfural	A	A	A	B	A	B	A	B	B	D	A	C	D	D	C			A
Gallic Acid 5%	A	C	D	D	B		B	B	B	B	A	C	A	C	B	A		A
Gas, Manufactured	B	B	B	B	B		B	A		A	A		A		A	A		A
Gas, Natural	B	B	B	B	A		B	A		A	A	D	A	B	A	A		A
Gas, Odorizers	A	A	B	B	B		A	B		B	A		A		B	A		A
Gasoline, Aviation	A	A	A	B	A		A	A	A	C	A		A		D	A	A	A
Gasoline, Leaded	A	A	A	A	A		A	B	A	C	A		A	B	D	A	A	A
Gasoline, Motor	A	A	A	B		A	A	A	A	C	A	D	A	D	D	A	A	A
Gasoline, Refined	A	B	B	B	A		A	B	A	C	A	D	A	D	C	A	A	A
Gasoline, Sour	A	B	B	B	A		A	C	A	C	A	D	A	C	D	B	A	A
Gasoline, Unleaded	A	A	A	B	A		A	A	A	C	A		A	B	D	A	A	A
Gelatin	A	A	D	D	A		A	B		A	A	A	A	B	A	A		A
Glucose	A	A	B	B	A		A	A	A	A	A	A	A	B	A	A		A
Glue	A	B	A	B	B		A	B	A	A	A	B	A	B	A	A		A
Glycerine (Glycerol)	A	B	C	B	A	A	A	A	A	C	A	A	B	A	D	A	A	
Glycol Amine	C	D		B	B	A			D	A	C	D	D	C			A	
Gycol	A	B	C	B	B		A	B		B	C	A	A	B	A			A
Graphite	B	B		C	B		A	B		B	A	B	B	B	B			A
Grease	B	C	A	A	A		A	B		A	A	D	A	D	B			A
Helium Gas	B	B		B	A		A	B	A	B	A	B	B	B	B			A
Heptane	A	A	B	B	A		A	B	A	A	A	D	A	B	B			A
Hexane	A	B	B	B	A		A	B	A	A	A	D	A	B	C	A		A
Hexanol, Tertiary	A	A	A	A	A		A	A	A	A	A	D	B	C	C	A		A
Hydrolic Oil, Petroleum Base	A	B	A	B	A		A	A		A	A	D	A		B			A
Hydrazine	C	D		D	B		B	D		C	D	B	D	C	C			A
Hydrocyanic Acid	A	D	D	C	A		A	C	B	B	D	B	A	B	B			A
Hydrofluoslicic Acid	D	A	D	D	C		B	B		B	A	B	A	B	B		A	A
Hydrogen Gas, cold	A	B	B	B	A		A	A		B	A	B	A	B	B	A		A
Hydrogen Gas, hot	C		B		B		A		A	B	A	B			B			A
Hydrogen Peroxide, Concentrated	A	D	D	D	B		B	D	D	D	D	B	B	B	D	D		A
Hydrogen Peroxide, Dilute	A	C	D	D	B		B	D	D	A	D	B	A		B	D		A
Hydrogen Sulfide, Dry	A	C	B	B	A	B	B	B	B	C	C	A	A	B	A	D	A	A
Hydrogen Sulfide, Wet	B	D	C	D	B		B	C	D	C	C	B	A	B	B	D	A	A
Hypo (Sodium Thiosulfate)	B	C	D	C	B		B	B		A	A	A	A		A			A
Illuminating Gas	A	A	A	A	A		A	A		C	A	D	A	D	C			A
Ink-Newsprint	C	C	D	D	A		A	B		A	A	B	A	B	B	A		A
Iodoform	C	C	B	C	A		A	C			A		A					A
Iso-Butane					B		B			B	A	D			D			A
Iso-Octane	A	A	A	B	A		A	A		A	A	D	A	B	C			A
Isopropyl Acetate					B		A			D	A	D			D		A	A
Isopropyl Ether	B	A	A	B	A		A	B	A	C	A	D	D	D	C	A	A	A
J P-4 Fuel	A	A	A	B	A		A	A	A	A	A		A		C	A		A
J P-5 Fuel	A	A	A	A	A		A	A	A	B	A		A		C	A		A
J P-6 Fuel	A	A	A	A	A		A	A	A	A	A		A		C	A		A
Kerosene	A	A	B	B	A		A	A	A	A	A	D	A	D	C	A	A	A
Ketchup	D	D	D	D	A		A	B		A	A		A	B	A			A
Ketones	A	A	A	A	A		A	A		D	A	D	D	D	D			A
Laquer (and Solvent)	A	A	C	C	A		A	A		D	A	D	D	D	D			A
Lactic Acid Concentrated cold	C	D	D	D	A	D	A	D	A	B	D	B	A	B	A	A	A	A
Lactic Acid Concentrated hot	C	D	D	D	B	D	A	D	B	C	D	B	B	B	C		A	A
Lactic Acid Dilute cold	A	D	D	D	A	B	A	C	A	B	D	B	A	B	A		A	
Lactic Acid Dilute hot	B	D	D	D	A	D	A	D	B	C	D		D		D		A	A
Lactose	B	B		C	B		B	B		B	A	B	B	B	C			A
Lard	A	B		A	A		A			B	A	C			C			A
Lard Oil	B	B	C	C	B		A	B		A	A	B	A	D	B			A
Lead Acetate	D	C	D	D	B		B	B		A	A	B	B		B			A
Lead Sulfate	D	C		D	B		B	B		B	A	B	B	B	B			A
Lecithin	D	C		C	B		B	B		D	A	D	B	D	D			A
Linoleic Acid	A	B	B	B	A		A	B		B	A	D	B	D	B			A
Linseed Oil	A	B	A	A	A		A	B		A	A	D	A	B	C			A
Lithium Chloride	D	B		B	B		A	B		B	A	B	B	B	B			A
LPG	A	A	B	B	B		B	B		A	A	D	A	D	B			A
Lubricating Oil Petroleum Base	A	B	A	A	A		A	B		A	A	D	A	C	B			A
Ludox	D	D		B	B		B	B		B	B	B	B	B	B			A
Magnesium Bisulfate	B	B	B	B	A		A	B		B	A	B	B	B	B			A
Magnesium Bisulfide	C	D		D	B		B	B		B	A	B	B	B	B			A
Magnesium Carbonate	B	B		B	A		A	B		B	A	B	B	B	B			A
Magnesium Chloride	D	B	C	D	B	C	B	B	A	A	A	A	A	A	A	C		A
Magnesium Hydroxide	D	B	B	B	A	A	A	B	B	A	A	A	A	A	A	D		A

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ARIZONA DEPARTMENT OF
ENVIRONMENTAL QUALITY

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Waste Programs Div.
Permits Section

CHEMICAL COMPATIBILITY

FNW™

	Aluminum	Brass	Carbon Steel	Ductile Iron/Cast Iron	316 Stainless Steel	17-4PH	Alloy 20	Monel	Hastelloy C	Buna N (Nitrile)	Delrin	EPDM/EPR	Viton	Hypalon	Neoprene	Nylon	Grafoil	Teflon
Magnesium Hydroxide Hot	D	D	B	B	A	A	A	A	B	B	A		A	B	B	D		A
Magnesium Nitrate	B				A		A	B		B	A		B	B	A			A
Magnesium Sulfate	B	B	B	B	A	A	A	B	A	A	A	A	A	A	A	A		A
Maleic Acid	B	B	B	C	B		B	B	A	B	A	D	A	D	B			A
Maleic Anhydride	B	B		B	B		B	B	B	D	C	D	B	D	D			A
Malic Acid	B	B	D	D	B		B	B		A	A		A		A			A
Malt Beverage					A		B	A		A	A	B	A		A			A
Manganese Carbonate	B				B		A			B	A							A
Maganese Sulfate	B	B		D	A		A	B		B	A	B	B	B	B		A	A
Mayonnaise	D	D	D	D	A		A	B		A	A		A		A			A
Meat Juices	B	D			A		A			B	A			B	B			A
Melamine Resins				D	C		C			B	A			D	B			A
Methanol	B	B		B	A		A	B		B	C	D	B	D	B			A
Mercuric Chloride	D	D	D	D	B		B	D	B	A	A	A	A	B	B	C		A
Mercuric Cyanide	D	D	D	D	A		A	C	B	A	A	A	A	B	B			A
Mercurous Nitrate	D	D			A		A	D			A		B	B				A
Mercury	D	D	A	A	A		A	B	B	A	A	A	A	B	A			A
Methane	A	A	B	B	A		A	B	A	A	A		A		B			A
Methyl Acetate	A	A	B	B	A		A	B	A	D	B	B	D	D	D	A		A
Methyl Acetone	A	A	A	A	A		A	A		D	B	A	D	D	D	A		A
Methylamine	A	D	B	B	A		A	C	B	D	A	B	D	D	D	A		A
Methy Bromide 100%	C	C		D	B		A	B		B	A	D	B	D	D			
Methyl Cellosolve	A	A	B	B	A		A	B	B	C	A	B	D	D	D	B		A
Methyl Cellulose					A		A		B	D	A				D			A
Methyl Chloride	D	B	B	B	A		A	B		D	A	D	B	D	D	A		A
Methyl Ethyl Ketone	A	A	A	A	A		A	A	B	D	A	B	D	D	D	A	A	A
Methylene Chloride	C	A	B	B	A		A	B	B	D	A	D	C	D	D	A		A
Methyl Formate	C	A	C	C	B		A	B	B	D	A	B	D	B	B			A
Methyl Isobutyle Ketone					A		A			D	A				D		A	A
Milk & Milk Products	A	B	D	D	A		A	B		A	A	A	A	B	A	A		A
Mineral Oils	A	B	B	B	A		A	A		A	A	D	A	C	B			A
Mineral Spirits	A	B	B	B	B		B	B		A	A		A		C			A
Mixed Acids (cold)	D	D	C	C	B		B	C		D	D	D	B	D	D	C		A
Molasses, crude	B	A	A	A	A		A	A		A	A		A	B	A	A		A
Molasses, Edible	A	A	C	C	A		A	A		A	A		A		A	A		A
Molybdic Acid					A		A				A							A
Monochloro Benzene Dry					B		B	B		D	C				D		A	A
Morpholine	B	B		B	A		A	B		D	A	B	D	D	D			A
Mustard	B	A	B	B	A		A	A		A	A		A		A			A
Naptha	A	B	B	B	B		B	B	A	B	A	D	A	C	C	A		A
Napthalene	B	B	B	B	B		B	B	B	D	A	D	A	D	D	A		A
Natural Gas, Sour	B	B	B	B	A		A	D	A	A	A	D	A	D	A	A		A
Nickel Ammonium Sulfate	D	D	D	D	A		A	C		A	C	B	D	B	B	A		A
Nickel Chloride	D	D	D	D	B		A	B	A	A	D	B	A	B	A	C	A	A
Nickel Nitrate	C	D	D	D	B		A	B		A	C	A	A	B	A			A
Nickel Sulfate	D	D	D	D	B		A	B	B	A	C	B	A	B	A	A	A	A
Nicotinic Acid	A	A	B	C	A		A	A		D	C	D	B	D	D			A
Nitric Acid 10%	D	D	D	D	A	A	A	D		C	D		A		B	D	A	A
Nitric Acid 30%	D	D	D	D	A	D	A	D		C	D	B	A	D	C	D	B	A
Nitric Acid 80%	B	D	D	D	C	D	B	D		D	D	B	B	D	D	D	B	A
Nitric Acid 100%	B	D	D	D	A	D	A	D		D	D	D	B	C	D	D	B	A
Nitric Acid Anhydrous	B	D	D	C	A	D	A	D		D	D	D	A	D	D	D	B	A
Nitorbenzene	C	D	B	B	A		A	B	B	D	B	C	C	D	D	A		A
Nitrogen	A	A	A	A	A		A	A		A	A	B	A	B	A			A
Nitrous Acid 10%	D	D	D	D	B		B	D		C	B		A		A			A
Nitrous Gases	B	D	B	C	A		A	D			B							A
Nitrous Oxide	C	B	B	C	B		B	D	B	B	A		A		B	A		A
Oils & Fats	B				A		A			B	A	D				A		A
Oils, Animal	A	A	A	A	A		A	B	A	A	A	B	B	C	B	A		A
Oils , Petroleum Refined	A	B	A	A	A		A	A	A	A	A	D	A	B	B	A		A
Oils, Petroleum Sour	A	C	B	C	A		A	A	A	B	A	D	A	B	B	A		A
Oils, Water Mixture	A	A	B	B	A		A		A	A	A		A		B	A		A
Olaic Acid	B				B		B	A		D	C		C		D	A		A
Oleic Acid	B	B	C	C	B		A	B	B	B	C	D	A	D	C	A	A	A
Oleum	B	C	B	D	B		B	C	B	D	D	D	C	B	D	D		A
Oleum Spirits	D	D		D	D		B	D		C	D	D	A	D	D	D		A
Olive Oil	B	C	B	B	A		A	A		A	A	B	A	B	B	A		A
Oxalic Acid	C	B	D	D	B	D	B	B		C	C	B	A	B	B	D	A	A
Oxygen	A	A	B	B	A	A	A	A	A	B	D	A	A	A	B	D		A
Ozone, Dry	B	B	C	C	A		A	A	A	D	C	B	B	B	D	D		A
Ozone, Wet	B	B	C	C	A		A	A	A	D	C	B	B	B	D	D		A
Paints & Solvents	A	A	A	A	A		A	A		D	A	D	B	D	D			A
Palmitic Acid	B	B	C	C	B		B	B		B	A	B	A	D	B	D		A
Palm Oil	A	B	C	C	B		A	A		B	A	D	A	D	B	A		A
Paper Pulp	D	B		B	A		A	B		B	A	B	B	B	B	A		
Paraffin	A	A	B	B	A		A	A	A	A	A	D	A	B	C	A		A

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CHEMICAL COMPATIBILITY

	Aluminum	Brass	Carbon Steel	Ductile Iron/Cast Iron	316 Stainless Steel	17-4PH	Alloy 20	Monel	Hastelloy C	Buna N (Nitrile)	Delrin	EPDM/EPR	Viton	Hypalon	Neoprene	Nylon	Grafoil	Teflon
Paraformaldehyde	B	B	B	B	B		B	B		B	A	D			B			A
Parldehyde					B		B			B	A	D			B		A	A
Pentane	A	A	B	B	A		A	B		A	A	D	A		B			A
Perchlorethylene, dry	B	C	B	B	A		A	B	B	D	B	D	A	D	D	A		A
Petrolatum (Vaselien Petroleum Jelly)	B	B	C	C			A	A		A	A		A		B			A
Phenol	A	B	D	D	A	B	A	A	A	D	C	D	B	D	D	D		A
Phosphate Ester 10%	D	D	A	A	A		A	A		D	A	A				A		A
Phosphoric Acid 10%	D	D	D	D	D	B	B	D		B	D	B	A	B	A	D	A	A
Phosphoric Acid 50% Cold	D	D	D	D	B	B	B	C		B	D	B	A	B	B	D	A	A
Phosphoric Acid 50% Hot	D	D	D	D	D	D	B	C		B	D	B	A	B	B	D	A	A
Phosphoric Acid 85% Cold	D	D	B	B	A	C	B	A		C	D		B	B	C	D	A	A
Phosphoric Acid 85% Hot	D	D	C	C	B	D	B			C	D			B	C	D	A	A
Phosphoric Anhydride	A				A		A			D	B		B		D	D	A	A
Phosphorous Trichloride	D		B	C	A		A			D	D	B	B		D	D	A	A
Phthalic Acid	B	B	C	C	B		B	A	B	C	B		A		C	A		A
Phthalic Anhydride	B	B	C	C	B		B	A	A	C	A		A		C	A		A
Picric Acid	C	C	D	D	B	C	B	D	B	C	D	B	B	B	A	B		A
Pineapple Juice	A	C	C	C	A		A	A		A	A		A	D	A			A
Pine Oil	B	B	B	B	A		A	B		A	A	D	A	D	D			A
Pitch (Bitumen)					A		A			C	A	D			C			A
Polysulfide Liquor	D	D		B	B		A	B		B	D	B	B	B	B			A
Polyvinyl Acetate	B	B		B	B		B	B			A	B		B	C			A
Polyvinyl Chloride	B	B		B	B		B	B			A	B		B	C			A
Potassium Bicarbonate	A				A		A	B		B	A							A
Potassium Bichromate	A				A		A	A		B	B		B		B			A
Potassium Bisulfate	B				A		A	B		B	A		A	C	B			A
Potassium Bisffite	C	C	D	D	B		B	D		A	A	B	A	C	A			A
Potassium Bromide	C	C	D	D	A	C	B	B		A	A	B	A	B	A			A
Potassium Carbonate	D	B	B	B	B	A	B	B		A	A	B	A	B	A			A
Potassium Chlorate	C	B	B	B	B	B	B	C		A	A	B	A		A			A
Potassium Chloride	D	C	C	B	B	B	A	B	B	A	A	A	A	B	A	A		A
Potassium Chromate	B	B		B	B		B	B		B	A	B	B	B	A			A
Potassium Cyanide	D	D	B	B	B		B	B	B	A	A	A	A	B	A			A
Potassium Dichromate	A	D	C	C	B		A	B		A	A	B	A	B	A			A
Potassium Ferricyanide	B	D	C	C	A	B	B	B		A	A	B	A		A			A
Potassium Ferrocyanide	B	B	C	C	B		B	A		A	A		A		A			A
Potassium Hydroxide Dilute Cold	D	D	A	A	B	B	B	A		A	D		D	B	B	B		A*
Potassium Hydroxide to 70%, Cold	D	D	B	B	B	C	B	A		B	D	B	D	B	B	B		A*
Potassium Hydroxide Dilute Hot	D	D	B	B	B	C	B	A		B	D				B			A*
Potassium Hydroxide to 70%, Hot	D	D	A	B	B	D	B	A		C	D	A		A	B			A*
Potassium Iodide	D	D	C	C	B	B	B	C		A	A	B	A		A			A
Potassium Nitrate	A	B	B	B	B	B	B	B	B	A	A	B	A	B	A			A
Potassium Oxalate	C				A		A				A							A
Potassium Permanganate	B	B	B	B	B	B	B	B	B	A	A	B	A	B	A			A
Potassium Phosphate	D	C		C	B		B	B	B	A	A	A	A	B	A	A		A
Potassium Phosphate Di-basic	B	B	A	A	A		A	B	B	A	A	B	A		A	A		A
Potassium Tri-basic	D		A	A	B		B	B		B		B			B	A		A
Potassium Sulfate	A	B	B	C	A	A	A	B		A	A	A	A	B	A	A		A
Potassium Sulfide	B	B	B	B	A		A	C	A	A	A	B	B	B	B	A		A
Potassium Sulfite	B	B	B	B	A		A	C	B	B	A	A	B	B	B	A		A
Producer Gas	B	B	B	B	B	A	B	A		A	A	D	A		B			A
Propane Gas	A	A	B	B	B	A	A	B	A	A	A	D	A	B	B	A		A
Propyl Bromide	B	B		B	B		A	B		B	A	B	B	D	B			A
Propylene Glycol	A	B	B	B	B		B	B		A	C	B	A	B	A			A
Pyidine	B			B	B		A			D	D		D		D			A
Pyrolgalic Acid	B	B	B	B	B	B	A	B		A	A		A		A			A
Quench Oil	A	B	B	B	A		A			A	A		A	B	B			A
Quinine, Sulfate, dry					A	B	A	B			A							A
Resins & Rosins	A	A	C	C	A	B	A	A		C	A		A		C	A		A
Resorcinol						B		B										A
Road Tar	A	A	A	A	A		A	A		B	A	D	A	D	C			A
Roof Pitch	A	A	A	A	A		A	A		B	A		A		C			A
Rosin Emulsion	A	B	C	C	A		A	A		D	A		B		C			A
R P-1 Fuel	A	A	A	A	A		A	A		B	A		A		C			A
Rubber Latex Emulsions	A	A	B	B	A		A				A		A					A
Rubber Solvents	A	A	A	A	A		A	A		D	C		D		C			A
Salad Oil	B	B	C	C	B		A	B		A	A	B	A	B	A			A
Salicylic Acid	C	C	D	D	A		B	B		A	A	B	A	B	A			A
Salt (NaCl)	B	B	C	C	B		A	A		A	A		A		A			A
Salt Brine	B	B		D	B		B	B		A	A	B	B	D	D	C		A
Sauerkraut Brine					B		B				C							A
Sea Water	C	C	D	D	B		B	A		A	A	A	A	C	A	C		A
Sewage	C	C	C	D	B	A	B	B		A	B	B	B	B	C			A
Shellac	A	A	A	B	A		A	A		A	A				A			A
Silicone Fluids	B	B		B	B		B			B	A		B	B	B			A
Silver Bromide	D				A	C	A	B			D							A

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Silver Cyanide	D	D		D	A			A	B		B	D		B	B	B		A
Silver Nitrate	D	D	D	D	A		A	D		C	A	A	A	B	C			A
Silver Plating Sol.	B				A		A				D				B			A
Soap Solutions (Stearates)	C	A	A	B	A		A	A		A	A	A	A	B	B			A
Sodium Acetate	B	B	C	C	B		B	B	B	B	A	B	A	D	B	A		A
Sodium Aluminate	D	B	C	C	A		B	B	B	A	A	B	A	B	A	A		A
Sodium Benzoate	B				B		B	B			B							A
Sodium Bicarbonate	B	B	C	C	B		A	B		A	B	A	A	B	A			A
Sodium Bichromate	A				B		B			D	A			B				A
Sodium Bisulfate 10%	D	B	D	D	A		A	B		A	D	B	A	B	A	A		A
Sodium Bisulfite 10%	D	B	D	D	A		B	B	B	A	D	B	A	B	A	A		A
Sodium Borate	B	B	C	C	B		B	B		A	A	B	A	B	A			A
Sodium Bromide 10%	B	B	C	D	B		B	B		A	A	B	A		A			A
Sodium Cargonate (Soda Ash)	D	B	B	B	A		A	B	B	A	A	B	A	B	A	A		A
Sodium Chlorate	C	B	C	C	B		B	C	B	A	A	B	A	B	A		B	A
Sodium Chloride	B	B	C	C	B		A	A	B	A	A	B	A	B	A	A	A	A
Sodium Chromate	D	C	B	B	A		B	B		A	A	B	A		A			A
Sodium Citrate	D				B		B				A							A
Sodium Cyanide	D	D	B	B	A	B	A	B		A	A	B	A	B	A			A
Sodium Ferricyanide	A				A		A	B			A							A
Sodiulm Fluoride	C	C	D	D	B	B	A	B		A	A	B	A	B	A	C		A
Sodium Hydroxied 20% Cold	D	A	A	A	A	A	B	A		A	D	B	B	B	A	C	A	A*
Sodium Hydroxide 20% Hot	D	A	B	B	A	C	A	A		B	D	B	C	B	B	C	A	A*
Sodium Hydroxide 50% Cold	D	A	A	B	A	B	A	A		A	D	B	C	B	A	C	A	A*
Sodium Hydroxide 50% Hot	D	A	B	B	A	C	A	B		B	D		C	B	B	C	A	A*
Sodium Hydroxide 70% Cold	D	A	A	A	A	B	B	A		B	D	B	C	B	C	C	A	A*
Sodium Hydroxide 70% Hot	D	B	B	B	A	C	B	B		D	D	B	C	B	D	C	A	A*
Sodium Hypochlorite (Bleach)	D	D	D	D	D	D	C	D	A		D		A			B		A
Sodium Hyposulfite	B				B		B	B			A							A
Sodium Lactate	D				A		A	B			A							A
Sodium Metaphosphate	A	C	B	C	B	B	B		A	A	B	B		B	A		A	
Sodium Metasilicate Cold	B	B	C	C	A		A	A		B	A		B	B	A	A		A
Sodium Metasilcate Hot	B	B	D	D	A		A	A	A		A							A
Sodium Nitrate	A	B	B	B	A	B	A	B	B	C	A	B	A	B	B	A		A
Sodium Nitrite	A				B		B	C	B	C	B	A	B		D	A		A
Sodium Perborate	B	B	B	B	B	B	B	B	B	C	A	A	A	C	B			A
Sodium Peroxide	C	D	C	C	B	B	B	B	B	C	A	A	A	B	B			A
Sodium Phosphate	D	C	C	C	B	B	B	B	B	B	B	A	A	B	C	A		A
Sodium Phosphate Di-basic	D	C	C	C	B		B	B	B	A	A	A	A		A	A		A
Sodium Phosphate Tri-basic	D	C	C	C	B		B	B	B	B	A	A	A		B	A		A
Sodium Polyphosphate					B		B	B	B	B·		A			B			A
Sodium Salicylate					A		A				A							A
Sodium Silicate	B	B	B	B	B		B	B		A	A	B	A	B	A	D		A
Sodium Silicate, hot	C	C	C	C	B		B	B		A	B					D		A
Sodium Sulfate	B	B	B	B	A	B	A	A		A	A	A	A	A	A			A
Sodium Sulfide	C	D	B	B	B	A	B	B		A	A	B	A	B	A	A		A
Sodium Sulfite	B	C		A	A	A	A	B	B	A	A	B	B	B	A	D		A
Sodium Tetraborate				A	A		A			A	A	B			A			A
Sodium Thiosulfate	B	C	B	C	B	A	B	B		A	A	A	A	B	A	A		A
Soybean Oil	B	B	C	C	A		A	A		A	B	B	A	D	B			A
Starch	B	B	C	C	B		A	A		A	A	C	A	B	A			A
Steam (212°F)	A	A	A	A	A	·A	A	B		D	D	B	C	B	D		A	A
Stearic Acid	A	C	C	C	B		B	B	A	A	A	B	A	B	C	A	A	A
Styrene	A	A	A	B	A		A	B	A	D	A	D	B	D	D	A		A
Sugar Liquids	A	A	B	B	A		A	A		A	A	B	A	D	A			A
Sugar, Syrup & Jam	B	B		C		A	A				A			D	B			A
Sulfate, Black Liquor	C	C	C	C	B	A	B	B		C	C	B	C	D	B			A
Sulfate, Green Liquor	B	C	C	C	B	A	B	B		C	A		C	D	B			A
Sulfate, White Liquor	B	C	C	C	B	B	D	C		C	D		C	D	B			A
Sulfur	A	D	C	C	B		A	B		D	A	B	B	B	C	C		A
Sulfur Chlorides	D	B	D	D	D		A	B		D	A	C	A	B	D		A	A
Sulfur Dioxide, dry	A	B	B	B	A	A	B	B	A	D	A	A	A	D	D	A	A	A
Sulfur Dioxide, wet	C	D			A	C	B	A	B	D	D	B		B	D		A	A
Sulfur Hexafluoride	A	B			A		A								B			A
Sulfur, Molten	A	D	C	B	B		A	D	B	D	D	B	B	B	C			A
Sulfur Trioxide		B	B	B	B	B	B		B	D	D		B	D	D		D	A
Sulfur Trioxide, dry	A	B	B	B	B	B	B	B	B	D	A	B	A	D	D	A	D	A
Sulfuric Acid 0 to 77%	C	C	D	D	C		B	B		B	D		A	B	B	D	A	A
Sulfuric Acid 100%	D	C	C	B	A	B	A	D		D	D	C	B	B	D	D	D	A
Sulfurous Acid	C	D	D	D	B		B	D	B	C	C	C	A	B	C	D	A	A
Tall Oil	C	B	B	B	B		B	B	A	B	A	D	A	D	B	D		A
Tannic Acid (Tannin)	C	B	C	C	B	B	B	B	B	B	A	B	A	B	B	A		A
Tanning Liquors	A				B		B			B	D				D			A
Tar & Tar Oils	A	A	A	A	A	A	A	A		C	A	D	A	D	D			A
Tartaric Acid	B	B	D	D	A	A	A	B	B	C	A	B	A	B	B			A
Tetraethyl Lead	B	B	C	C	B		B	A			A							A

Ratings: **A**-Excellent **B**-Good **C**-Poor **D**-Do not use **Blank**-No information

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Toluol (Toluene)	A	A	A	A	A		A	A	A	D	C	D	B	D	D	A		A
Tomato Juice	A	C	C	C	A		A	B		A	A		A	D	A			A
Transformer Oil	A	B	A	B	A		A	A		A	A		A		B			A
Tributyl Phosphate	A	A	A	A	A		A	A		D	A	B	D	D	D	A		A
Trichlorethylene	A	B	B	C	B	A	B	B	A	D	A	D	B	D	D	A	A	A
Trichloroacetic Acid	D	B		D	D		B	B	A	C	D		D		D			A
Triethanolamine	B				B		B	B	A	C	A	B		B	B			A
Varnish	A	A	C	C	A		A	A	A	C	A	D	B	D	B			A
Vegetable Oils	A	B	B	B	A		A	B	A	A	A	D	A	B	B			A
Vinegar	C	B	D	D	A		A	B	A	D	B	A	D	C	D			A
Vinyl Acetate	B	B		B	B		B	B	A		D	A		B	B	A	A	A
Water, Distilled	A	A	D	D	A	A	A	A	A	C	A	B	A	B	B			A
Water, Fresh	A	A	C	C	A	A	A	A	A	C	A	B	A	A	B	C		A
Zinc Sulfate	D	B	D	D	B		A	B	A	A	A	A	A	B	A		A	A

Ratings: A B C D Blank

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DOC: FNWCHEMCOMP05 Ver. 7/05

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	Aluminum	Brass	Carbon Steel	Ductile Iron/Cast Iron	316 Stainless Steel	17-4PH	Alloy 20	Monel	Hastelloy C	Buna N (Nitrile)	Delrin	EPDM/EPR	Viton	Hypalon	Neoprene	Nylon	Grafoil	Teflon
Triethylamine		B			B		B		A	B	C				B			A
Trisodium Phosphate	D				B		B		A	A	A	B	B	B	A			A
Tung Oil	B	B	B	B	A		A	C	A	A	A	D	A	D	B			A
Turpentine	B	B	B	B	B	A	B	B	A	B	A	D	A	C	D	A		A
Urea	B	B	C	C	B		B	B	A	C	A	B	D	D	B			A
Uric Acid	D				A		A		A		B							A
Water, Acid Mine	D	D	D	D	B	B		D	C	B	A	A	D	C	A		A	
Waxes	A	A	A	A	A		A	A	A	A	A	C	A	B	B			A
Whiskey & Wines	D	B	D	D	A		A	A	A	B	A	A	A	C	B	A		A
Xylene (Xylol), Dry	A	A	B	B	A		A	A	A	D	A	D	B	D	D	A	A	A
Zinc Bromide	D	B		D	B		B	B	A	B	A	B	B	B	B			A
Zinc Hydrosulfite	D	C	A	B	A		A	B	A	A	A	A	A		A			A

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EXHIBIT D-4

Tank Farm Control Flow Diagram

Tank Farm Control Flow Diagram

High Level switch senses liquid at 90% in tank and actuates bell and shuts off air to double diaphragm (air operated diaphragm) pump via air actuator control valve.

Close main valve to donor vessel or remove stinger from donor drum

Push acknowledge button on Tank Farm Monitoring Panel to silence bell alarm, and reset air actuator valve that controls air flow to the double diaphragm pump.

Continue pumping into tank to remove remaining waste liquid in hoses and pump.

CEASE ALL PUMPING!! TANK IS FULL!!

If liquid level reaches 95% in tank, High-High Switch activates alarm bell and air actuator thereby deactivating the double diaphragm pump.

Close main valve at donor vessel or remove stinger from donor drum

Push acknowledge button to silence bell alarm, and reset air actuator valve to allow air to flow to double diaphragm pump.

Continue to pump into tank to remove remaining waste liquid in pump and hoses.

STOP! TANK IS AT 95% CAPACITY! DO NOT PUMP ANY MORE LIQUIDS INTO THE TANK!!

APPENDIX D-1

CONTAINER STORAGE SECONDARY CONTAINMENT CALCULATIONS

Clean Harbors Arizona LLC - Phoenix
Secondary Containment Capacity - Calculations
Container Storage Area - CSA I 7/19/2009

(1) **Reference Documents:**

1. Survey drawings - GUIDA Surveying Inc., - stamped 7-13-09
2. Calculations for containment capacity increase - excel spreadsheet - dated June 27, 2008
3. Report of findings - sprinkler hydraulics - Grainger consulting Inc. dated June 9, 2008
4. Container storage secondary containment calculations - AKE Inc. dated Jan. 10, 2008

(2) **Containment Calculations Summary**

Per AKE Inc report, CSA I, had adequate containment capacity to provide secondary containment as required by 40 CFR 264.175(b)(3) for the storage of containers as shown in the report. The calculated net available capacity was identified as Vuse of 493.9 cubic feet.

Grainger report on sprinkler hydraulics showed that the CSA I did not have adequate containment capacity to hold the sprinkler water for the required period of time. Grainger report identified the minimum required capacity to be 1417.11 cubic feet.

Based on the capacity requirement per Grainger report, minimum increase in containment curbs and ramps was calculated. Facility has made improvements to the containment curbs and ramps in order to increase the secondary containment capacity of the CSA I area. The area has been re-surveyed to account for those improvements. The floor configuration has remained same, only the perimeter curbing and ramps have been altered.

Based on the recent survey, the lowest elevation (70.13 TOP) occurs at the crest line in the personnel aisle leading to the man door at north west corner. Using this elevation as the maximum liquid level and series of calculations, gross containment capacity has been determined. The average liquid depth was used to estimate the volume that would be displaced by the immersed pallets and containers.

Registered Professional Engineer (Chemical)
Certificate No. 49850
JOHN WILLIAM CALDWELL
Date Signed 07/30/09
ARIZONA, U.S.A.
expires 06/30/12

The gross containment capacity of CSA I is =	1869.53 cu.ft
The displacement volume of pallets and containers is =	441.63 cu.ft
Therefore, the net secondary containment capacity =	1427.89 cu.ft

The net secondary containment volume, 1427.89, is larger than the minimum containment volume needed, 1417.11, per Grainger report.

Therefore, CSA I has adequate containment capacity.

(3) **Detail Calculations**

Figure -1 provides CSA I configuration and overall dimensions obtained from AKE Inc report.

For the ease cf vclume calculations,
the total containment area is divided into four separate areas - one large area, two small areas formed due to ramps and access ramp area. See Figure -2, for point elevations and area sub division.

Area 1 - bound by pts 13,15,16 & c - is 11 ft X 3.5 ft.
Area 2 - bound by pts a,9, c & 5 - is 70.83 ft X 36.88 ft.
Area 3 - bound by pts 1,3,4 & a - is 28.8 ft X 4.5 ft
Ramp Area - bound by pts 11,13,15 & d - is 11.88 ft X 3.5 ft.

The elevations for these points is obtained from GUIDA survey and are tabulated below. From GUIDA survey, the lowest curb point elevation, 70.13, is on the crest line within the personnel passage towards the NW doorway. This would be the maximum liquid level. For the points a, b & c no elevations are available and have been selected as being same as the nearest surveyed point.

Maximum liquid depth is calculated using the maximum possible liquid level elevation of 70.13

TABLE - 1

Point	Floor Elevation in ft.	Maximum liquid depth in ft.	in inches	Top elevation in ft.
1	69.44	0.69	8.28	
2	69.54	0.59	7.08	
3	69.51	0.62	7.44	
a = 1	69.44	0.69	8.28	
b = 2	69.54	0.59	7.08	
4	69.48	0.65	7.8	
5	69.41	0.72	8.64	
6	69.43	0.7	8.4	
7	69.45	0.68	8.16	
8	69.43	0.7	8.4	
9	69.43	0.7	8.4	
11	69.47	0.66	7.92	
12	69.5	0.63	7.56	
13	69.49	0.64	7.68	
c = 16	69.4	0.73	8.76	
15	69.47	0.66	7.92	70.16
16	69.4	0.73	8.76	
d				70.2

Maximum liquid depth is based maximum liquid level of 70.13 ft.

AREA 1 - containment volume

Figure -3, shows the shape and configuration of the volume at max mum liquid level.

The average liquid depth of the area = 0.69 ft.
The gross containment volume = 11' X 3.5' X 0.69' = 26.57 cu.ft.

AREA 2 - containment volume

Figure -4, shows the shape and configuration of the volume at maximum liquid level.
The average depth along the west edge, crest line and east edge have been calculated to be

West edge = 0.7 ft
Crest line = 0.63 ft
East Edge = 0.72 ft

The gross containment volume, based on the average cross section

$$= 70.83 \times 18.44\ (0.7 + 0.63)/2 + 70.83 \times 18.44\ (0.63 + 0.72)/2$$

$$= 1750.18 \text{ cu.ft.}$$

AREA 3 - containment volume

Figure - 5, shows the shape and configuration of the volume at maximum liquid level.
The average depth along the west edge, crest line and east edge have been calculated to be

West edge = 0.69 ft
Crest line = 0.59 ft
East Edge = 0.63 ft

The gross containment volume, based on the average cross section

$$= 4.5 \times 18.44\ (0.69 + 0.59)/2 + 4.5 \times 10.36\ (0.59 + 0.63)/2$$

$$= 81.55 \text{ cu.ft.}$$

RAMP AREA - containment volume

Figure - 6, shows the shape and configuration of the volume at maximum liquid level.

The average liquid depth of the area = 0.63/2 ft.
The gross containment volume = 11.88' X 3.0' X 0.63'/2
= 11.23 cu.ft.

Therefore, total gross containment volume of the entire CSA I is
= 26.57 + 1750.18 + 81.55 + 11.23 cu.ft.
= 1869.53 cu.ft.

Displacement Volume

Since liquid depth s greater than 6.5" within the entire area, all pallets will be submerged.

From reference document #2 & #4,

# of drums per layer = 332
# of pallets per layer = 83
displacement volume of each pallet = 3.708 cu.ft.
pallet height = 6.5 inches

Therefore the displacement volume due to pallets = 83 x 3.708 = 307.76 cu.ft.

Most drums are located in area 2. The average liquid depth in the area = 0.67 ft.
= 8.04 inch

therefore, average immersion height of the each drum = 8.04 - 6.5 = 1.54 inch

drum diameter provided in reference documents is 22 inches, however, for the worst case displacement calculations, assume all drums to be 24" diameter.

Therefore, foot print area of each drum = 3.142 x 2' x 2' /4 = 3.142 sq. ft.

The displacement volume of immersed portion of the drums =			3.142 x 1.54/12 x 332	
			=	133.87 cu.ft.
Total displacement volume	=	307.76 + 133.87	=	441.63 cu. ft.

Therefore, net available containment volume = 1869.53 - 441.63 = 1427.89 cu.ft.

The required minimum containment volume based on Grainger report is = 1417.11 cu.ft.

Hence, area CSA I has adequate containment capacity.

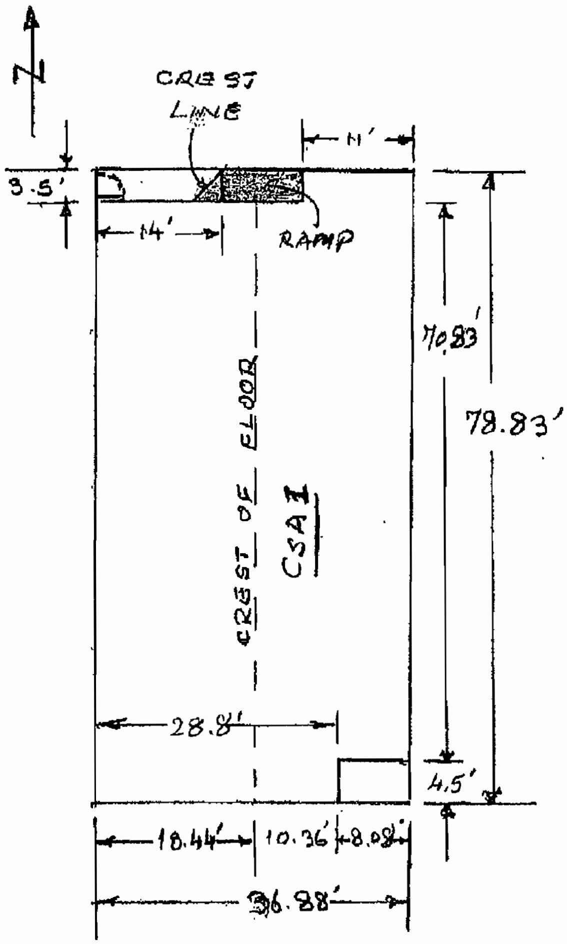
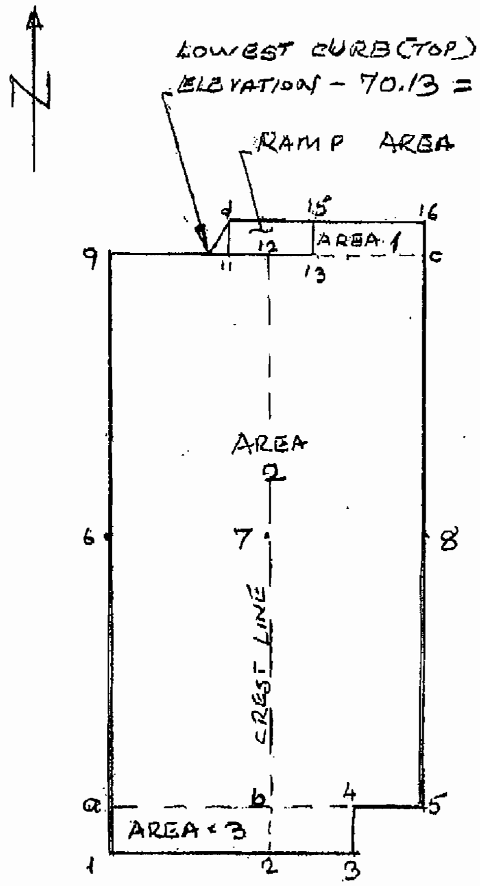


FIGURE - 1

CAS I - AREA CONFIGURATION



POINT ELEVATIONS

pt.	FLOOR EL. FT	TOP EL FT
1	69.44	
2	69.54	
3	69.51	
a = 1	69.44	
b = 2	69.54	
4	69.48	
5	69.41	
6	69.43	
7	69.45	
8	69.43	
9	69.43	
11	69.47	
12	69.50	
13	69.49	
c = 16	69.40	
15	69.47	70.16
16	69.40	
d		70.20

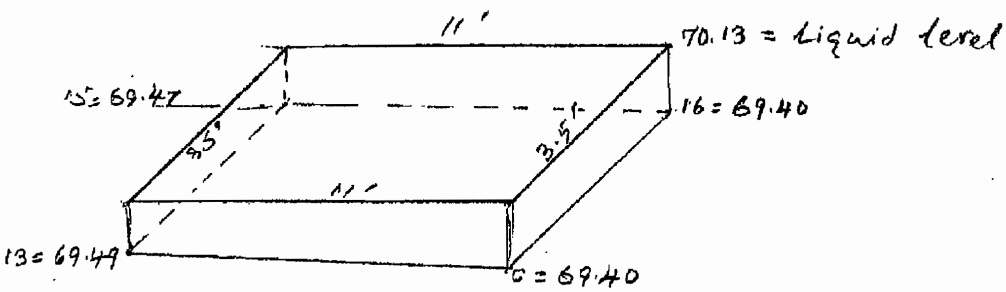
FOR CALCULATION PURPOSES

TOTAL AREA DIVIDED INTO FOUR SEPARATE AREAS

AREA 1 = 11' × 3.5' (pts. 13-15-16-C)
AREA 2 = 70.83' × 36.88' (pts. a-9-c-5)
AREA 3 = 28.8' × 4.5' (pts. 1-a-4-3)
RAMP AREA = 11.88' × 3.5' (pts 11 & 13 FLOOR AND d & 15 TOP)

FIGURE - 2

AREA BREAKDOWN & POINT ELEVATIONS



pt	LIQUID depth, ft
13 –	0.64
C –	0.73
16 –	0.73
15 –	0.66

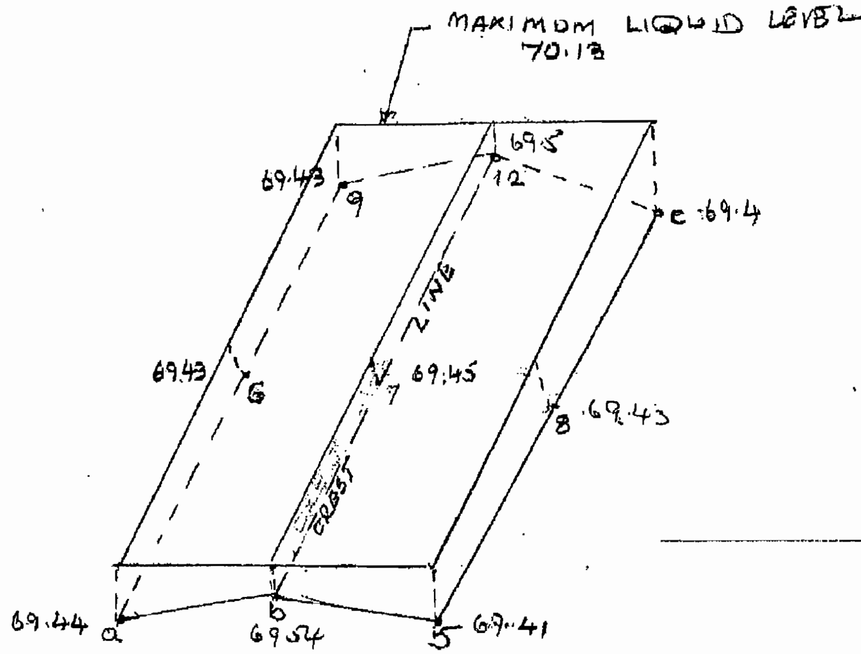
Average depth = 0.69 ft

GROSS Volume = 11' x 3.5' x 0.69'

= 26.57 cu. ft.

FIGURE-3

AREA 1 - VOLUME CALCULATIONS

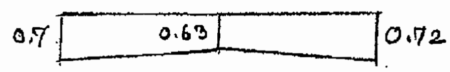


Average liquid depth of

West Edge - 0.70'

Crest line - 0.63'

East Edge - 0.72'



AVERAGE CROSS-SECTION

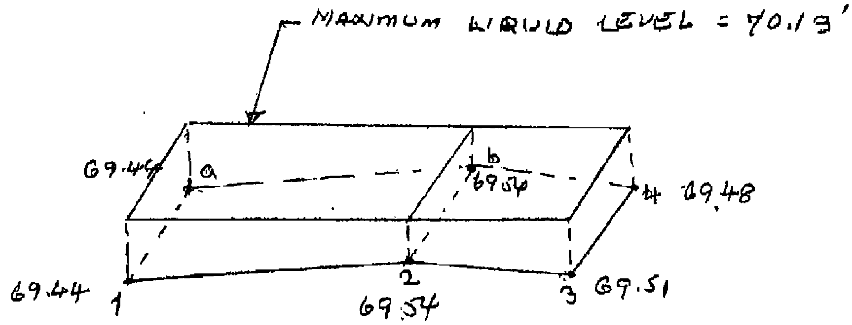
$$\text{VOL} = 70.83' \times 18.44' \times \left\{ \frac{0.70+0.63}{2} \right\} + 70.83' \times 18.44 \left\{ \frac{0.63+0.72}{2} \right\}$$

$$= 653.05 \{ 1.33 + 1.35 \}$$

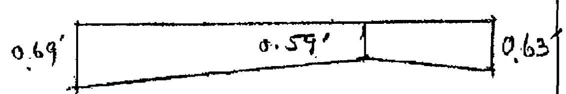
$$= 1750.18 \text{ Cu. ft.}$$

FIGURE - 4

AREA-2 VOLUME CALCULATIONS



Average liquid depth of
West edge = 0.69'
Crest line = 0.59'
East edge = 0.63'



Average Cross-section

$$\text{VOL.} = 4.5' \times 18.44' \left\{ \frac{0.69 + 0.59}{2} \right\} + 4.5' \times 10.36' \left\{ \frac{0.59 + 0.63}{2} \right\}$$

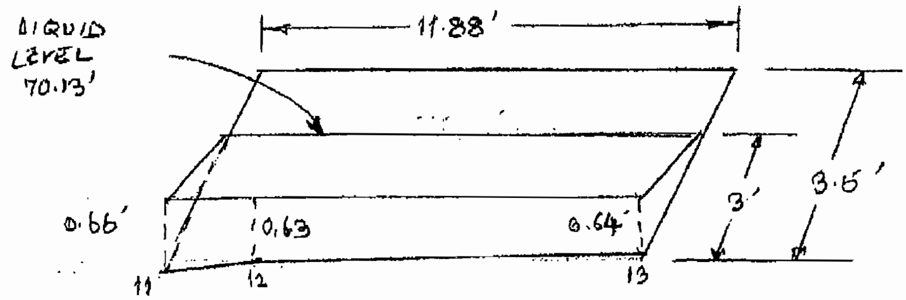
$$= 41.49 \{1.28\} + 23.31 \{1.22\}$$

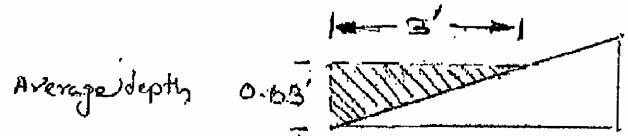
$$= 81.55 \text{ cu. ft.}$$

FIGURE - 5

AREA 3 – VOLUME CALCULATIONS

CAMPAD





Containment Volume = $\frac{1}{2} \times 0.63' \times 3' \times 11.88'$

= 11.23 cu.ft

FIGURE-6

RAMP AREA - VOLUME CALCULATIONS

AKE, Inc.
January 10, 2008

<u>CSA I Containment Calculation Summary</u>

Containment Storage Area I (CSA I) is a covered storage area within the Clean Harbors Arizona, LLC facility at 1340 West Lincoln Street, Phoenix, Az. CSA I is required to have sufficient secondary containment capacity to contain the volume of the largest container or 10% of the volume of all containers, whichever is larger as required by 40 CFR 264.175(b)(3). In this case, 10% of the volume of all containers stored in this area is the greater volume.

The volume of liquid contained is dependent on the elevations and configurations of the floor, surrounding walls, curbs, and ramps. Pallets and containers submerged in liquid displace volume and reduce the available containment volume.

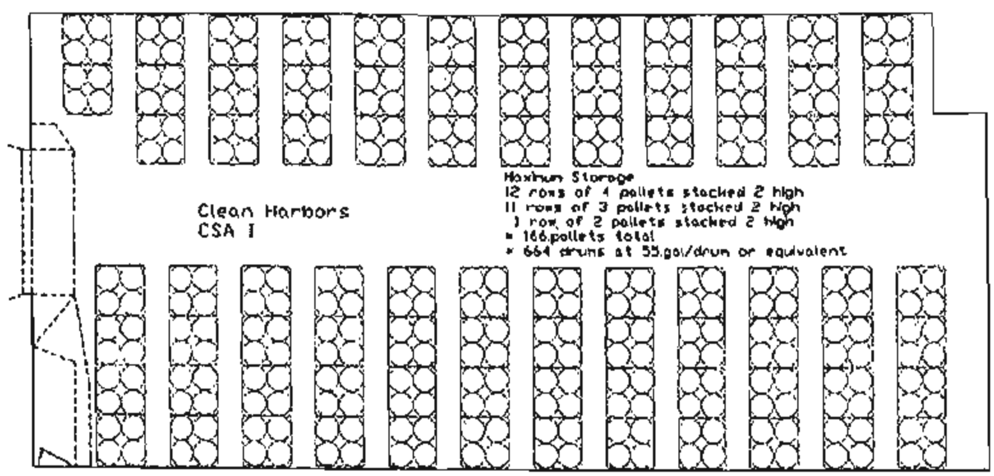
Elevations from a survey of the existing containment area were used to create a 3 dimensional model of the containment area floor using a Computer Aided Drafting (CAD) program and calculate the resultant liquid volume if a spill were to occur. The average liquid depth was used to estimate the volume that would be displaced by immersed pallets and containers. The volume available for containment was then calculated as the liquid volume minus the volume displaced by pallets and containers.

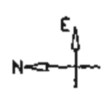
Vcalc = 575.7 cu.ft. = total containment volume of CSA I
<u>Vdisp = - 81.8 cu.ft.</u> = volume displaced by pallets in the liquid
Vuse = 493.9 cu.ft. = usable containment volume

Vreq = 488.2 cu.ft. = required containment volume for CSA I = 10% of maximum stored liquid volume

<u>The usable containment volume, Vuse, is greater than the required containment volume, Vreq, therefore CSA I has adequate secondary containment volume.</u>

This storage area is configured to store a maximum of 664 drums at 55.gal/drum or the equivalent liquid. The drums all sit on pallets. The low point of the containment structure is the 69.66 TC (top of curb) by the door in the northwest corner.





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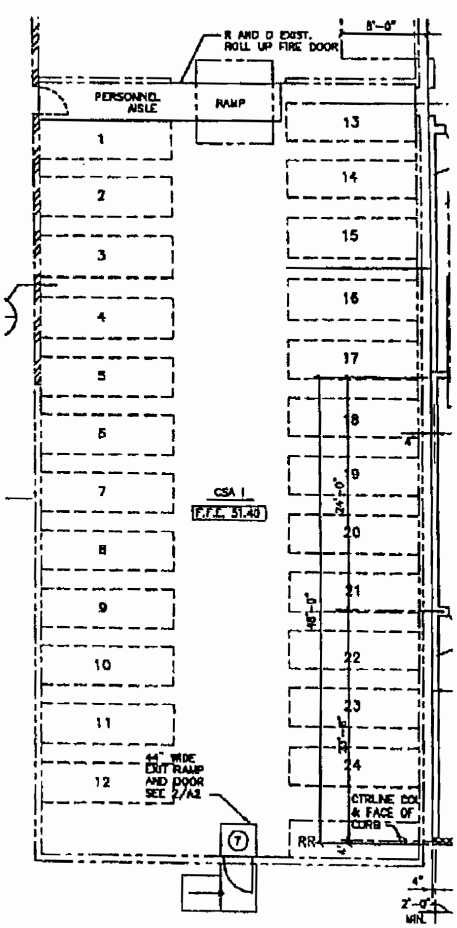
Required Containment:

CSA1 is delineated for 12 rows of pallets on each side as shown in the next drawing "Clean Harbors Floor Plan at CSA II and Loading Dock", Dwg.No. 581-ADA-104R. Rows 1 through 12 each have the capacity to hold 4 pallets, double stacked, from the wall toward the center of the room. Row 13 has the capacity to hold 2 pallets, double stacked, from the wall toward the center of the room. Rows 14 through 24 each have the capacity to hold 3 pallets, double stacked, from the wall toward the center of the room. Each pallet is estimated to support containers holding the equivalent of four 55 gallon containers. The maximum volume of liquid contained in CSA I is then:

V = (12 rows * 4 pallets + 1 row * 2 pallets + 11 rows * 3 pallets) * 2 pallets high * 220 gal/pallet * (1 cu.ft./ 7.48 gal)
= 4882 cu.ft (Based on 664 drums of 55 gallons equivalent containers)

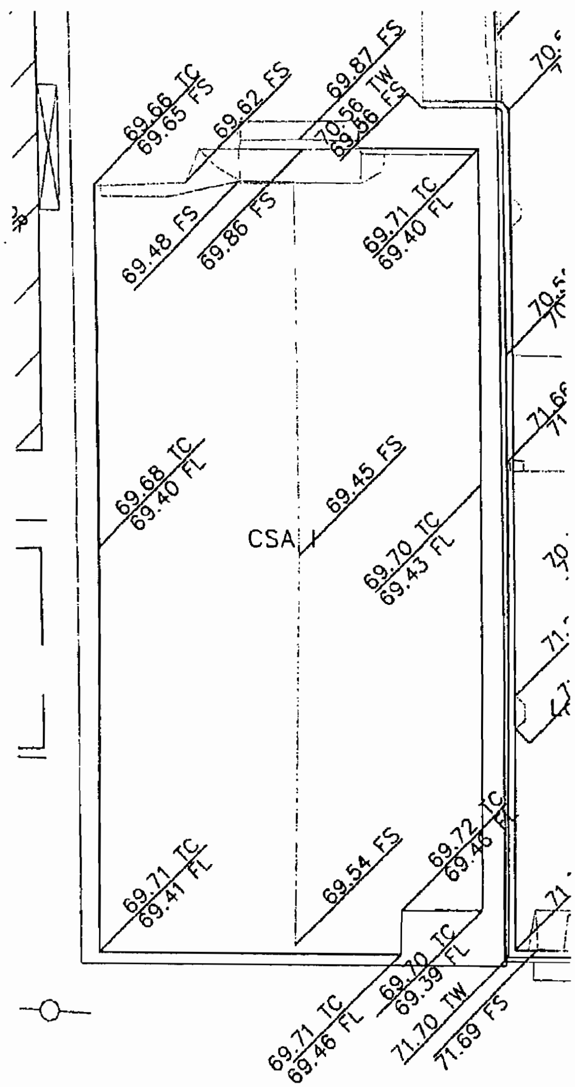
The requirement is found in 40 CFR 264.175 paragraph (b)(3) which states: "The containment system must have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container, whichever is greatest." The required containment volume is then:

Vreq = 10% * 4882 cu.ft.
Vreq = 488.2 cu.ft. = required containment volume for CSA I



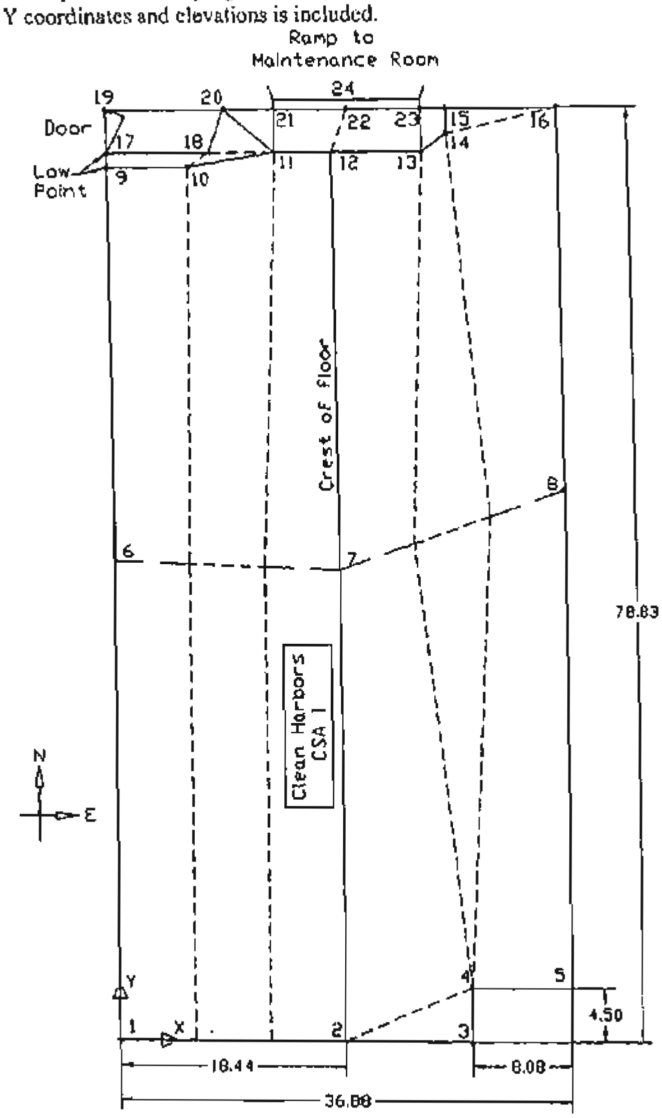
CSA I Elevations

Elevations obtained from Guida Surveying, Inc. are shown below. Elevations are given in height above sea level minus 1000 ft so that 69.40 is actually 1069.40 ft above sea level. These points were used along with a few interpolated points to create a 3-D model of the floor. The floor model was then extruded vertically and cut off at a level corresponding to the top of the liquid level. The volume of the resulting solid was calculated and used as the maximum containment capacity of CSA I.



AKE, Inc.
January 10, 2008

The plot below shows some dimensions of CSA 1. Numbers denote points at which elevations were determined by Guida Surveying, Inc. or estimated based on the Guida Surveying points. A table that gives X and Y coordinates and elevations is included.



Dimensions to the inside of the curbs were obtained during AKE's site visit and used along with north end ramp dimensions from the Guida Surveying drawing. A tabulation of X, Y, floor elevation (FS), and top of curb elevation (TC) for the different points is on the next page.

These points were used to create a 3-D CAD model representation of the floor. The floor was assumed to have a linear slope from the crest lengthwise through the area down to the east and west sides. The dashed lines in the picture above show the way the floor was broken up into areas to create the 3-D model. This floor model was extended vertically to create a solid and then trimmed at 69.66 feet elevation to create a volume that represents the containment volume of CSA I. 69.66 feet is the lowest curb elevation determined by Guida Surveying therefore this will be the maximum height of fluid that could be contained in CSA 1.

AKE, Inc.
January 10, 2008

Clean Harbors - CSA I

Points as placed on a floor plan of CSA I
The south east corner of the building is X = Y = 0.0
The floor is surrounded by a curb that is roughly 3" high.

Survey elevations FS and TC are elevations above sea level minus 1000.ft. so that 69.41 is really 1069.41ft above sea level.
FS = Finished Surface = floor elevation
TC = Top of Curb, n/a means this point was not near a wall or curb
The top of the liquid level will = lowest TC

		--- Points in feet ---			69.66 ft = top of liquid level	
point	X~ft.	Y~ft	FS	TC	depth~inches	
1	0.00	0.00	69.41	69.71	3.00	
2	18.44	0.00	69.54	69.71	1.44	
3	28.79	0.00	69.46	69.71	2.40	
4	28.79	4.50	69.46	69.72	2.40	
5	36.88	4.50	69.39	69.7	3.24	
6	0.00	40.35	69.40	69.68	3.12	
7	18.44	39.60	69.45	100	2.52	
8	36.88	46.27	69.43	69.7	2.76	
9	0.00	74.17	*69.48*	69.66	2.16	*estimated point*
10	6.60	74.17	*69.48*	n/a	2.16	*estimated point*
11	13.80	75.33	69.48	n/a	2.16	
12	18.44	75.33	*69.50*	n/a	1.92	*estimated point*
13	25.78	75.33	*69.50*	n/a	1.92	*estimated point*
14	27.86	76.81	*69.50*	n/a	1.92	*estimated point*
15	27.86	78.83	*69.50*	n/a	1.92	*estimated point*
16	36.88	78.83	69.40	69.71	3.12	
17	0.00	75.33	69.65	69.66	0.12	
18	8.35	75.33	69.62	n/a	0.48	
19	0.00	78.83	*69.66*	n/a	0.00	*estimated point*
20	9.60	78.83	*69.65*	n/a	0.12	*estimated point*
21	13.80	78.83	*69.86*	69.86	0.00	*estimated point*
22	19.79	78.83	69.86	69.86	0.00	
23	25.78	78.83	69.86	69.86	0.00	
24	19.79	79.58	69.87	69.87	0.00	

The low point from the Guida Surveying data is at the door at the north end of the west wall where the top of curb has an elevation of 69.66 feet. This is at points 9 and 17. The containment volume calculated from the 3-D CAD model is given below.

Vcalc = 575.7 cu.ft = the calculated containment volume of CSA I

Average Liquid Depth:
The average liquid depth is calculated to determine how much of the pallets are immersed in the liquid. This depth will be used to calculate the volume displaced by the pallets.

Davg = containment volume / room area = Vcalc / ((78.83 – 4.50)*(36.88)) = 575.7 / 2741
= 0.210 ft = 2.52 inches

Displaced Volume

Volume available for containing spills will be reduced by the volume displaced by the pallets and bottoms of containers that are in the liquid. The volume displaced will depend on the depth of the liquid surrounding the pallets and containers. The maximum depth in CSA I is 3.24", so only the pallets will be immersed in liquid in the event of a spill.

The typical pallet was 4 ft x 4 ft and had three 1.5"x 5.5" boards on the bottom, three 3.5"x 3.5" beams at 90 degrees in the middle, and a top of closely spaced 1.5"x 5.5" boards. An estimate of the volume displaced can be calculated by assuming that all of the pallets sit in the average liquid depth of 2.52 inches. This would immerse the three boards on the bottom and 1.02" of the three 3.5"x 3.5" beams in the middle of the pallets. The volume displaced by a pallet in 3" of liquid would be:

Vpallet = (3*(1.5" * 5.5" * 48") + 3*(3.5" * 1.02" * 48")) / 1728 cu.in./cu.ft. = 0.985 cu.ft./ pallet

The total volume displaced by pallets would be:

Vdisp = (12 rows * 4 pallets + 1 row * 2 pallets + 11 rows * 3 pallets) * Vpallet.
= 83 pallets * 0.985 cu.ft./ pallet

Vdisp = 81.8 cu.ft = volume displaced by portion of pallets immersed in liquid

The total usable containment volume in CSA I is then:

Vuse = Vcalc – Vdisp = 575.7 cu.ft. – 81.8 cu.ft.

Vuse = 493.9 cu.ft. = usable containment volume in CSA I

The usable containment volume (481 cu.ft.) exceeds the required containment volume (494 cu.ft) therefore CSA I has more than the required secondary containment volume.

Clean Harbors Arizona, LLC – Phoenix
Secondary Containment Capacity Calculations
CSA II **7/20/09**

Reference Documents

1. Survey drawings – GUIDA Surveying Inc. – stamped 7-13-09
2. Calculations for containment capacity increase – excel spreadsheet – dated June 27, 2008
3. Report of findings – sprinkler hydraulics – Grainger consulting inc. dated June 9, 2008
4. Container storage secondary containment calculations – AKE Inc. dated Jan 10, 2008.

Containment Calculation Summary

Facility CSA II area has three separate sections where drums are stored. Each area independently has adequate containment capacity to meet RCRA requirements for secondary containment. However, west ramp needed to be raised in order to provide additional containment capacity to meet fire code requirements. Facility has made the improvements and specific area has been re-surveyed.

Based on new survey and AKE Inc reported elevations, the point # 44, located at the northern edge of the southern most ramp (man door ramp) on east side, becomes the lowest elevation point for the containment wall. The elevation at that point is 70.45 ft. Modified ramp on west side has new elevation in the range of 70.53 to 70.59 ft. Therefore, for containment capacity calculations, maximum liquid level will be considered to be 70.45 ft.

Within the CSA II area, facility stores incompatible waste containers on containment pallets. These incompatible waste pallets will be located in the section B, and, if and when needed, first pallet (two high), closest to the section B, of each row of section A & C. This has been depicted on the container layout plan, figure –7.

In calculating the net containment capacity, volume displaced by these pallets has been taken into account. For net containment capacity calculations, it is assumed that entire section B and the first pallet in each row of section A & C are occupied with containment pallets.

The Gross containment Capacity of the CSA II area = **3,378.05** cu. ft.
The total displacement volume due to pallets and containers = **999.51** cu. ft.
The net containment capacity = **2378.54** cu. ft.

Required containment capacity from Grainger report = **2,283.42** cu.ft.

Net containment capacity of CSA II exceeds the required minimum capacity. Therefore, CSA II has adequate secondary containment capacity.

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Detailed Calculations

For the ease of containment capacity calculations, CSA II is divided into six areas. Using the coordinate data from the AKE Inc. report dimensions for each area is closely approximated to a rectangular shape as shown on Figures 1, 2 & 3, and, as outlined below.

- Area 1 : Section A – 49.84' x 29.6' – bound by pts. 4, 6, 39, 38, 37 & 16
- Area 2 : Section B - 49.84' x 31.55'– bound by pts 16, 37, 42, 48, 49, 51, 53, 56 & 24
- Area 3 : Section C – 49.84' x 38.85' – bound by pts. 24,56, 58, 60, 61, 36 & 31
- Area 4 : North sloped area in staging/transfer aisle – 15.58' x 26.14' – bound by pts. 26, 27, 30 & 29
- Area 5 : South sloped area in staging/transfer aisle – 15.58' x 24.33' – bound by pts. 1, 3, 15 & 13.
- Area 6 : Middle portion of the area in staging/transfer aisle – 15.58' x 49.53' – bound by pts. 13, 15, 27, 26, 70, 69, 68 & 17

The areas occupied by ramps are deducted from the respective sections and the containment volume contribution of ramp area is ignored.

Table –1, CSA II – Area survey elevations, provides data from the AKE Inc report and the new elevations for the modified portion from the re-survey. The tabulation of liquid depth at each point is also provided.

Table – 2, Gross containment volume for section A, B & C, provides current containment capacity due to increase in ramp height, by using AKE report calculated volumes and adding the incremental volume due to increase in liquid level.

(1) Gross containment volume

(A) Area 1 : Section A

Figure –1 shows the shape and configuration of the volume at maximum liquid level. The average depths of south and north edge are 1.1 ft and 0.34 ft. respectively.

The gross containment volume from Table – 2 is = 1,042.23 cu. ft.

(B) Area 2 : Section B

Figure –2 shows the shape and configuration of the volume at maximum liquid level. The average depths per AKE and after improvement are = 1.38 inch & 5.76 inch.

The gross containment volume from Table – 2 is = 685.20 cu. ft.

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(C) Area 3 : Section C

Figure –3 shows the shape and configuration of the volume at maximum liquid level. The average depths of south and north edge are 0.30 ft and 1.06 ft. respectively.

The gross containment volume from Table – 2 is = 1,330.59 cu. ft.

(D) Area 4 : North sloped Staging Aisle

Figure – 4 shows the configuration and containment volume calculations. Most of the ramp area will be out of water. Only bottom 5 ft will some water.

The gross containment volume = 11.68 cu. ft.

(E) Area 5 : South sloped Staging Aisle

Figure – 5 shows the configuration and containment volume calculations. About half of the ramp area will be out of water.

The gross containment volume = 61.40 cu. ft.

(F) Area 6 : Center portion of Staging/transfer Aisle

Figure – 6 shows the configuration and containment volume calculations. Average liquid depth will be = 0.32 ft.

The gross containment volume = 246.94 cu. ft.

Total gross containment volume of the entire CSA II = 3,378.05 cu. ft.

(2) Displacement volume due to containers and pallet

(A) Area -1: Section A

The Figure – 8 shows the liquid depth profile. The container layout is shown on Figure –7, and the Table-3 shows detailed displacement volume calculations.

Five wooden pallets per row will be completely submerged. One wooden pallet and one containment pallet per row will be partially submerged. 160 containers will also be partially submerged.

The displacement volume = 392.56 cu. ft.

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(B) Area –2: Section B

From Table-2, the average liquid depth for the entire section B is 5.76 inches. Per Figure-7, there are 39 pallets in this section and it is assumed that all should be considered as containment pallets.

Therefore, as calculated in Table –3, the displacement volume = 224.56 cu. ft.

(C) Area –3: Section C

The Figure – 8 shows the liquid depth profile. The container layout is shown on Figure –7, and the Table-3 shows detailed displacement volume calculations.

Six wooden pallets per row will be completely submerged. One wooden pallet and one containment pallet per row will be partially submerged. 192 containers will also be partially submerged.

The displacement volume = 398.22 cu. ft.

(D) Area –4: North Sloped Area in Staging Aisle

There is only 5 feet of area where there would be some accumulated liquid. Refer to figure –4.Therefore, based on the Figure –7, it appears that 1.5 pallets per row will be partially under water. The average liquid depth in this area is 1.8 inches. Therefore, from Table –3,

The displacement volume = 3.09 cu. ft.

(E) Area –5: South Sloped Area in Staging Aisle

This area has two different slopes, slope 1 – steep slope and slope 2 –a very gradual slope. It appears that there would be 1 pallet located in liquid on slope 1, and 3 pallets on slope 2. The average liquid depth for each slope is provided on figure –5. Therefore, from Table –3,

The displacement volume = 7.14 cu. ft.

(F) Area –6: Middle Area in Staging Aisle

This area has a access ramp and will have 1.5 pallets x 2 rows on the north end and 2 pallets in one row on the south end. The average liquid depth in the area is 0.32 ft. Refer to figure-6. Therefore, per Table-3,

The displacement volume = 10.99 cu. ft.

The total displacement volume for the entire CSA area = 999.51 cu. ft.

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TABLE - 1
CSA II - Area - Survey Elevations
Clean Harbors Arizona, LLC – Phoenix

Liquid depth is based on the maximum liquid elevation of **70.45 ft.**

Point	Elevation Floor, ft	Elevation Top, ft	Depth ft	Depth inches	
1	71.11	71.66	--	--	
2	71.11	--	--	--	
3	71.11	71.73	--	--	
4	69.33	71.73	1.12	13.44	
5	69.35	71.74	1.10	13.20	
6	69.37	71.76	1.08	12.96	
7	69.38	70.55	1.07	12.84	
8	69.43	--	1.02	12.24	
9	70.17	70.55	0.28	3.36	
10	70.20	--	0.25	3.00	
11	70.16	--	0.29	3.48	
12	69.77	--	0.68	8.16	
13	70.11	70.55	0.34	4.08	
14	70.12	--	0.33	3.96	
15	70.14	--	0.31	3.72	
16	70.12	--	0.33	3.96	
17	70.17	70.55	0.28	3.36	
18	70.17	--	0.28	3.36	
19	70.14	--	0.31	3.72	
20	***70.59***		--	--	*re-survey*
21	70.10	--	0.35	4.20	
22	70.12	--	0.33	3.96	
23	69.90	--	0.55	6.60	
24	70.13	--	0.32	3.84	
25	70.13	--	0.32	3.84	
26	70.14	70.94	0.31	3.72	
27	70.16	--	0.29	3.48	
28	70.08	--	0.37	4.44	
29	72.00	72.08	--	--	
30	72.03	72.08	--	--	
31	69.36	72.08	1.09	13.08	
32	69.48	--	0.97	11.64	
33	69.61	--	0.84	10.08	
34	69.43	--	1.02	12.24	
35	69.60	70.95	0.85	10.20	
36	69.42	70.99	1.03	12.36	
37	70.10	--	0.35	4.20	
38	69.95	--	0.50	6.00	
39	70.15	70.50	0.30	3.60	
40	70.47	70.47	--	--	
41	70.08	--	0.37	4.44	

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TABLE - 1
CSA II - Area - Survey Elevations
Clean Harbors Arizona, LLC – Phoenix

Liquid depth is based on the maximum liquid elevation of **70.45 ft.**

Point	Elevation Floor, ft	Elevation Top, ft	Depth ft	Depth inches	
42	70.06	--	0.39	4.68	
43	70.09	--	0.36	4.32	
44	**70.45**	**70.51**	**0.00**	**0.00**	**Spill point level**
45	70.49	70.49	--	--	
46	70.52	70.52	--	--	
47	70.48	70.48	--	--	
48	69.96	--	0.49	5.88	
49	69.89	70.51	0.56	6.72	
50	69.82	70.53	0.63	7.56	
51	69.79	70.55	0.66	7.92	
52	69.84	--	0.61	7.32	
53	69.97	--	0.48	5.76	
54	70.18	--	0.27	3.24	
55	70.86	70.86	--	--	
56	70.18	--	0.27	3.24	
57	70.91	70.91	--	--	
58	70.04	--	0.41	4.92	
59	70.87	70.87	--	--	
60	70.00	--	0.45	5.40	
61	69.99	70.91	0.46	5.52	
62	***70.53***	***70.56***	--	--	***same as 63***
63	***70.53***	***70.56***	--	--	***re-survey***
64	***70.59***	--	--	--	***same as 20***
65	***70.53***	***70.53***	--	--	***re-survey***
66	***70.53***	***70.53***	--	--	***same as 65***
67	70.35	70.53	0.10	1.20	interpolation
68	70.10	70.53	0.35	4.20	
69	70.08	70.53	0.37	4.44	
70	70.06	70.53	0.39	4.68	
71	70.15	--	0.30	3.60	

All data points and elevations are taken from the AKE Inc report, only the points in **BOLD *Italic*** were re-surveyed after improvements and show new elevation per revised survey.
Point # 44 - shows the lowest curb elevation, hence, that elevation would be the maximum liquid level that can be had in the containment area.
Points for which liquid depth is not shown/calculated will not be submerged.

Table - 2
Gross Containment volume - Sections A, B & C
Clean Harbors Arizona, LLC - Phoenix

Area	Overall Dimensions in ft. (note 1)	Net Surface Area, sq. ft. (note 1)	From AKE Inc. Report: Gross Volume cu.ft. (note 2)	From AKE Inc. Report: Liquid elevation used for containment volume calculations, ft. (note 2)	From AKE Inc. Report: Liquid depth, Havg, inch (note 2)	Increase in Havg. At liquid level of 70.45 in inches (note 3)	Gross volume to the maximum liquid level of 70.45 ft, in cu. ft. (note 3 & 4)	Liquid depth, New Havg, Inch
	a	b	c	d	e	f = 70.45 -d	g =c + (b x f/12)	h = e + f
Area 1 - section A	49.84 x 29.6	1445.84	514.5	70.085	4.56	4.38	1042.23	8.94
Area 2 - Section B	49.84 x 31.55	1490.42	141.2	70.085	1.38	4.38	685.20	5.76
Area 3 - Section C	49.84 x 38.85	1883.72	727.8	70.13	5.1	3.84	1330.59	8.94
Area 4 - North sloped area in staging aisle	15.58 x 26.14						11.68	1.8
Area 5 - South sloped area in staging aisle	15.58 x 24.33						61.4	3.11
Area 6 - middle portion of the transfer aisle	15.58 x 49.53						246.94	3.84
				Total Gross Containment Capacity of CSA II area			**3378.05**	

Notes:

(1) Net surface area is calculated by deducting the area for the ramps. Refer to Figure -1, 2 & 3 for area configuration/layout and surface area calculations for Areas 1, 2 & 3. All dimensions are derived from the AKE Inc. report, using coordinate data and closely approximating each area to a rectangular shape.
(2) Gross volume, liquid e evation and the average depth. Havg, are taken form AKE Inc report.
(3) Using the liquid level from AKE Inc and the new liquid level of 70.45, the additional depth of liquid is derived as a difference. With added depth additional containment capacity is calculated to arrive at the new gross containment capacity and new Havg, the average liquid depth.
(4) The configuration and volume calculations for transfer/staging aisle areas, areas 4, 5 & 6 (north sloped, south sloped and middle portion) is provided in figures 4, 5 & 6.

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Table -3
Displacement volumes
Clean Harbors Arizona, LLC - Phoenix

(1) **Wooden Pallets**

Displacement volume	3.708 cu. ft.	Per AKE report
Height of the wooden pallet	0.54 ft	Per AKE report - 6.5"/12"

(2) **Containment Pallet**

Overall dimensions	53" x 53" x 12"	New Pig model PAK606-WOD
Containment volume	66 gals	8.82 cu. ft.
displacement volume	12.00 cu. ft.	See Figure - 9 for configuration (53x53x4+48x48x4+6x3.142x7 x 7/4+3x3.142x6x6/4)/1728

(3) **Containers**

Diameter	24 inch	
Cross sectional area	3.142 Sq. ft.	2' x2' x 3.142/4

(4) **Area -1: Section A**

Refere to Figures - 7 & 8

# of wooden pallets totally submerged	40	8 rows x 5 pallets/row
# of wooden pallets partially submerged	8	8 rows x 1 pallets/row
# of containment pallets partially submerged	8	8 rows x 1 pallets/row
average depth for partially submerged pallets	0.44 ft	
# Of containers partially submerged	160	8 rows x 5 pallets/row x 4 drums/pallet
average depth for partially submerged containers	0.28 ft	
Displacement volume	**355.48** cu. ft.	40 x 3.708 + 8 x 3.708 x 0.44/0.54 + 160 x 3.142 x 0.28 + 8 x 12.00 x 0.44

(5) **Area -2: Section B**

Average liquid depth for the section	5.76 inch	Per Table -2
# of containment pallets for the section	39	Per Figure -7
The displacement volume	**224.59** cu.ft.	39 x 12 x 5.76/12

(6) **Area -3: Section C**

Refer to Figures 7 & 8

# of wooden pallets totally submerged	48	8 rows x 6 pallets/row
# of wooden pallets partially submerged	8	8 rows x 1 pallets/row
# of containment pallets partially submerged	8	8 rows x 1 pallets/row
average depth for partially submerged pallets	0.42 ft	
# Of containers partially submerged	192.	8 rows x 6 pallets/row x 4 drums/pallet
average depth for partially submerged containers	0.26 ft	
Displacement volume	**398.22** cu. ft.	48 x 3.708 + 8 x 3.708 x 0.42/0.54 + 192 x 3.142 x 0.26 + 8 x 12.00 x 0.42

(7) **Area -4: North Sloped Area in Staging Aisle**

Refer to AKE report Figure 2 and Figures 4 & 7 of this report

# of wooden pallets - partially submerged	3	See Figure -4
Average liquid depth	1.8 inch	See Figure -4
Displacement volume	**3.09** cu. ft.	1.5 x 3.708/0.54 x 1.8/12

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Table -3
Displacement volumes
Clean Harbors Arizona, LLC - Phoenix

(8) **Area -5: South Sloped Area in Staging Aisle**

Refer to AKE report Figure 2 and Figures 5 & 7 of this report

# of pallets partially submerged in slope-1	1	See Figure -5
# of pallets partially submerged in slope-2	3	See Figure -5
Avg. liquid depth in slope 1 area	0.14 ft	See Figure -5
avg. liquid depth in slope 2 area	0.3 ft	See Figure -5
Displacement volume	**7.14** cu. ft.	3.708 (1x0.14+3x0.3)/0.54

(9) **Area -6: Middle Area in Staging Aisle**

Refer to AKE report Figure 2 and Figures 6 & 7 of this report

# of pallets partially submerged north end	3	
# of pallets partially submerged south end	2	
Total # of pallets partially submerged in the area	5	
Average liquid depth	0.32 ft	See Figure -6
Displacement volume	**10.99** cu.ft.	5x3.708x0.32/0.54
Total displacement volume	**999.51** cu.ft	Total of Area-1 through Area -6

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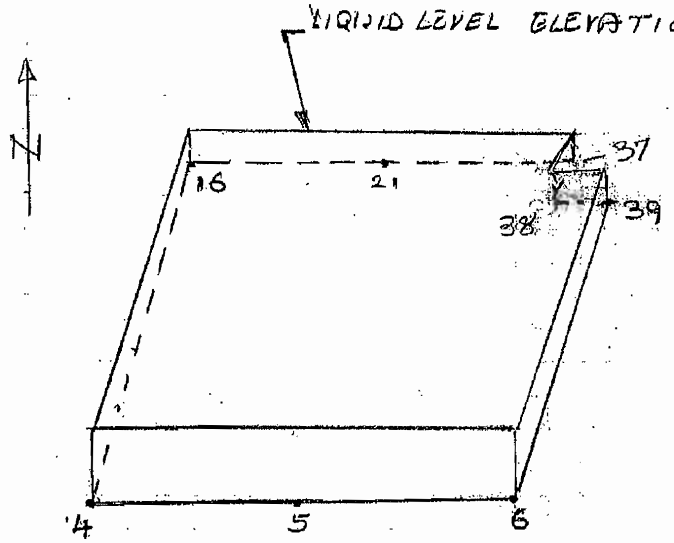
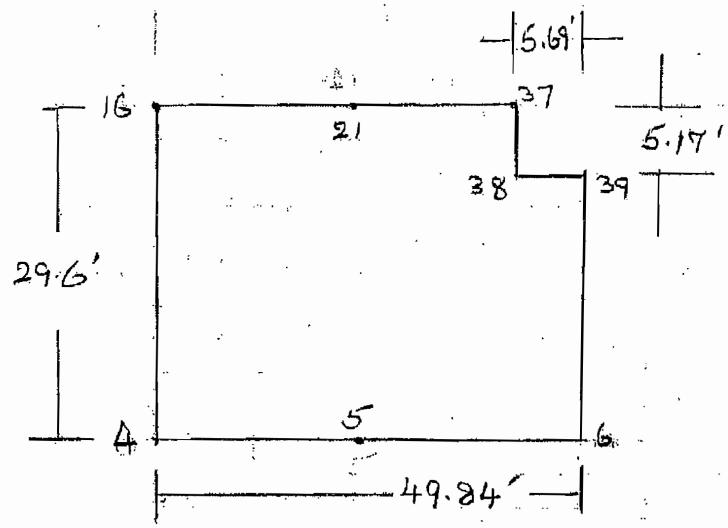


PT.	LIQ. depth, ft
4	1.12
5	1.10
6	1.08
16	0.33
21	0.35
37	0.35
38	0.5
39	0.30

NET SURFACE AREA = (49.84 × 29.6) − (5.69 × 5.17) = 1445.84 Sq-ft



Average depth

North Edge pts. 16, 21 & 37 = 0.34'

South Edge pts. 4, 5 & 6 = 1.1'

NOTE: pts. 4 & 16 are assumed to be on a line perpendicular to the line formed by pts pts. 16, 21 & 37, at a Distance as shown above.

FIGURE-1

AREA-1 - CONFIGURATION

SECTION-A

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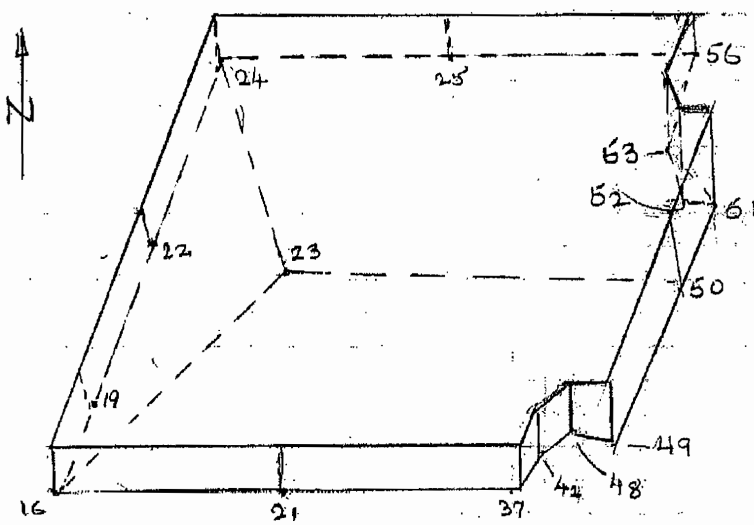

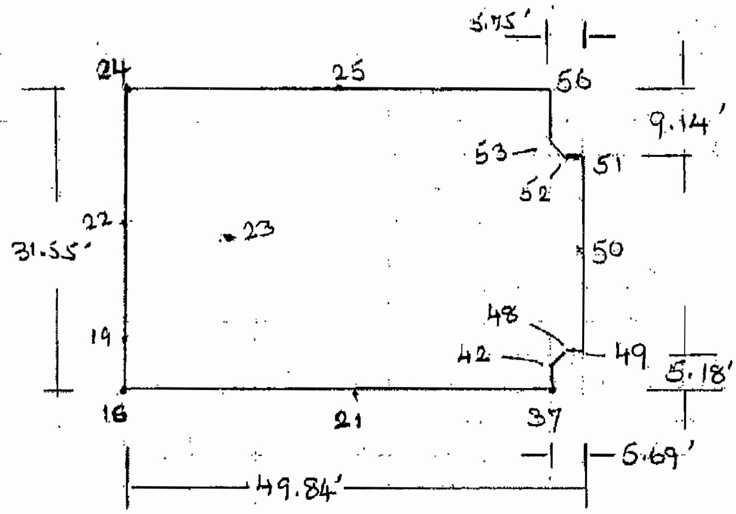

Pt.	Liquid depth
16	0.33
21	0.35
37	0.35
42	0.39
48	0.49
49	0.56
50	0.63
51	0.66
52	0.61
53	0.48
56	0.27
25	0.32
24	0.32
22	0.33
19	0.31
23	0.55

NET SURFACE AREA $= (49.84' \times 31.55') - (5.69' \times 5.18' + 9.14' \times 5.75')$
$= 1490.42$ sq.ft

Note: Area's south & north edges are assumed to be perpendicular to the East-West sides to closely resemble rectangular shape

FIGURE-2
AREA-2 CONFIGURATION
SECTION-B

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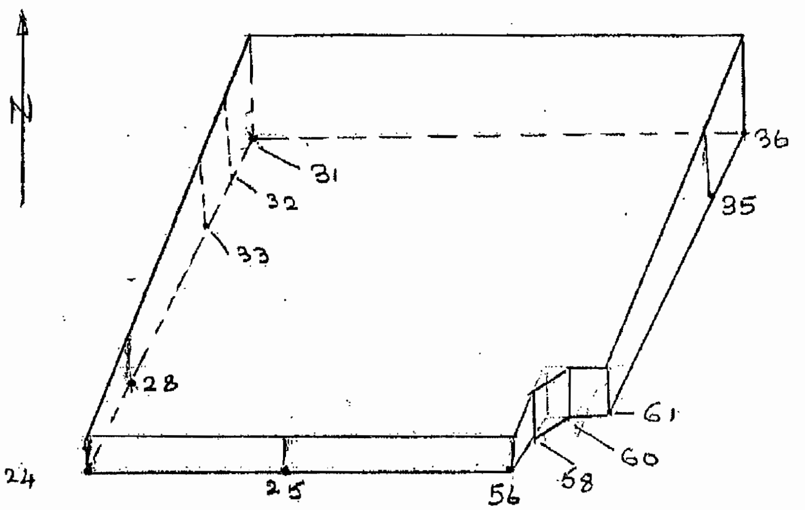
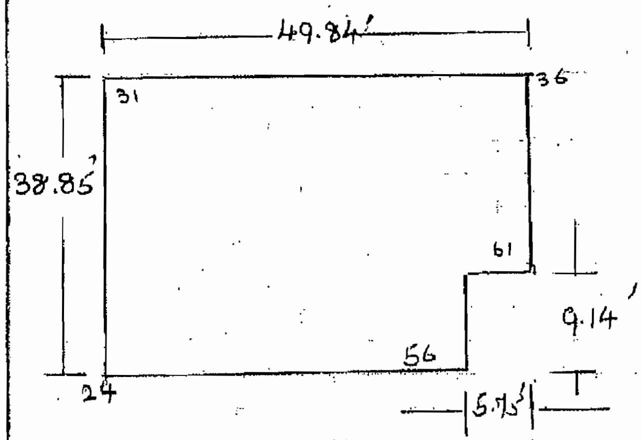


PT.	LIQUID depth
24	0.32
25	0.32
56	0.27
58	0.41
60	0.45
61	0.46
35	0.85
36	1.03
31	1.09
32	0.97
33	0.84
28	0.37



Average liquid depth

North Edge = 1.06'

South Edge = 0.30'

SURFACE AREA = 49.84' x 38.85' − (5.75' x 9.14') = 1883.72 sq. ft.

Note: Area South Edge has been assumed to be square with two sides to closely resemble a rectangle.

FIGURE - 3

AREA - 3 - CONFIGURATION

SECTION - C

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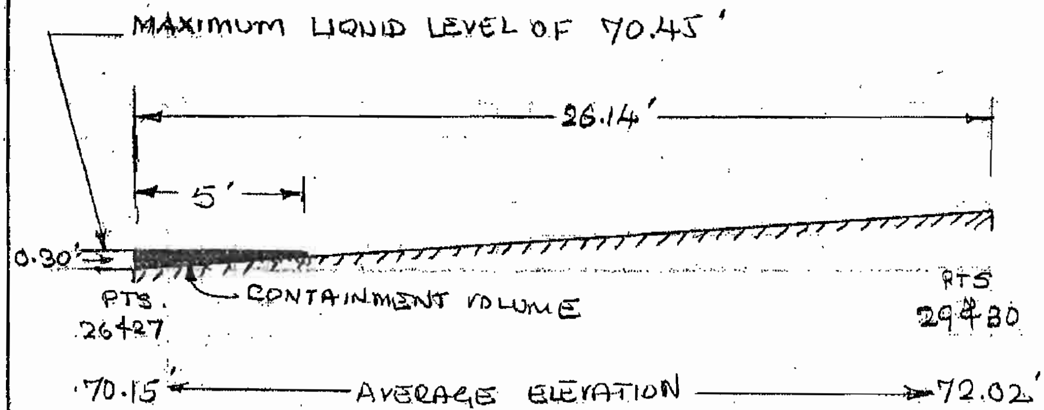

Average Liquid depth = 0.15' = 1.8"

Gross Containment Volume = $\frac{1}{2} \times 0.30 \times 5' \times 15.58'$

= 11.68 cu.ft.

PALLETS PLACED IN LIQUID AREA = 3
1.5 PALLET x 2 ROWS

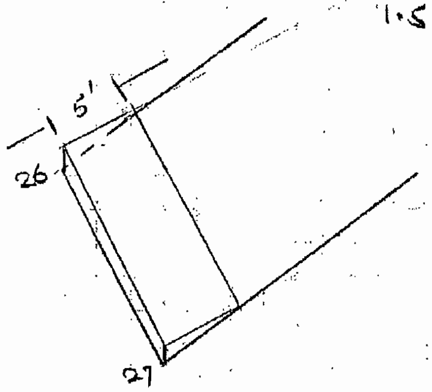

FIGURE-4
AREA-4 CONFIGURATION
NORTH SLOPED STAGING AISLE

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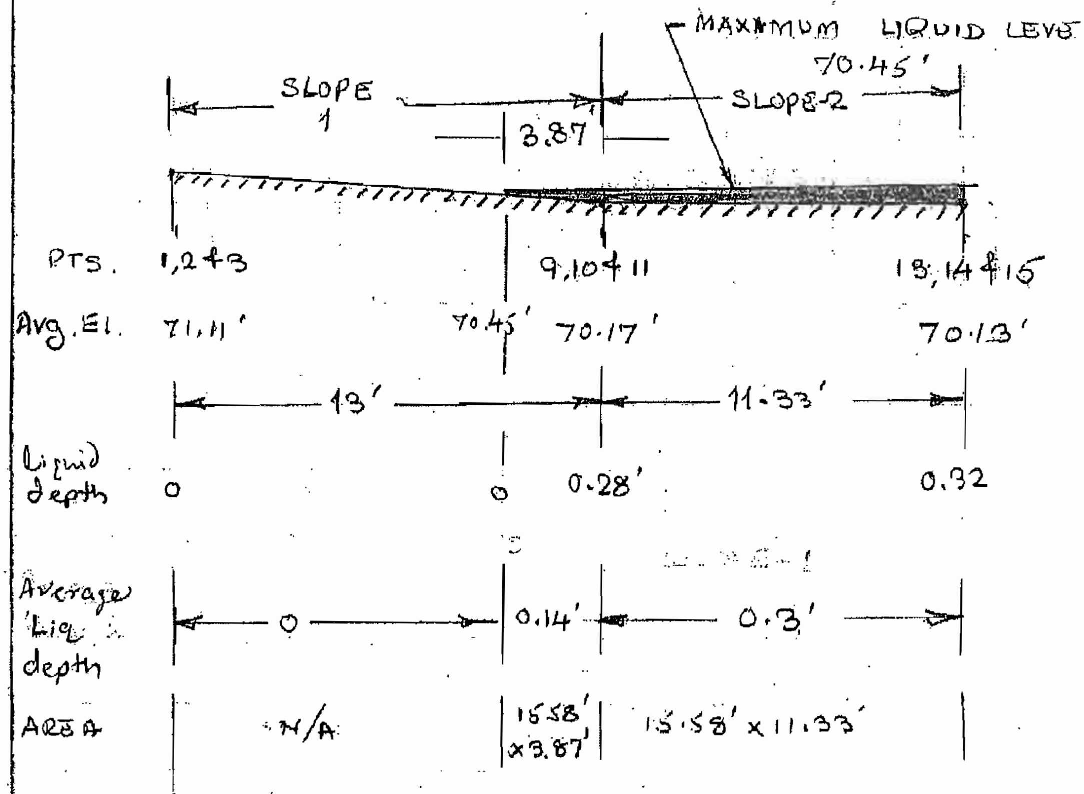

Gross Containment Vol:

$= 0.14' \times 15.58' \times 3.87' + 0.3 \times 15.58' \times 11.33'$

$= 61.40$ Cu. ft.

Average liquid depth = 3.11 inch over 15.58' x 15.2' Area

FIGURE - 5

AREA-5 CONFIGURATION

SOUTH SIDE SLOPED STAGING AISLE

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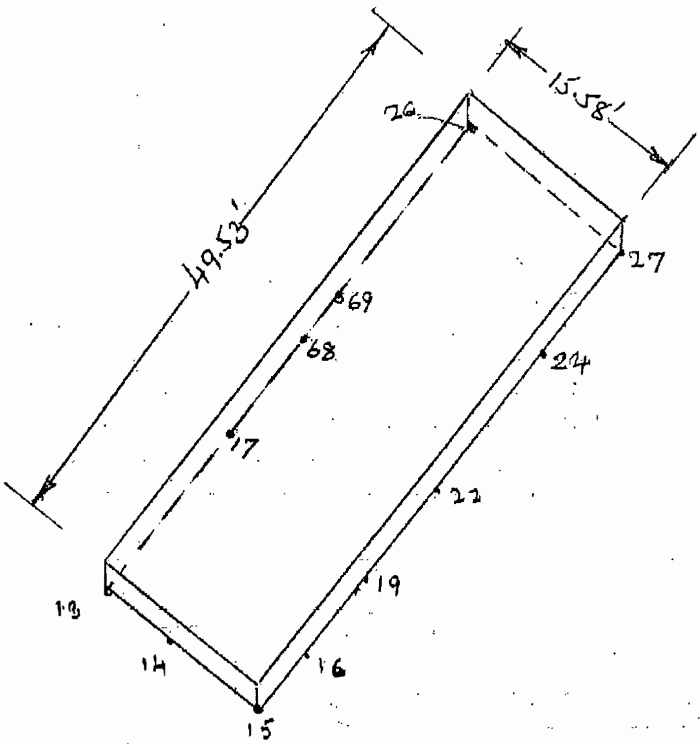

PT.	El., ft.
13	70.11
14	70.12
15	70.14
16	70.12
19	70.14
22	70.12
24	70.13
27	70.16
26	70.14
69	70.08
68	70.10
17	70.17

MAXIMUM LIQUID LEVEL - 70.45'

AVERAGE LIQUID DEPTH = 0.32' = 3.84 inch.

Gross Containment Volume = 0.32' x 15.58' x 49.53'

= 246.94 cu ft.

FIGURE - 6

AREA-6 CONFIGURATION

CENTER TRANSFER AISLE

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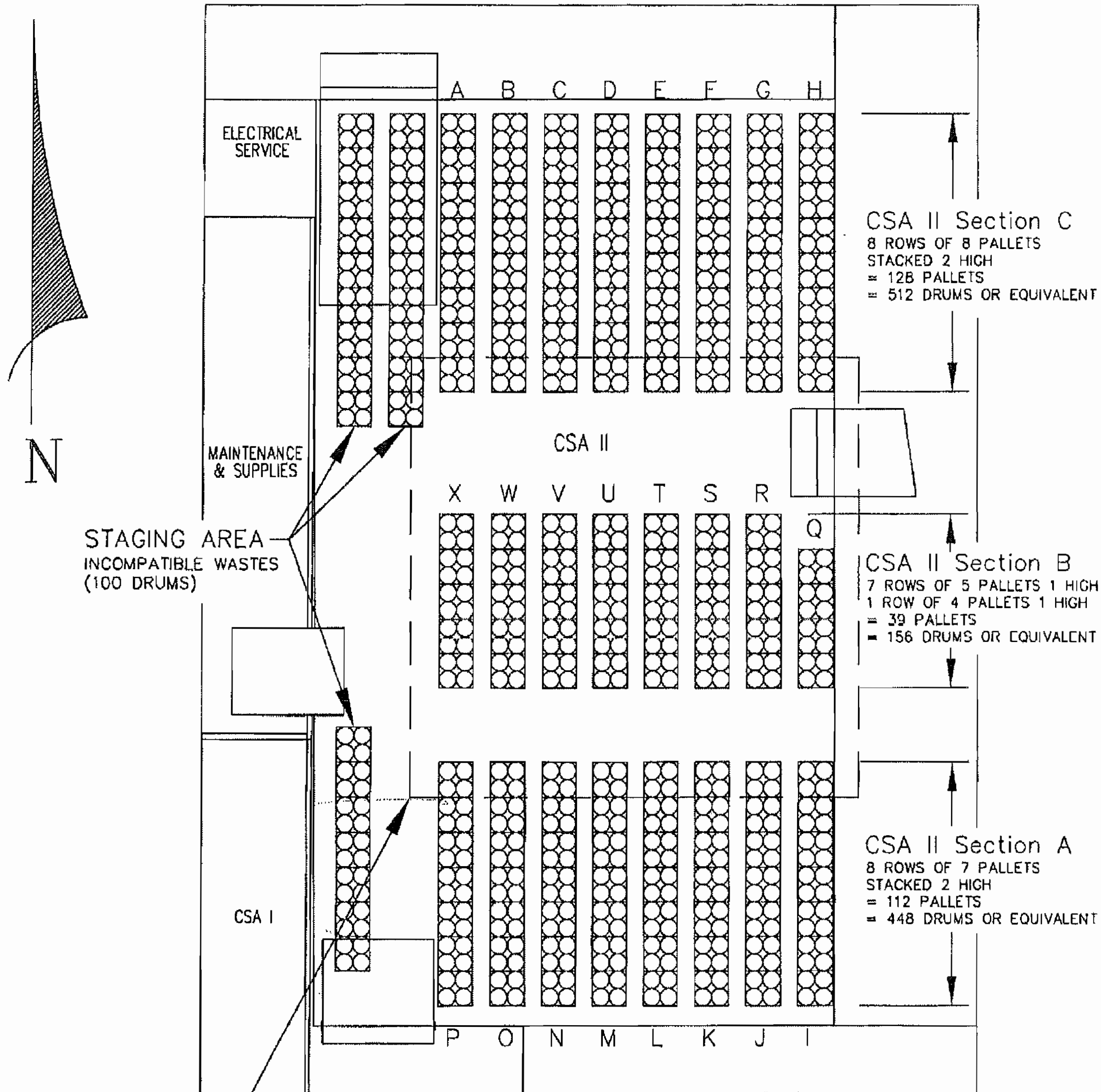

NOTE: INCOMPATIBLE WASTES WILL BE STORED ONLY IN ROWS Q, R, S, T, U, V, W, X & ONE PALLET IN EACH OF THE ROWS A THROUGH P AS OUTLINED/ON CONTAINMENT PALLETS.

FIGURE 7: CONTAINER STORAGE LAYOUT – CSA II

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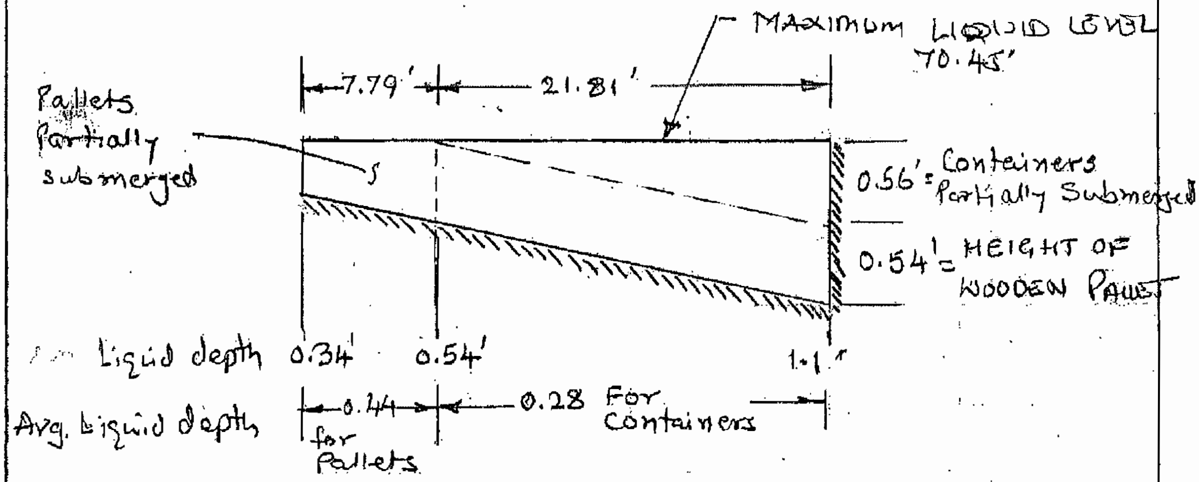
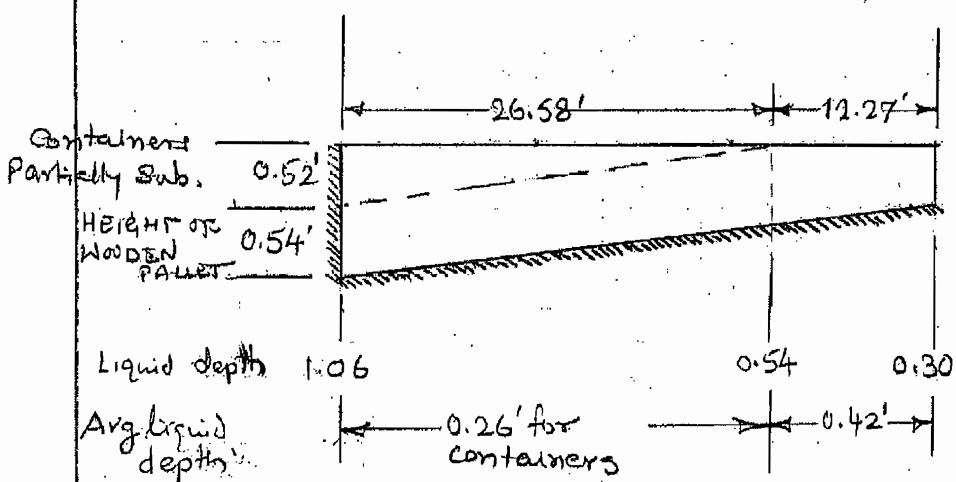


AREA-1: SECTION-A



AREA-3: SECTION-C

FIGURE-8

AREA-1&2: DISPLACEMENT VOLUME PROFILE

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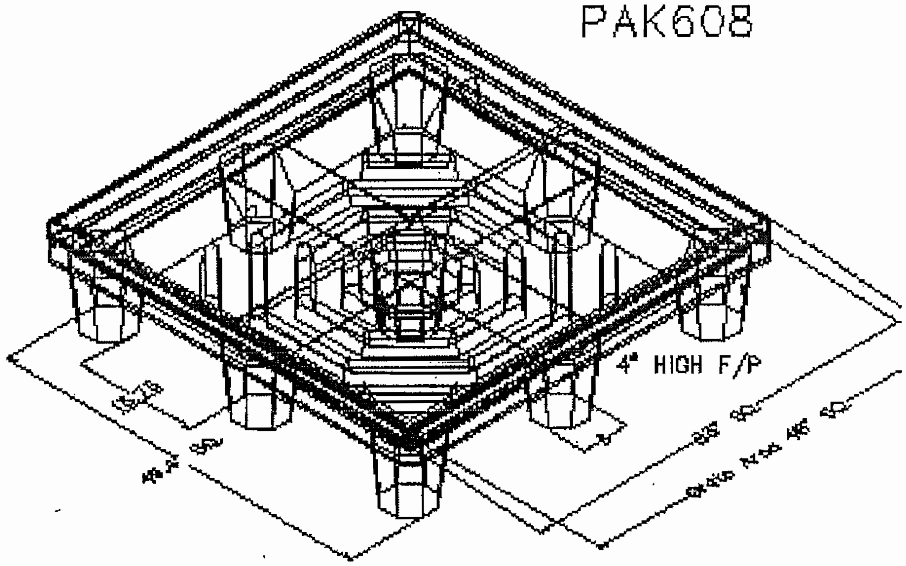
New Pig
One Park Ave. • Tipton, PA 16684 • (814) 684-0101 • newpig.com

Pallet Dimensions For: PAK606
PAK341
PAK342
PAK415
PAK608



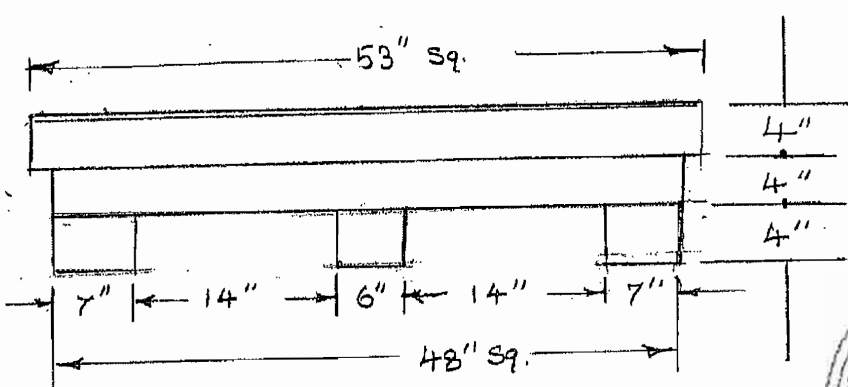


FIGURE-9
CONTAINMENT PALLET CONFUGERATION

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CSA II Containment Calculation Summary

Containment Storage Area II (CSA II) is a covered storage area within the Clean Harbors Arizona, LLC facility at 1340 West Lincoln Street, Phoenix, Az. CSA II is required to have sufficient secondary containment capacity to contain the volume of the largest container or 10% of the volume of all containers, whichever is larger as required by 40 CFR 264.175(b)(3). In this case, 10% of the volume of all containers stored in this area is the greater volume. CSA II secondary containment was calculated for the whole area (including all drums) and section by section (separating the drums by sections).

The volume of liquid contained is dependent on the elevations and configurations of the floor, surrounding walls, curbs, and ramps. Pallets and containers submerged in liquid displace volume and reduce the available containment volume.

Elevations from a survey of the existing containment area were used to create a 3 dimensional model of the containment area floor using a Computer Aided Drafting (CAD) program and calculate the resultant liquid volume if a spill were to occur. The average liquid depth was used to estimate the volume that would be displaced by immersed pallets and containers. The volume available (Vuse) for containment was then calculated as the liquid volume (Vcalc) minus the volume displaced (Vdisp) by pallets and containers.

The calculation below represents CSA II area as a whole and includes all drums seen in Figure 2 on page 2. This calculation shows that if there was a spill event equal to 10% of all drums stored within CSA II, there is more than enough usable containment volume to satisfy 40 CFR 264.175(b)(3).

Vcalc = 1911.8 cu.ft. = total containment volume of CSA II
Vdisp = -699.6 cu.ft. = volume displaced by pallets and containers submerged in liquid
Vuse = 1212.2 cu.ft. = usable containment volume

Vreq = 894 cu.ft. = required containment volume for CSA II = 10% of maximum stored liquid
(Based on 1216 drums of 55 gallon equivalent containers)

The usable containment volume, Vuse, is greater than the required containment volume, Vreq, therefore CSA II has adequate containment volume.

CSA II Individual Sections Summary

The floor of CSA II is graded to create 3 sections that will each contain liquid separate from the other sections. The individual sections allow for separation of liquids that may potentially be incompatible with each other. Containment calculations were made for each of these sections (A, B, and C) and are summarized below. All values are in cubic feet and the numbers for CSA II total are included.

The data below represents the results of calculations completed on pages 10-12.

CSA II	A	B	C	
1912.	514.	141.	728.	Vcalc = total containment volumes
700.	84.	25.	118.	Vdisp = volume displaced by pallets and containers
1212.	430.	116.	610.	Vuse = (Vcalc–Vdisp) = usable containment volume
894.	329.	115.	377.	Vreq = required containment volume
318.	101.	1.	233.	Excess capability = (Vuse-Vreq)

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In summary, evaluating each section we calculated that Figure 1 represents the maximum drums that can be placed in CSA II. This is do to a geometry constraint or a secondary containment constraint. Per Figure 1 drum storage arrangement for each section; if there was a spill event in any section, the section would be able to contain its secondary containment. In the event that there is a leak (10% of 100 drums) in the staging area, there would be enough reserve capacity to secondarily contain the fugitive liquid. The excess capability is described numerically above.

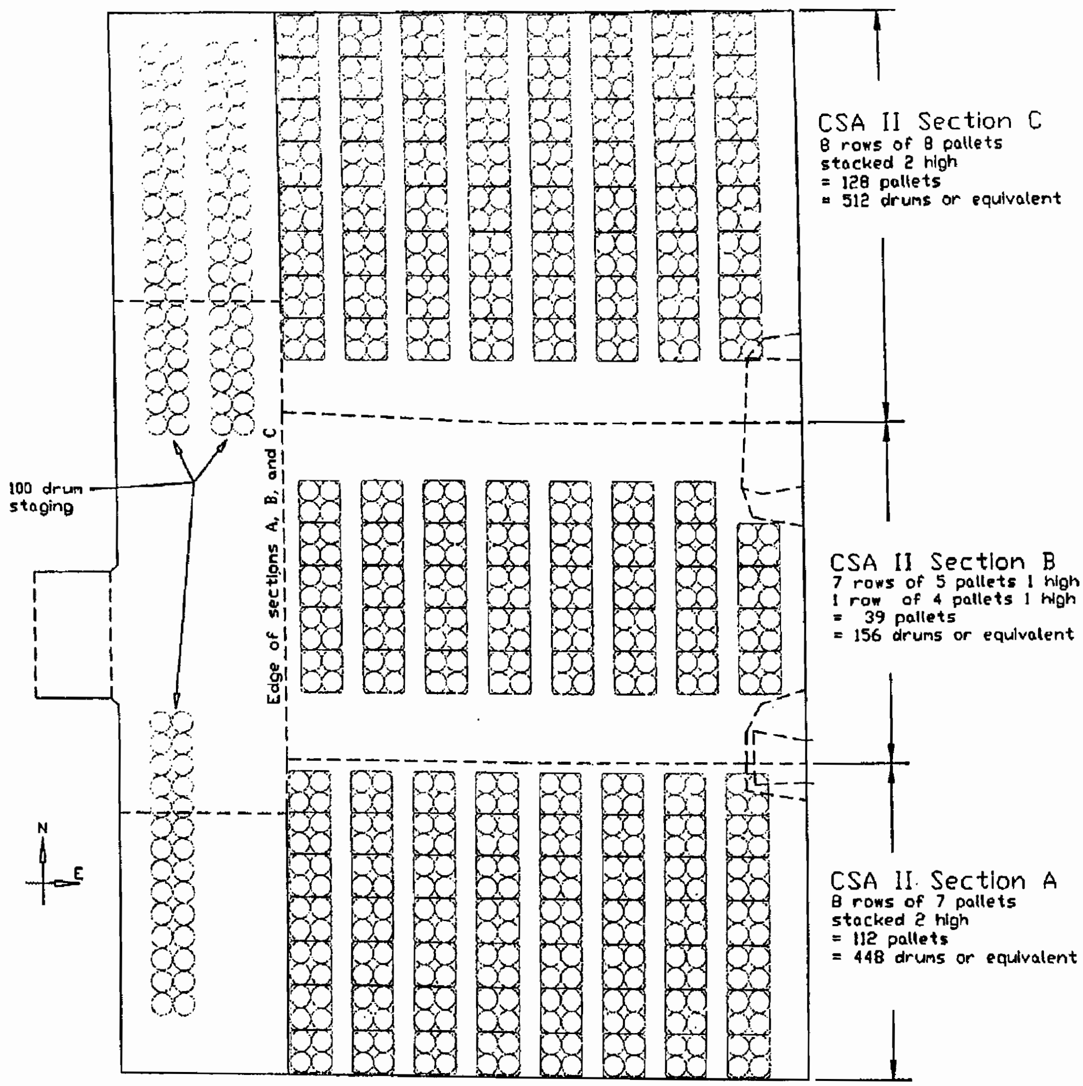

Figure 1: Schematic of stored drums in CSA II

Required Containment Volume:

Figure 1 above describes the maximum loading of CSA II. CSA II is marked for 8 rows of 7 pallets stacked 2 high on the south side (section A), (7 rows of 5 pallets + 1 row of 4 pallets) stacked 1 high in the middle (section B), 8 rows of 8 pallets on the north side stacked 2 high (section C), and 100 staged drums within the staging area. Each pallet can hold 4 drums with 55 gallon capacity or the equivalent. The calculated maximum liquid stored in CSA II is:

Ndrums = [(8 rows * 7 pallets) * 2 high + (8 rows * 8 pallets) * 2 high + (7 rows * 5 pallets + 1 row * 4 pallets) * 1 high] * 4 drums + 100 drums
= 448 drums + 512 drums + 156 drums + 100 drums
= 1,216 drums

V = Ndrums * 55 gal/drum * 1 cu.ft./ 7.48 gal
= 8,941 cu.ft.

The requirement is found in 40 CFR 264.175 paragraph (b)(3) which states: "The containment system must have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container, whichever is greatest." The required containment volume is then:

Vreq = 10% * 8941 cu.ft.

Vreq = 894.1 cu.ft. = required containment volume for CSA II

<u>CSA II Elevations</u>

Elevations were obtained from Guida Surveying, Inc. and from a check using a Pro-Level Manometer (water level) in the south loading ramp area. The building interior width and length were measured by AKE, Inc. and a CAD picture of CSA II was created showing locations where elevations were measured. Figure 2 through 5 and the point table defines the floor elevation. The low point surrounding (perimeter) CSA II is 70.20 feet (point 20) and is found at the ramp on the west side leading into the maintenance and supply room. This is the maximum elevation of liquid that can be contained in CSA II before if flows into the maintenance room.

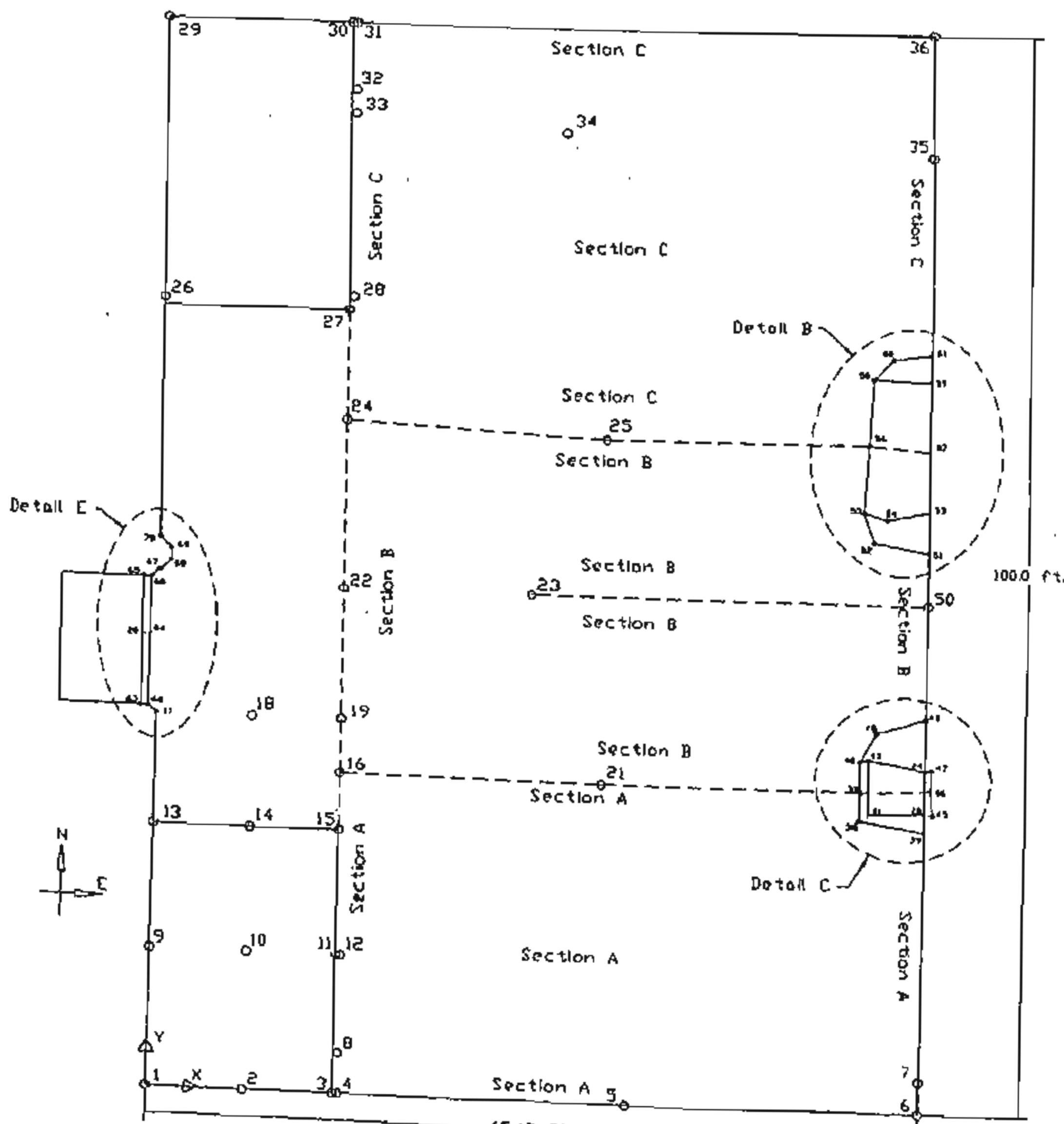

Figure 2: Schematic the shows CSA II, known elevation points, and ramp details

Figure 3-5 are closer view of ramp details seen in Figure 2 in CSA II.

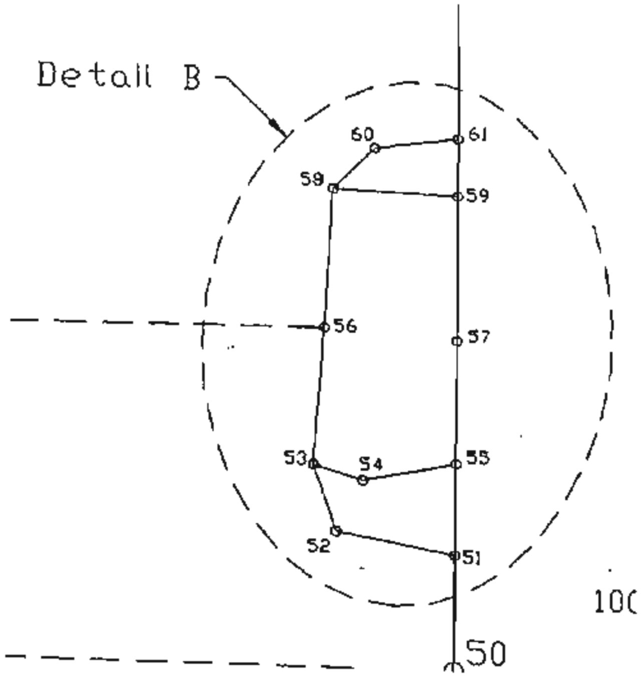

Figure 3: North East ramp detail

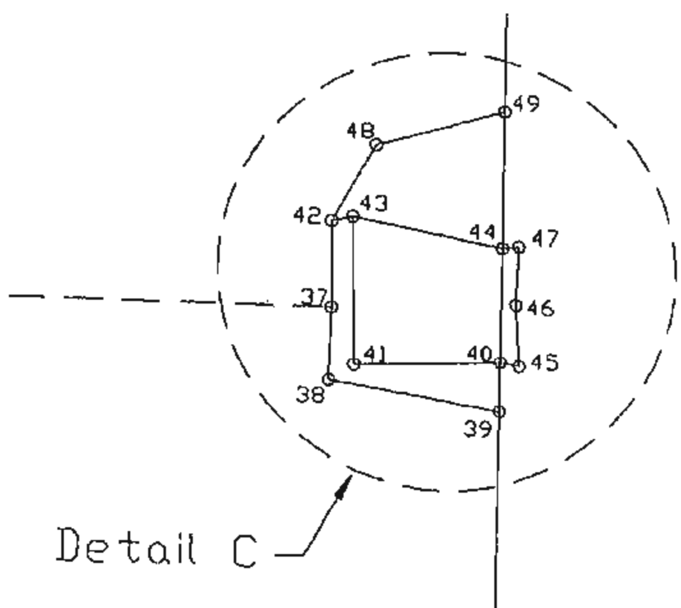

Figure 4: South East ramp detail

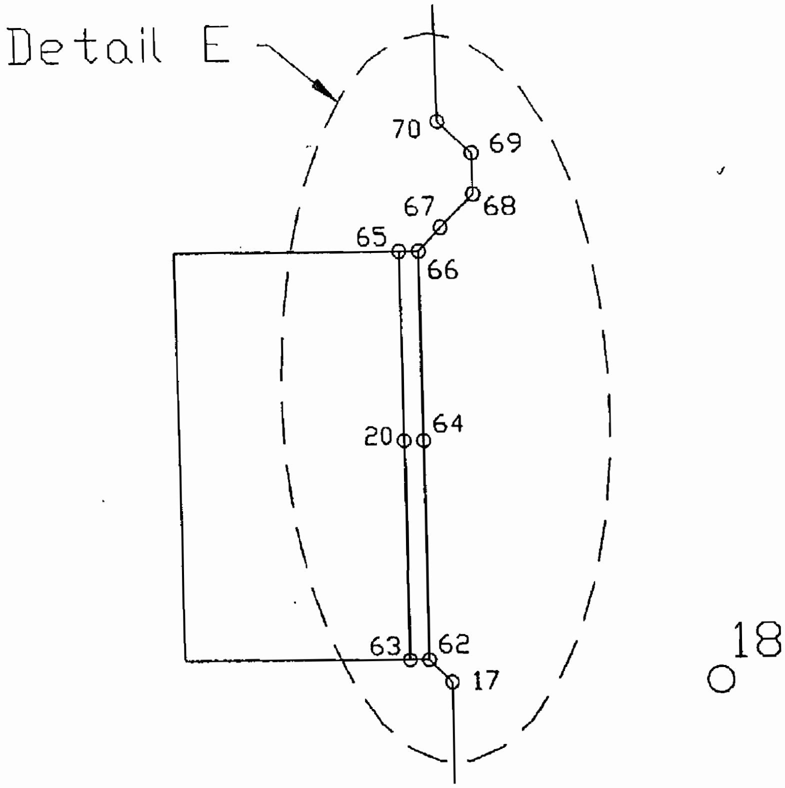

Figure 5: West ramp detail

The Table 1, below, shows the final set of points. The southeast corner of the building is X = Y = 0.0 and the building is 65.42 ft. x 100 ft. Point locations were measured from an AutoCAD drawing supplied by Guida Surveying, Inc.

FS = Finished Surface, floor
TW = Top of Wall, TW = ---- if the value is irrelevant

Points as placed on a floor plan of CSA II
--- Points in feet --- <u>Depth based on 70.20 ft top of liquid</u>

<u>Table 1: Final Data Points seen in Figure 2</u>

point	X~ft	Y~ft	FS	TW	depth~inches	
1	0.00	0.00	71.11	71.66	0.00	
2	8.00	0.00	71.11	---	0.00	
3	15.58	0.00	71.11	71.73	0.00	
4	16.00	0.00	69.33	71.73	10.44	
5	40.56	0.00	69.35	71.74	10.20	
6	65.42	0.00	69.37	71.76	9.96	estimated point
7	65.42	2.95	69.38	70.55	9.84	
8	16.00	3.83	69.43	---	9.24	
9	0.00	13.00	70.17	70.55	0.36	
10	8.00	13.00	70.20	---	0.00	
11	15.58	13.00	70.16	---	0.48	

12	16.00	13.00	69.77	---	5.16	
13	0.00	24.33	70.11	70.55	1.08	
14	8.00	24.33	70.12	---	0.96	
15	15.58	24.33	70.14	---	0.72	
16	15.58	29.60	70.12	---	0.96	
17	0.00	34.60	70.17	70.55	0.36	
18	8.00	34.60	70.17	---	0.36	
19	15.58	34.60	70.14	---	0.72	
20	-1.25	41.84	70.20	70.20	0.00	
21	37.85	29.43	70.10	---	1.20	
22	15.58	46.84	70.12	---	0.96	
23	31.67	46.88	69.90	---	3.60	
24	15.58	62.58	70.13	---	0.84	
25	37.77	61.57	70.13	---	0.84	
26	0.00	73.86	70.14	70.94	0.72	
27	15.58	73.08	70.16	---	0.48	
28	16.00	74.42	70.08	---	1.44	
29	0.00	100.00	72.00	72.08	0.00	estimated point
30	15.58	100.00	72.03	72.08	0.00	
31	16.00	100.00	69.36	72.08	10.08	
32	16.00	93.85	69.48	---	8.64	
33	16.00	91.66	69.61	---	7.08	
34	34.04	90.33	69.43	---	9.24	
35	65.42	88.69	69.60	70.95	7.20	
36	65.42	100.00	69.42	70.99	9.36	
37	59.77	29.42	70.10	---	1.20	detail C
38	59.73	26.87	69.95	---	3.00	detail C
39	65.42	25.95	70.15	70.50	0.60	detail C
40	65.42	27.66	70.47	70.47	0.00	detail C
41	60.55	27.44	70.08	---	1.44	detail C
42	59.74	32.34	70.06	---	1.68	detail C
43	60.43	32.50	70.09	---	1.32	detail C
44	65.42	31.59	70.45	70.51	0.00	detail C
45	66.07	27.55	70.49	70.49	0.00	detail C
46	65.91	29.70	70.52	70.52	0.00	detail C
47	65.97	31.66	70.48	70.48	0.00	detail C
48	61.14	35.00	69.96	---	2.88	detail C
49	65.42	36.30	69.89	70.51	3.72	detail C
50	65.42	46.73	69.82	70.53	4.56	linear interpolations between 49 and 51
51	65.42	51.75	69.79	70.55	4.92	detail B
52	60.60	52.64	69.84	---	4.32	detail B
53	59.67	55.43	69.97	---	2.76	detail B
54	61.64	54.81	70.18	---	0.24	detail B
55	65.42	55.59	70.86	70.86	0.00	detail B
56	60.04	61.62	70.18	---	0.24	detail B
57	65.42	61.15	70.91	70.91	0.00	detail B
58	60.36	67.69	70.04	---	1.92	detail B
59	65.42	67.46	70.87	70.87	0.00	detail B
60	62.02	69.56	70.00	---	2.40	detail B
61	65.42	70.03	69.99	70.91	2.52	detail B
62	-0.67	35.27	70.16	70.56	0.48	detail E
63	-1.25	35.27	70.24	70.56	0.00	detail E
64	-0.67	41.84	70.18	---	0.24	detail E
65	-1.25	47.33	70.21	70.53	0.00	detail E
66	-0.67	47.33	70.16	70.53	0.48	detail E
67	0	48	70.13	70.53	0.84	linear interpolation

68	1.00	48.92	70.10	70.53	1.20	detail E
69	1.00	50.12	70.08	70.53	1.44	detail E
70	0	51.06	70.06	70.53	1.68	detail E
71	0	41.84	70.15	---	0.60	linear interpolation

The low point surrounding CSA II is 70.20 feet (point 20) and is found in the middle of the ramp on the west side leading into the maintenance and supply room. If the liquid level exceeds this elevation it will flow over the ramp and into the maintenance and supply room.

The containment volume of CSA II was calculated by using the 71 points in the table above in a 3-D CAD model to define the floor. This surface model of the floor was extruded vertically and then trimmed at 70.20 feet elevation to define the liquid level that would form from a liquid spill. The volume of the liquid was then calculated by the computer and found to be:

Vcalc = 1911.8 cu.ft. = the calculated containment volume of CSA II

Displaced Volume

Volume available for containing spills will be reduced by the volume displaced by the pallets and bottoms of containers that are in the liquid. The volume displaced will depend on the depth of the liquid surrounding the pallets and containers. The depth in CSA II varies from 1" to 10" depending on the location.

The typical pallet was 4 ft x 4 ft and had three 1.5"x 5.5" boards on the bottom, three 3.5"x 3.5" beams at 90 degrees in the middle, and a top of closely spaced 1.5"x 5.5" boards. A conservative (high) estimate of the volume displaced can be calculated by assuming that all of the pallets are totally immersed in liquid. The volume displaced by a pallet is:

Vpallet = (3*(1.5" * 5.5" * 48") + 3*(3.5" * 3.5" * 48") + (1.5"* 48"* 48"))/ 1728 cu.in./cu.ft.
= 3.708 cu.ft./ pallet

The total volume displaced by all of the pallets that rest on the floor would be:

Vdisp1 = (8 rows * 7 pallets + 7 rows * 5 pallets + 1 row * 4 pallets + 8 rows * 8 pallets) * Vpallet
= 159 pallets * 3.708 cu.ft./ pallet
= 589.6 cu.ft.

Each pallet is 6.5" high. This will keep the containers out of the liquid except along the north and south walls of CSA II and the 100 staged drums. The 8 pallets along the south wall and 8 pallets along the north wall sit in roughly 10" of liquid, so 3.5" of the containers on these pallets will be immersed in liquid. The second 8 pallets out from each wall will sit in roughly 8" of liquid so 1.5" of the containers on these pallets will be immersed. Assuming 4 drums/ pallet each with a diameter of 24" gives a displacement of:

Vdisp2 = (16 pallets * 3.5"+ 16 pallets * 1.5") * 4 drums/pallet* (π/4)*(24")^2 / (1728 cu.in./cu.ft.)
= 58.6 cu.ft. + 25.1 cu.ft.
= 83.7 cu.ft.

The volume displaced by the 100 staged drums will depend on where they are in CSA II (they are shown partly on the ramps in the picture on page 2 but they could sit anywhere in CSA II). A quick survey of points that are not occupied by drums on pallets indicates that these 100 drums will sit in 0.36 to 1.20 inch of liquid. Their displacement will be calculated by assuming that they sit in 1.0 inch of liquid.

Vdisp3 = 100 drums * (1.0 in. deep) * (π/4)*(24")^2 / (1728 cu.in./cu.ft.)
= 26.2 cu.ft.

Total displaced volume is then:

Vdisp = Vdisp1 + Vdisp2 + Vdisp3 = 589.6 + 83.7 + 26.2

Vdisp = 699.5 cu.ft = volume displaced by pallets + containers immersed in liquid in CSA II

Section by Section Secondary Containment Calculations

Section A

Section A is on the south side of CSA II, seen in Figure 1. It is defined by a polygon with corners at points 4, 6, 16, 37, 41, and 39. Liquid contained in Section A will flow into Section B when the level reaches 70.085 ft. The low point is at the bottom of the ramp on the east side of the building.

Required Containment Volume:

This section is marked off to have 8 rows of 7 pallets stacked 2 high. Each pallet can hold 4 drums with 55 gallon capacity or the equivalent, therefore the maximum liquid stored in Section A is:

Ndrums = (8 rows * 7 pallets) * 2 high * 4 drums
= 448 drums

V = Ndrums * 55 gal/drum * 1 cu.ft./ 7.48 gal
= 3,294 cu.ft.

The requirement is to contain 10% of this volume.

Vreq = 10% * 3,294 cu.ft.
Vreq = 329 cu.ft.

Total Containment Volume

The total containment volume of section A was calculated by modifying the 3-D CAD model created to calculate the whole containment volume. Maximum liquid level was set to 70.085 feet.

Total containment volume was calculated by the computer to be:

Vcalc = 514.5 cu.ft

Displaced Volume:

It will be assumed that all pallets sit in Havg inches of liquid. The typical pallet was 4 ft x 4 ft and had three 1.5"x 5.5" boards on the bottom, three 3.5"x 3.5" beams at 90 degrees in the middle, and a top of closely spaced 1.5"x 5.5" boards. An estimate of the volume displaced will be calculated by assuming that all of the pallets sit in Havg inches of liquid. The volume displaced by a pallet is:

Vpallet = (3*(1.5" * 5.5" * 48") + 3*(3.5" * (4.56"-1.5") * 48")) / 1728 cu.in./cu.ft.
= 1.580 cu.ft./ pallet immersed in 4.56" of liquid

The total volume displaced by the immersed portion of the pallets that rest on the floor in Section A would be:

Vdispl = 8 rows * 7 pallets * Vpallet
= 56 pallets * 1.580 cu.ft./ pallet
Vdispl = 84.4 cu.ft.

Summary:

Vcalc = 514.5 cu.ft
Vdisp = - 84.4 cu.ft.
Vuse = 430.1 cu.ft.

Vreq = 329 cu.ft.

Section A of CSA II has a usable containment volume, Vuse, greater than the required volume, Vreq, therefore secondary containment is adequate.

Section B

Section B is in the middle of CSA II. It is defined by a polygon with corners at points 16, 24, 56, 54, 55, 44, 41, and 37. Liquid contained in Section B will flow into Section A when the level reaches 70.085 ft. The low point is at the bottom of the ramp on the east side of the building and south side of section B.

Required Containment Volume:

This section will have 7 rows of 5 pallets stacked 1 high and 1 row of 4 pallets stacked 1 high. Each pallet can hold 4 drums with 55 gallon capacity or the equivalent, therefore the maximum liquid stored in Section B is:

Ndrums = (7 rows * 5 pallets + 1 row * 4 pallets) * 1 high * 4 drums
= 156 drums

V = Ndrums * 55 gal/drum * 1 cu.ft./ 7.48 gal
= 1,147.0 cu.ft.

The requirement is to contain 10% of this volume.

Vreq = 10% * 1,147 cu.ft.
Vreq = 114.7 cu.ft.

Total Containment Volume

The total containment volume of section B was calculated by modifying the 3-D CAD model created to calculate the whole containment volume. Max liquid level was set to 70.085 feet.

Total containment volume was calculated by the computer to be:

Vcalc = 141.2 cu.ft

Displaced Volume:

An estimate of the volume displaced will be calculated by assuming that all of the pallets sit in Havg inches of liquid. The typical pallet was 4 ft x 4 ft and had three 1.5"x 5.5" boards on the bottom, three 3.5"x 3.5" beams at 90 degrees in the middle, and a top of closely spaced 1.5"x 5.5" boards. The volume displaced by the immersed portion of a pallet is:

Vpallet = (3*(1.38" * 5.5" * 48")) / 1728 cu.in./cu.ft.
= 0.6325 cu.ft./ pallet immersed in 1.38" of liquid

The total volume displaced by the immersed portion of the pallets that rest on the floor in Section B would be:

Vdispl = (7 rows * 5 pallets + 1 row * 4 pallets) * Vpallet
= 39 pallets * 0.6325 cu.ft./ pallet
Vdispl = 24.7 cu.ft.

Summary:

Vcalc = 141.2 cu.ft
Vdisp = - 24.7 cu.ft.
Vuse = 116.5 cu.ft.

Vreq = 114.7 cu.ft.

Section B of CSA II has a usable containment volume, Vuse, greater than the required volume, Vreq, therefore secondary containment is adequate.

→ Note: drums must be on pallets. ←

Section C
Section C is on the north side of CSA II. It is defined by a polygon with corners at points 24, 31, 36, and 57. Liquid contained in Section C will flow into Section B when the level reaches 70.13 ft. The low point is at points 25 on the south side of Section C.

Required Containment Volume:
This section is marked off to have 8 rows of 8 pallets stacked 2 high. Each pallet can hold 4 drums with 55 gallon capacity or the equivalent, therefore the maximum liquid stored in Section C is:

Ndrums = (8 rows * 8 pallets) * 2 high * 4 drums
= 512 drums

V = Ndrums * 55 gal/drum * 1 cu.ft./ 7.48 gal
= 3,765 cu.ft.

The requirement is to contain 10% of this volume.
Vreq = 10% * 3,765 cu.ft.
Vreq = 377 cu.ft.

Total Containment Volume
The total containment volume of section C was calculated by modifying the 3-D CAD model created to calculate the whole containment volume. Maximum liquid level was set to 70.13 feet.

Total containment volume was calculated by the computer to be:
Vcalc = 727.8 cu.ft

Displaced Volume:
An estimate of the volume displaced will be calculated by assuming that all of the pallets sit in Havg inches of liquid. The typical pallet was 4 ft x 4 ft and had three 1.5"x 5.5" boards on the bottom, three 3.5"x 3.5" beams at 90 degrees in the middle, and a top of closely spaced 1.5"x 5.5" boards. The volume displaced by the immersed portion of a pallet is:

Vpallet = (3*(1.5" * 5.5" * 48") + 3*(3.5" * 3.5 * 48) + (5.10-1.5-3.5) * 48 * 48)) / 1728 cu.in./cu.ft.
= 1.842 cu.ft./ pallet immersed in 5.10" of liquid

The total volume displaced by the immersed portion of the pallets that rest on the floor in Section C would be:

Vdispl = 8 rows * 8 pallets * Vpallet
= 64 pallets * 1.842 cu.ft./ pallet
Vdispl = 117.9 cu.ft.

Summary:
Vcalc = 727.8 cu.ft
Vdisp = -117.9 cu.ft.
Vuse = 609.9 cu.ft.

Vreq = 377 cu.ft.

Section C of CSA II has a usable containment volume, Vuse, greater than the required volume, Vreq, therefore secondary containment is adequate.

Definition of Sections A, B, and C

The original floor plan for CSA II is shown on the next page oriented so that north is at the top of the page. This is from Clean Harbors drawing 581-CDA-106 sheet 4. The elevations are different than the Guida Surveying values, but this is unimportant since the variation in elevation is what determines the containment capability. Figure 7 shows the way the floor was intended to be sloped to create the 3 containment sections.

In the center of the Figure 7, are dashed lines marked "EL. 52.50" that define the outer edge of containment Section B. The north and south edges of Section B are aligned with the centers of the ramps on the east side of the building. The west edge of Section B lines up with the edge of the ramps in the northwest and southwest corners of CSA II. Dashed lines and arrows define the sloped surfaces. The low point of Section B is at the east wall. Section A is south of Section B with its floor sloping toward the south wall. Section C is north of Section B with its floor sloping toward the north wall.

Figure 6, below, shows elevations from Guida Surveying, Inc. AKE, Inc. was told that these were the measured high and low points that define CSA II and Sections A, B, and C and the boundaries between the sections. The floor was assumed to have a linear slope between the points where elevations were measured. Additional points were obtained on the southwest ramp using a Pro-Level Manometer (water level).

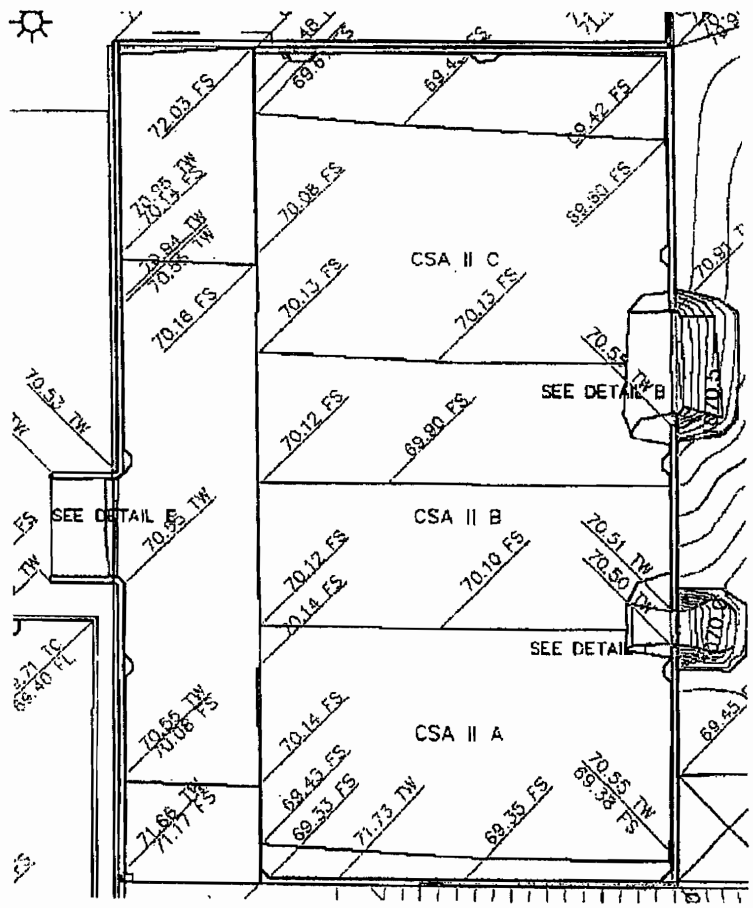

Figure 6: Guida detail survey results

January 9, 2007

Definition of Sections A, B, and C

The original floor plan for CSA II is shown on the next page oriented so that north is at the top of the page. This is from Clean Harbors drawing 581-CDA-106 sheet 4. The elevations are different than the Guida Surveying values, but this is unimportant since the variation in elevation is what determines the containment capability. Figure 7 shows the way the floor was intended to be sloped to create the 3 containment sections.

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Figure 6, below, shows elevations from Guida Surveying, Inc. AKE, Inc. was told that these were the measured high and low points that define CSA II and Sections A, B, and C and the boundaries between the sections. The floor was assumed to have a linear slope between the points where elevations were measured. Additional points were obtained on the southwest ramp using a Pro-Level Manometer (water level).

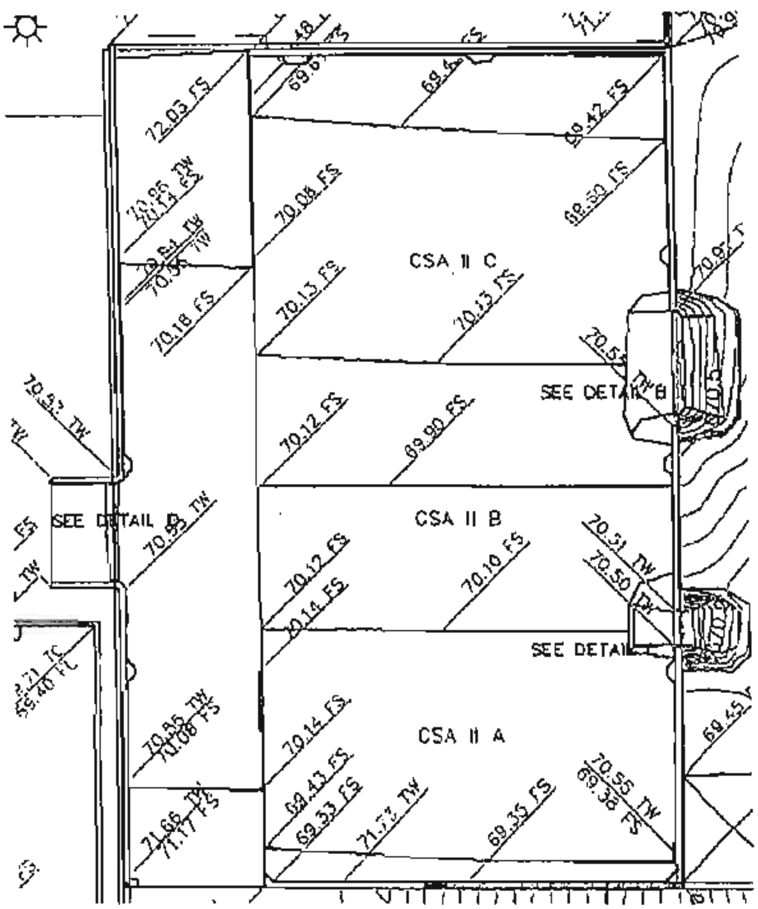


Figure 6: Guida detail survey results

January 10, 2008

Workstation Containment Calculations

The Clean Harbors Environmental Services site at 1340 West Lincoln Street, Phoenix, Az. has a structure with four workstations for handling waste. Each work station is open on the west side (no wall) and has walls on the other 3 sides. The floor is sloped down into each workstation so that any spills in a workstation will be contained in that workstation. Each workstation is required to contain a spill equal to 10% of the maximum liquid stored in this area.

A spill would create a liquid level in the workstation. The volume of liquid that can be contained depends on the elevations of the floor and the surrounding walls, curbs, and ramps. Pallets and containers that sit in this liquid displace volume and reduce the available containment volume.

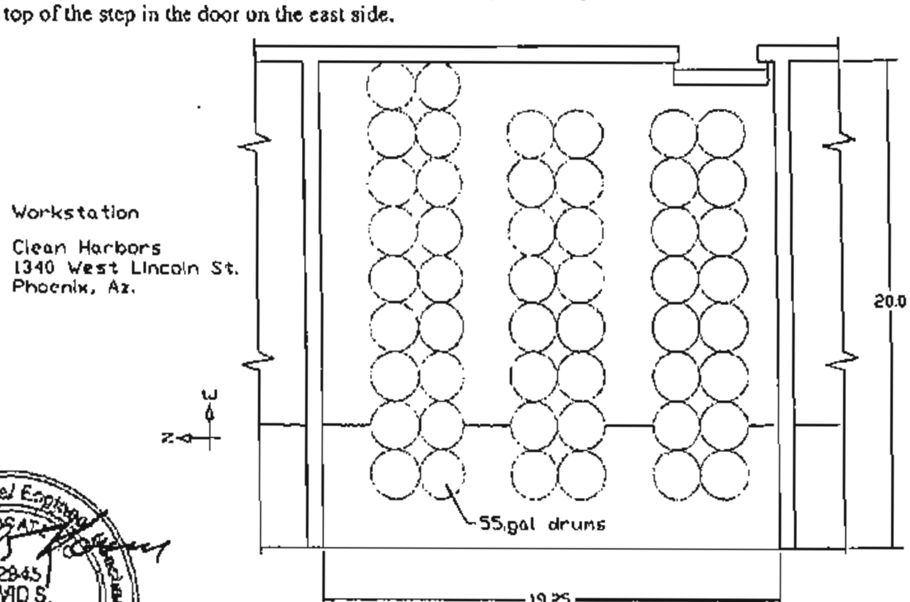
Workstation elevations and room dimensions are found on Clean Harbors drawing 581-ADA-105R sheet A3. These were checked with a Pro-Level Manometer (water level) and tape measure and the values obtained were used to calculate the total containment volume of each workstation. The volume that would be displaced by immersed pallets and containers was then calculated and subtracted from the total volume to get the usable containment volume.

Vcalc = 251 cu.ft. = total containment volume of CSA 1
Vdisp = -123 cu.ft. = volume displaced by 50 drums in the liquid
Vuse = 128 cu.ft. = usable containment volume

Vreq = 36.8 cu.ft. = required containment volume for each workstation = 10% of 50 drums

The usable containment volume, Vuse, is greater than the required containment volume, Vreq, therefore the workstations have adequate secondary containment volume.

Each workstation could hold a maximum of 50 drums at 55 gal/drum or the equivalent as shown below. The drums may sit on the floor, or the pallets that are used to move them into and out of the workstation. The low points of the containment structure are the lip on the open west side of each workstation and the top of the step in the door on the east side.



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Required Containment:
The required containment was based on two rows of 16 drums and one row of 18 drums as shown. Each drum holds 55 gallons. The maximum liquid stored in each workstation is then:

V = (2 rows * 16 drums + 1 row * 18 drums) * 55 gal/drum * (1 cu.ft./ 7.48 gal)
= 367.6 cu.ft (the equivalent of 50 drums containing 55 gallons each)

The requirement is found in 40 CFR 264.175 paragraph (b)(3) which states: "The containment system must have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container, whichever is greatest." The required containment volume is then:

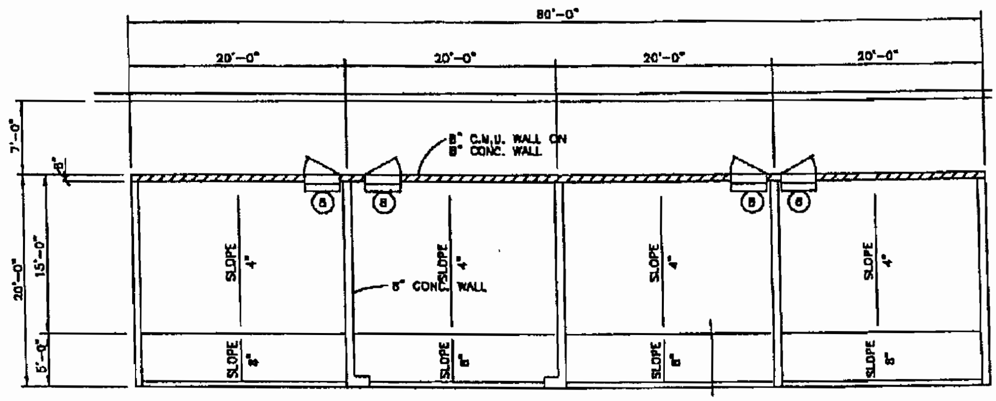
Vreq = 10% * 367.6 cu.ft.

Vreq = 36.8 cu.ft. = required containment volume for CSA I

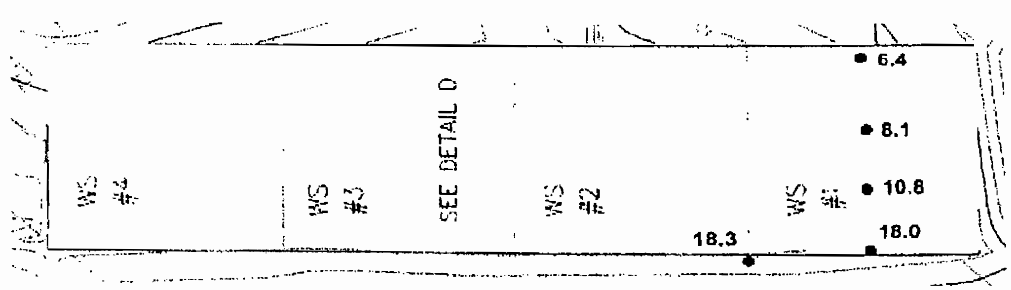
Work Station Elevations

Elevations and dimensions from Clean Harbors Dwg.No. 581-ADA-105R sheet A3 are shown below. There are four workstations each with 3 solid and one open wall. The floor slopes down from the open side into the workstations so that any spills are contained in the workstation. In all workstations the step on the small door on the east side is higher than the peak on the open west side, so liquid will flow out the west side of the workstation.

The drawing shows the floor dropping 8 inches in the first 5 feet and 4 inches in the next 15 feet. A check using a water level on the south workstation floor showed the floor to have slightly less slope. Room dimensions of the workstations are close to what is shown below. A check with a tape measure showed the rooms to average 20'0" from the peak on the west side to the wall on the east side (larger than the 19'4" from the drawing), and 19'3" from south wall to north wall in the workstation (vs. 19'4" from the drawing).



In the picture above and the one below, north is to the left and east is up. The open side of the work stations is at the bottom of the picture (west side). The picture below shows elevations in inches as taken using a Pro-Level Manometer (water level) during the AKE, Inc. site visit 12-6-07. This slope check showed 7.2" drop in the first 5 feet and 4.4" drop from there to the back of the workstation for a total of 11.6" drop.



Elevations from Guida Survey, Inc. showed that the workstation floors dropped about 12 inches from the peak at the west side to the east corner of each room, matching what was found with the water level. The total containment volume is calculated using the slope obtained using the water level.

Vcalc = volume of first 5 ft + volume of next 15 ft – volume displaced by stairs
= (5 ft*(18.0"-10.8")*(1/2) + 15 ft*(18.0"- (10.8"+6.4")/2))* (1 ft/12.") * (19.25 ft) – 4' * 1' * 1'
= 251.0 cu.ft.

Vcalc = 251.0 cu.ft = the calculated containment volume of each workstation

Displaced Volume

Volume available for containing spills will be reduced by the volume displaced by the pallets and bottoms of containers that are in the liquid. The greatest volume will be displaced if the drums are sitting on the floor without pallets. A conservative (high) estimate of the volume displaced can be calculated by assuming that all 50 drums sit in liquid at the average depth of the back 15.feet of the room.

depth = (18.0"- (10.8"+6.4")/2))* (1 ft/12") = 0.783 ft. = 9.4 inch

Vdisp = 50 drums * (π/4)*(2 ft)^2 * 0.783 ft

Vdisp = 123.0 cu.ft = volume displaced by portion of drums immersed in liquid

The total usable containment volume in CSA I is then:

Vuse = Vcalc – Vdisp = 251.0 cu.ft. – 123.0 cu.ft.

Vuse = 128 cu.ft. = usable containment volume in each workstation

SECONDARY CONTAINMENT CALCULATIONS
WORK STATIONS

All four work stations have the same dimensions and storage capacities.

Work stations are covered, eliminating the need for rainfall containment.

Drawings 581-CDA-105 and 581-CDA-107 show details of construction and placement of containers for storage arrangements.

Total storage capacity (per station) = 50 55 gallon equivalents
= 2,750 gallons
= 2750 gal / 7.48 gal/ft^3
= 367.6 ft^3

Total required containment = 10% of total storage capacity = 36.8 ft^3

Dimensions of work stations has two slopes with 12" total containment at the deepest point of each work station. An air duct penetrates the wall at the deepest area. The lowest duct in each of the four work stations is 10.5". The deepest point used for calculation purposes is 10". The first slope is approximately 8" over 5 'and changes to 4" over the remaining 15'. If the containers were to sit in liquid, the average depth for all containers would be 7" deep.

Total containment volume of work station =

((6"/12") x 5' x ½) x 20' = 25.0 ft^3
((4"/12") x 15' x ½) x 20' = 50.00 ft^3
(6"/12") x 15' x 20' = 150.00 ft^3
Total containment volume = 225.0 ft^3

Drum displacement in secondary containment
Average depth = 7"
50 drums ($\pi r^2 h$)
50 (π (1')^2 (7"/12")) = 91.58 ft^3

Available secondary containment volume
225 ft^3 – 91.58 ft^3 = 133.42 ft^3

Required containment = 36.8 ft^3

Therefore sufficient containment is provided.

January 10, 2008

Tank Farm Containment Calculations

The Clean Harbors Environmental Services site at 1340 West Lincoln Street, Phoenix, Az. has a tank farm constructed on a post tension concrete slab with an integrated wall that provides containment of spills and rainwater. The tanks vary in size from 2,570 gallons to 10,250 gallons and are anchored to one foot tall grooved concrete pedestals with the exception of the rain water collection tank which rests directly on the concrete surface. The top of the liquid resulting from a spill and rain was set to 1 ft. above the lowest point of the tank farm such that the liquid level crested the top of the lowest concrete pedestal, this is an elevation of 70.32 ft. Using this as the top of the liquid prevents the tanks from potentially contacting any incompatible liquids.

Vuse = 3,968 cu.ft. = usable containment volume in tank farm

Vreq = 3,253 cu.ft = containment volume required for tank farm
This is 100% of the largest tank volume + 4" rainfall.

The usable containment volume, Vuse, is greater than the required containment volume, Vreq, therefore the tank farm has sufficient containment volume.

If the liquid is allowed to fill the containment area the liquid level would rise to 72.42 ft and the total containment capacity is 10,305 cu.ft. The bottom of all tanks would be in the liquid.

Required Containment Volume:

40 CFR 264.193(e)(1) states that "External liner systems must be: (i) Designed or operated to contain 100 percent of the capacity of the largest tank within its boundary". A plot of tank locations is on the next page along with a table giving locations, base diameters, and tank capacities. The total tank capacity is 113,000 gallons and the capacity of the largest single tank is 10,250 gallons. The containment system is required to contain the volume of the largest container, 10,250 gallons, plus the precipitation of a 24 hour / 25 year rain event.

Vreq1 = 10,250 gallons * (1 cu.ft./ 7.48 gallons) = 1,370 cu.ft. = liquid spill

Since the tank farm is not covered it must also contain the worst 24 hr rainfall expected in 25 yrs. At this location this is 4.0" of rainfall. This falls on an area of 72.67 ft x 77.75 ft giving a volume of:

Vreq2 = 4.0" * (1 ft/ 12") * 72.67 ft * 77.75 ft = 1,883 cu.ft. = 24 hr rainfall

Total required containment volume is then:

Vreq = Vreq1 + Vreq2 = 1,370 cu.ft. + 1,883 cu.ft.
Vreq = 3,253 cu.ft = containment volume required for tank farm
This is 100% of the largest tank volume + 4" rainfall.

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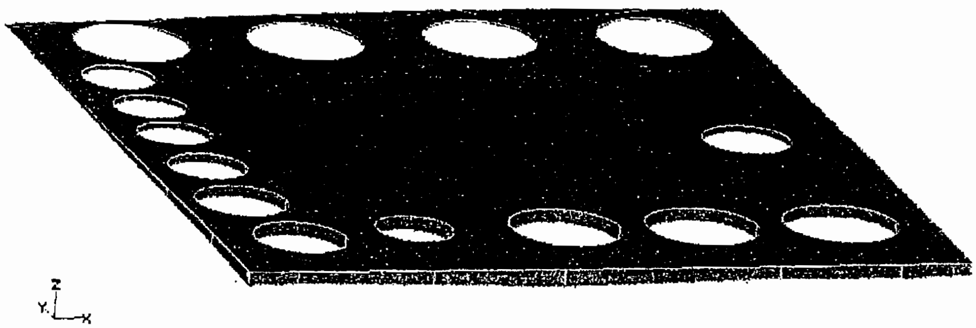
January 10, 2008

Usable Containment Volume:

A 3-D CAD model was made using measured elevations in the tank farm. This was extruded vertically and cut off at the top of the liquid, 71.04 ft. elevation. The model had cylinders removed that matched the locations and diameters of the tanks so that the remaining solid represented the usable containment volume of the tank farm. A picture of the solid representing the volume contained with a liquid level of 71.04 ft is shown below.

The northern most 8 tanks (301, 302, 303, 501, 101, 102, 103, and 104) contain hazardous waste liquids that could be potentially incompatible with each other. It is desired to keep any spills in the tank farm below the top of the pedestals under these 8 tanks. The pedestals are 1 ft high. The floor of the tank farm slopes downward to the south so the lowest pedestal of the 8 RCRA tanks is found under Tank 104. The top of the liquid resulting from a spill and rainfall is set to 1 ft above the lowest point around Tank 104 so that the liquid level just reaches the top of the concrete pedestal. The top of the liquid is then 71.04 ft.



The volume of this solid is:

Vuse = 3,968 cu.ft. = usable containment volume in tank farm

The maximum containment volume is found by letting all tanks be immersed in liquid up to the low point on the containment wall. The low point on the wall is 72.42 ft. The tanks are assumed to have the same diameter as the concrete pedestals that they sit on. The same 3-D modeling approach using 72.42 ft. for the top of the liquid gave:

Vmax = 10,305 cu.ft. = total liquid that can be contained in the tank farm

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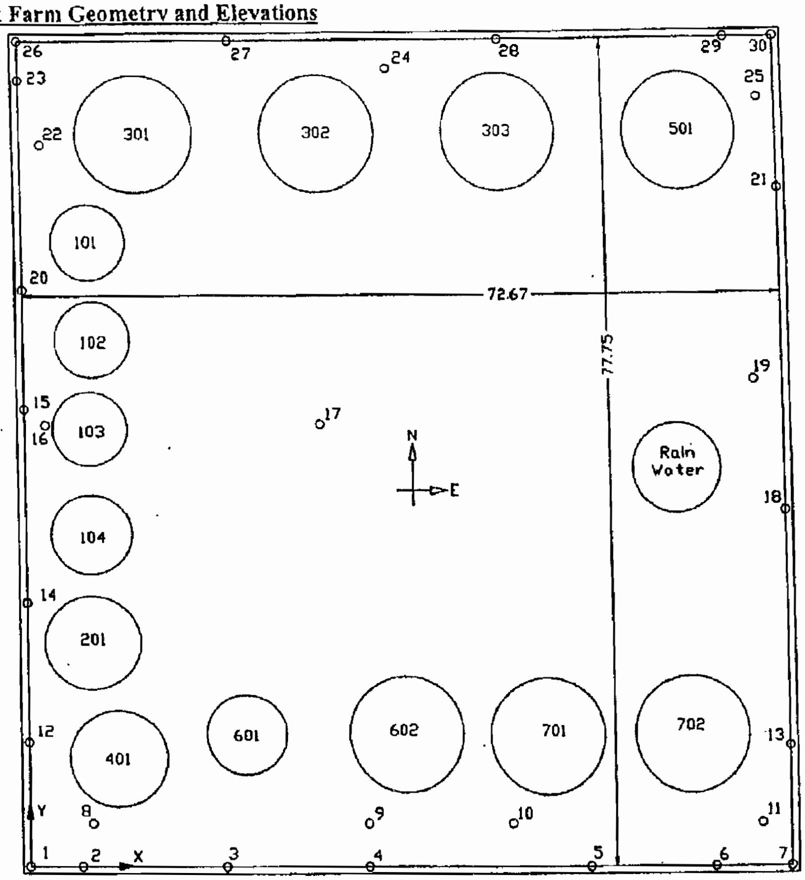
Tank Farm Geometry and Elevations



X and Y are dimensions from the inside SW corner of the tank farm to the tank center, scaled from Guida Surveying 1"=20' drawing.
Dia. is the diameter of the concrete pad that the tanks sit on.

X, Y, and Dia. are in feet

tank	X	Y	Dia.	gallons
501	63.34	68.92	11	10,150
303	45.74	69.02	11	10,150
302	28.22	68.92	11	10,150
301	10.90	68.94	11	10,250
101	6.29	58.86	7	2,570
102	6.54	49.95	7	2,570
103	6.18	41.62	7	2,570
104	6.18	31.51	7.583	4,530
201	6.13	21.12	9	7,540
401	8.43	10.03	9	7,540
601	20.49	12.25	7.583	4,530
602	35.80	12.31	11	10,150
701	49.50	12.11	11	10,150
702	63.38	12.25	11	10,150
rain tank	62.36	37.65	8.583	10,000 .

113,000 gallons = Total tank capacity

January 10, 2008

Elevations for containment calculations

The table below shows the elevations of the concrete floor and containment walls of the tank farm. These were obtained from 3 points taken by Guida Surveying, Inc (Top of Wall at NW, NE, and SE corners) and additional points taken by Lindsey Lawlis of Peterson Geotechnical Group with a Pro-Level Manometer (water level). The tanks are all mounted on concrete pedestals that raise the tanks 12" above the surface of the containment floor to prevent the tanks from contacting spilled liquids. The top of the liquid for containment calculations was set at 12" above the lowest finished surface near Tank 104 in order to keep the 8 tanks on the north side of the tank farm from contacting liquid.

FS = finished surface = bottom of containment surface
TW = top of wall, n/a means not applicable since no wall exist at this point

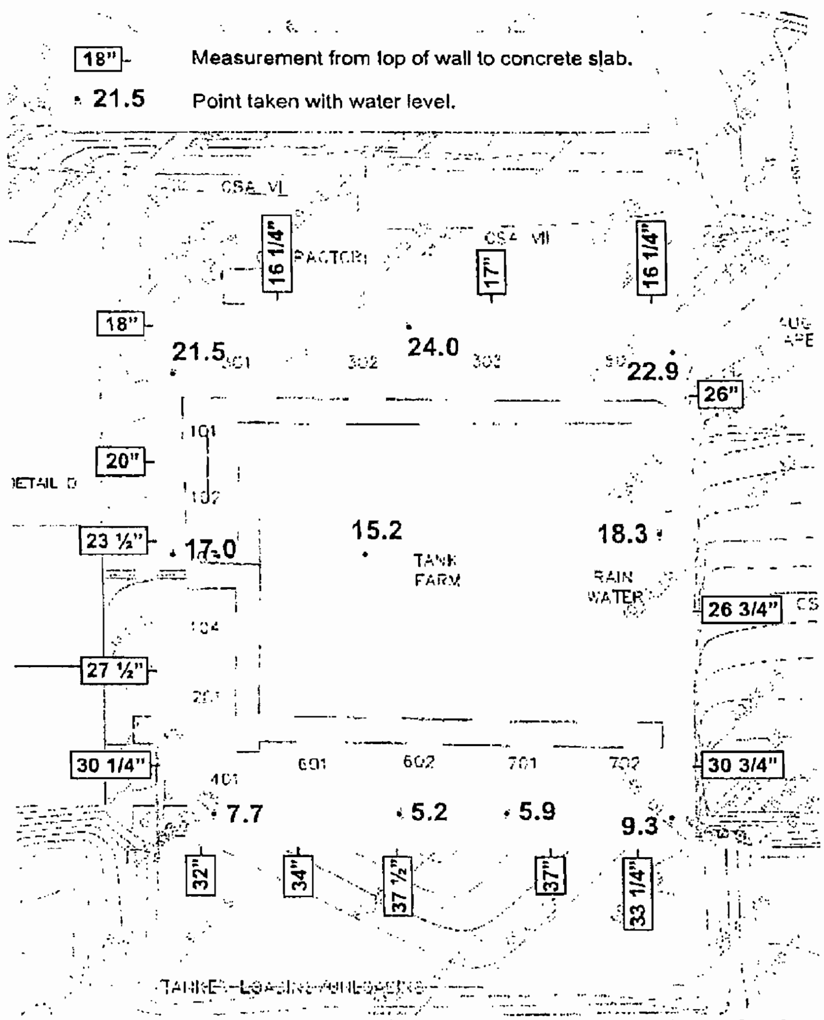
depth = liquid level depth in inches based on --> 71.04 ft elevation at top of Tank 104 pedestal
Bold numbers are direct data points 72.42 = min TW

point	X	Y	FS	TW	Depth~in
1	0	0	69.68	72.44	16.3
2	5	0	69.77	72.44	15.2
3	18.5	0	69.61	72.44	17.2
4	32	0	69.32	72.44	20.6
5	53.5	0	69.82	72.44	14.6
6	65.5	0	69.67	72.44	16.4
7	72.67	0	69.86	72.44	14.2
8	6	4	69.52	n/a	18.2
9	32	4	69.32	n/a	20.6
10	46	4	69.37	n/a	20.0
11	70	4	69.66	n/a	16.6
12	0	11.5	69.93	72.45	13.3
13	72.67	11	69.88	72.44	13.9
14	0	25	70.17	72.46	10.4
15	0	43.5	70.51	72.47	6.4
16	2	42	70.3	n/a	8.9
17	28	42	70.15	n/a	10.7
18	72.67	33.5	70.2	72.43	10.1
19	70	46	70.41	n/a	7.6
20	0	54.5	70.8	72.47	2.9
21	72.67	63.55	70.75	72.42	3.5
22	2	68	70.67	n/a	0.4
23	0	74	70.98	72.48	0.7
24	35	75	70.88	n/a	1.9
25	71	72	70.79	n/a	3.0
26	0	77.75	71.17	72.49	0.0
27	20	77.75	71.12	72.47	0.0
28	46	77.75	71.03	72.45	0.1
29	68	77.75	71.07	72.42	0.0
30	72.67	77.75	71.09	72.42	0.0

January 10, 2008

The diagram and numbers below were provided by Lindsey Lawlis of Peterson Geotechnical Group. North is to the top of this picture. Guida Surveying, Inc. provided top of wall elevations at three of the four corners of the wall around the tank farm. These values were: "no measurement at SW corner", "72.44 at SE corner", "72.49 at NW corner", and "72.42 at NE corner".

A Pro-Level Monometer (water level) was used to define elevations of the concrete floor inside the tank farm. Pro-Level (water level) points are shown below relative to an arbitrary zero. In order to use this information with the points taken by Guida Surveying it was necessary to determine what 'Guida' elevation matched 0.0" on the Pro-Level Manometer (water level). Unfortunately a Pro-Level Manometer (water level) point was not taken at one of the three TW points Guida checked consequently zero had to be deduced from another location. The south wall was assumed to be level at 72.44 ft and this value was used with the 37.5" from top of wall to finished surface and 5.2" at the finished surface to determine that 0.0" on the Pro-Level Manometer (water level) was 68.88 ft elevation.



Data point number 21 which shows a 26" top of wall to slab dimension in the picture below was changed to 20" to smooth the floor surface (east wall near NE corner).

A. V. SCHWAN & ASSOCIATES, INC.
CONSULTING STRUCTURAL ENGINEERS
6000 E. Thomas Road, Suite 1
Scottsdale, Arizona 85251-7572
Phone 602-265-4331
Fax 480-663-1788

STEPHEN A. SCHWAN, P.E., PRESIDENT
MO KHATIB, P.E.
NATHAN L. KLINE, P.E.

January 11, 2007

Lon Stewart, P.E.
Clean Harbors Environmental Services, Inc.
1340 W. Lincoln Street
Phoenix, AZ 85007

Subject: Clean Harbor Environmental Services
AVS Job No. 5639

Gentlemen:

Please find enclosed with this letter:

a) Secondary Containment Calculations; work station

b) Tank Specifications for Tanks #101, 102, 103, 104, 301, 302, 303 and 501.

c) Record Set of Drawings updated to reflect current conditions: Sheet #s

FP1	
581-ADA-102	581-CDA-104
571-ADA-104R	581-CDA-108
581-ADA-105R	581-CDA-109
581-ADA-108	581-CDA-101
581-ADA-116	581-CDA-103
581-YDA-101	581-CDA-105
581-YDA-102	581-CDA-106
581-YDA-103	581-CDA-107
581-CDA-101	581-CDA-108
581-CDA-102	581-CDA-109
581-CDA-103	581-CDA-110

<u>Secondary Containment Calculations</u>
I have reviewed the attached calculations provided to me for the Secondary Containment and find them to be accurate.

<u>Tank Specifications</u>
Attached are the Specifications for Tanks #101, 102, 103, 104, 301, 302, 303 and 501. These tanks are located within the tank farm as shown on the Facilities Plan Sheet FP1.

<u>Record Set of Drawings</u>
The previously listed set of drawings/documents have been updated to reflect the current conditions and any owner changes that have been made since the last Record Set of Drawings.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Respectfully submitted,

Stephen A. Schwan, P.E.
President

SAS/dfc
enclosures

Superseded by ARE 1/10/08

SECONDARY CONTAINMENT CALCULATIONS
WORK STATIONS

All four work stations have the same dimensions and storage capacities.

Work stations are covered, eliminating the need for rainfall containment.

Drawings 581-CDA-105 and 581-CDA-107 show details of construction and placement of containers for storage arrangements.

Total storage capacity (per station) = 50 55-gallon equivalents
= 2,750 gallons
= 2750 gal. ÷ 7.48 gal/ft^3
= 367.6 ft^3

Total required containment = 10% total storage capacity = 36.8 ft^3

Dimensions of work stations = 20' long x 20' wide.

The floor of the work stations has a two slopes with 12 inches of total containment at the deepest point of each work station. The first slope is approximately 8" in 5 feet and then 4" of slope for the remaining 15 feet. If containers were to sit in liquid, the average depth for all containers would be 9 inches deep.

Total containment volume of work station =

((8"/12) x 5' x ½) x 20' = 33.33 ft^3
((4"/12) x 15' x ½) x 20' = 50.00
(8"/12) x 15' x 20' = <u>200.00</u>
Total Containment volume = 283.33 ft^3

Registered Professional Engineer (Structural)
CERTIFICATE NO. 27351
STEPHEN A. SCHWAN
Date Signed 1-11-09
ARIZONA, U.S.A.

Drum Displacement in Secondary Containment
Average depth = 9-inches
50 drums ($\pi r^2 h$)
$50 (\pi (1)^2 (9/12)) = 117.8$ ft^3

Available Secondary Containment volume
283.3 - 117.8 = 165.5 ft^3

Required Containment = 36.8 ft^3

Therefore sufficient containment is provided.

Superceded by AKE on 1/10/08

SECONDAY CONTAINMENT CALCULATIONS
TANK FARM

The Tank Farm is an open air concrete structure with 14 tanks (8 RCRA regulated and 6 non-RCRA regulated) for waste and one tank for the storage of rainwater. Drawings 581-ADA-108 and 581-CDA-104 show tank layout and construction details.

The secondary containment capacity must contain the precipitation from a 25 year, 24 hour event plus the capacity of the largest tank.

25 year, 24 hour storm event = 3.12 inches
(City of Phoenix Storm Drain Design Manual,p.16)

Largest Tank Volume = 10,400 gallons = 1390.4 ft^3

Volume of Secondary Containment:

$$\tfrac{1}{2}(53.34 - 51.60)(72.67)(77.67) = 4910.5\ ft^3$$
$$(54.68 - 53.34)(72.67)(77.67) = \underline{7563.3}$$
$$12473.8\ ft^3$$

Volume of Tankage below Top of Secondary Containment Wall.
The tank farm wall ranges in height from 3.08 feet at the south end to 1.34 feet at the North end, for an average height of 2.2 feet. The displacement for tank volumes will assume that all tanks will have an average height of 2.2 feet for fluid displacement to remove the volume for available secondary containment. Tank dimensions can be found on drawing 581-ADA-108. In addition, an 8 ½ foot diameter rainwater tank resides in the tank farm secondary containment area.

$$(\#\ of\ Tanks)\ \pi/4\ (D)^2\ (\text{Depth of Submergence}) = \text{Displacement } ft^3$$

$$(3)\ \pi/4\ (6)^2(2.2) = 186.6\ ft^3$$
$$(2)\ \pi/4\ (6.5)^2(2.2) = 146.0$$
$$(2)\ \pi/4\ (8)^2(2.2) = 221.2$$
$$(1)\ \pi/4\ (8.5)^2(2.2) = 124.8$$
$$(7)\ \pi/4\ (10)^2(2.2) = \underline{1209.5}$$
$$1888.1\ ft^3$$

SECONDARY CONTAINMENT CALCULATIONS
TANK FARM

Rainwater Displacement Allowance for a 25 year, 24 hour event will be
$(77.67)(72.67)(3.12"/12"/ft) = 1467.5\ ft^3$

Net Volume of Secondary Containment for capturing spilled waste is

Secondary Containment Volume	=	$12473.8\ ft^3$
minus Tank Displacement	=	1888.1
minus rainwater displacement	=	1467.5
Net available containment		$9118.2\ ft^3$

Required Containment Volume is $1390.4\ ft^3$

Therefore sufficient containment volume is provided.

SECONDARY CONTAINMENT CALCULATIONS
LOADING DOCK

Drawings for the loading dock can be viewed on Drawing 581-CDA-105. The loading docks are designed with four bays for trucks to back down into for delivery or shipment of waste from the facility. A 6" high curb separates the north two bays from the south two bays.

$(52.20 - 49.58) \times (23.5) \times (58.33) \times \frac{1}{2} = 1795.7\ ft^3$
$(52.20 - 49.58) \times (23.0) \times (58.33) \times \frac{1}{2} = \underline{1757.5}$
Loading dock containment $= 3553.2\ ft^3$

$= 3553.2\ ft^3 \times 7.48\ gal/ft^3 = 26578 gallons$

SECONDARY CONTAINMENT CALCULATIONS
TANKER TRUCK LOADING/UNLOADING AREA

Drawings for the tanker loading/unloading area can be viewed on Drawing 581-CDA-104
Area of loading/unload area is 74' x 19' for 1406 ft^2 with a 10 foot wide berm surrounding the flatter platform where the trucks load and unload.

A typical tanker truck load is approximately 5,000 gallons or 668.4 ft^3

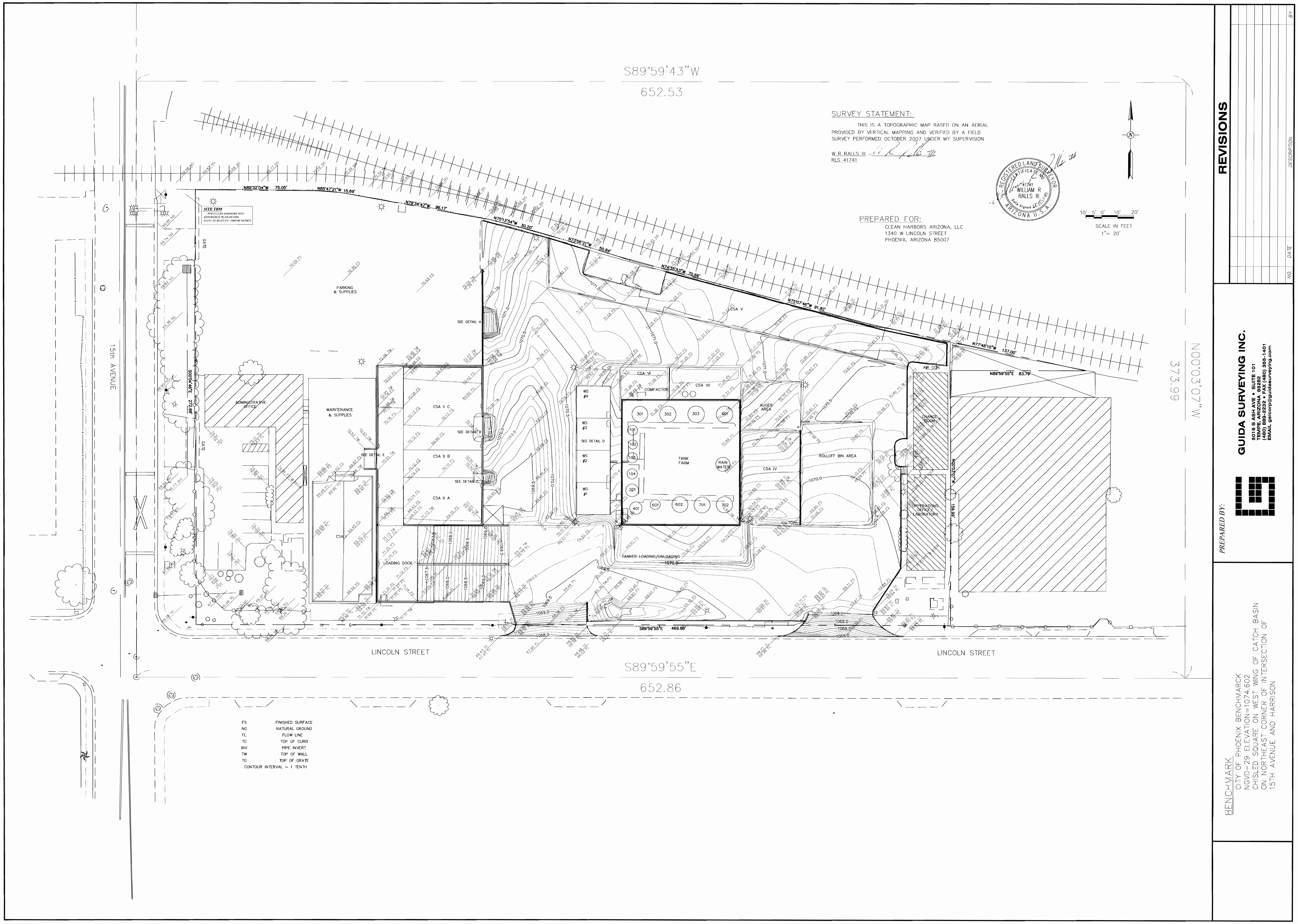
Containment volume of sloped bottom:

$(52.10 - 51.60)(19)(74)(½)(½) = 175.75\ ft^3$

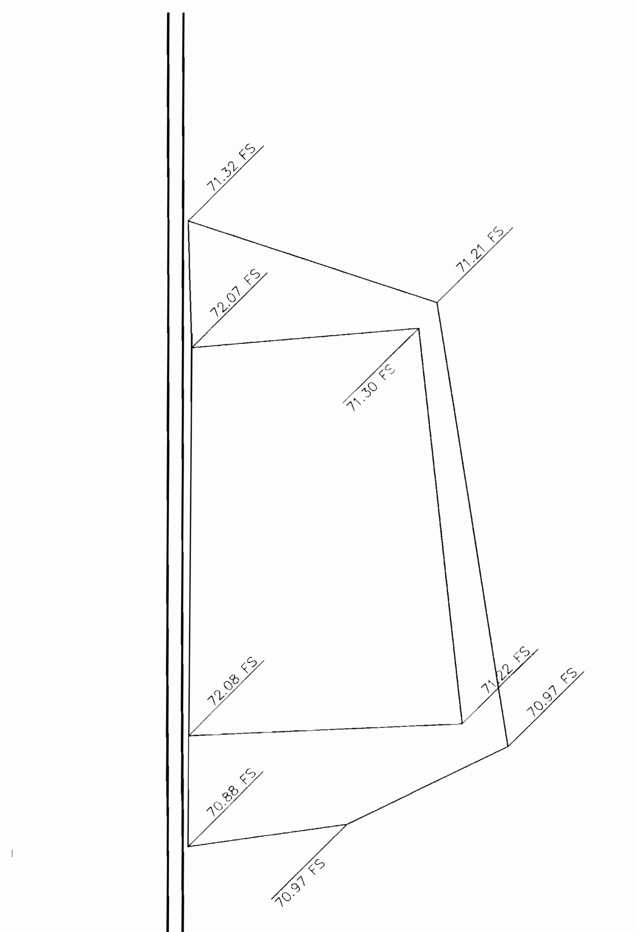
Containment volume behind rolled curb:
The berm is 4" high and 5 feet wide from high to low point and surrounds three sides of the loading area.

$(4/12)(19)(74) + (4/12)(84 + 2(19 + 5))(5)(1/2)$
$468.7 + 110.0$
$578.7\ ft^3$

Total Containment of tanker loading/unloading area = 175.75 + 578.7
754.45 ft^3



S89°59'43"W
652.53
SURVEY STATEMENT:
THIS IS A TOPOGRAPHIC MAP BASED ON AN AERIAL PROVIDED BY VERTICAL MAPPING AND VERIFIED BY A FIELD SURVEY PERFORMED OCTOBER 2007 UNDER MY SUPERVISION
W R RALLS III
RLS 41741
REGISTERED LAND SURVEYOR
CERTIFICATE NO.
41741
WILLIAM R
RALLS III
Date Signed
ARIZONA U.S.A.
PREPARED FOR:
CLEAN HARBORS ARIZONA, LLC
1340 W LINCOLN STREET
PHOENIX, ARIZONA 85007
10' 5' 0' 10' 20'
SCALE IN FEET
1"= 20'
15th AVENUE
PARKING & SUPPLIES
ADMINISTRATIVE OFFICE
MAINTENANCE & SUPPLIES
CSA II C
CSA II B
CSA II A
CSA I
LOADING DOCK
CSA V
CSA VI
CSA VII
COMPACTOR
TANK FARM
RAIN WATER
AUGER AREA
CSA IV
ROLLOFF BIN AREA
TANKER LOADING/UNLOADING
CHANGE ROOM
OPERATIONS OFFICE & LABORATORY
373.99
N00°03'07"W
LINCOLN STREET
LINCOLN STREET
S89°59'55"E
652.86
FS FINISHED SURFACE
NG NATURAL GROUND
FL FLOW LINE
TC TOP OF CURB
INV PIPE INVERT
TW TOP OF WALL
TG TOP OF GRATE
CONTOUR INTERVAL = 1 TENTH
REVISIONS
NO. DATE DESCRIPTION BY
PREPARED BY:
GUIDA SURVEYING INC.
BENCHMARK
CITY OF PHOENIX BENCHMARK
NGVD-29 ELEVATION=1074.602
CHISLED SQUARE ON WEST WING OF CATCH BASIN
ON NORTHEAST CORNER OF INTERSECTION OF
15TH AVENUE AND HARRISON



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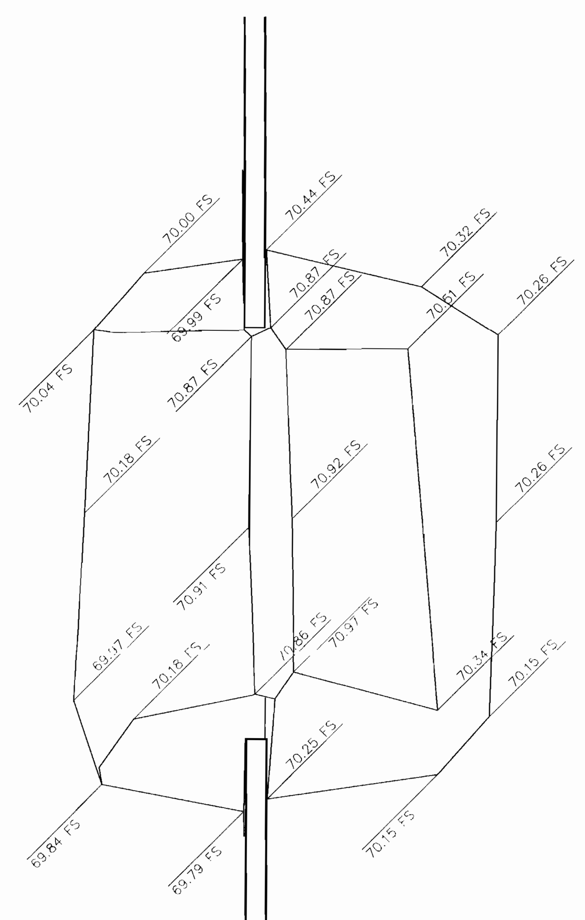

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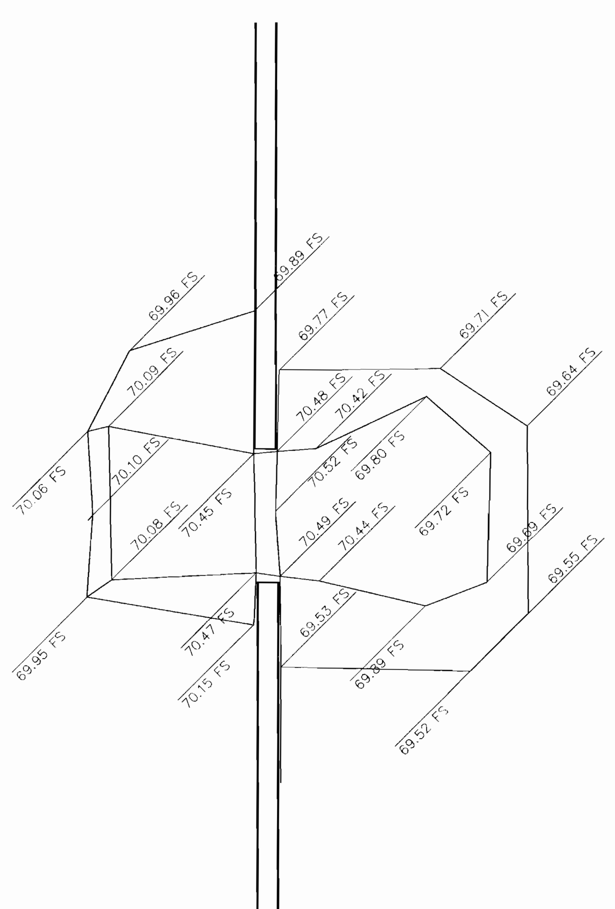

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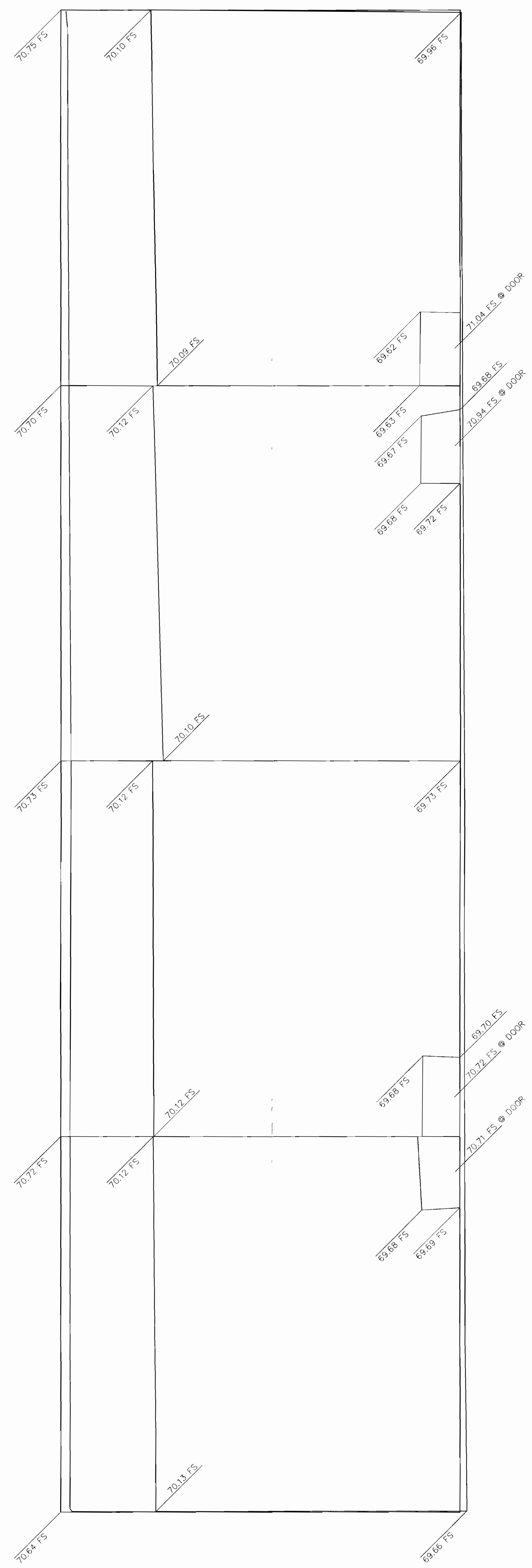


DETAIL D
NOT TO SCALE

SURVEY STATEMENT:

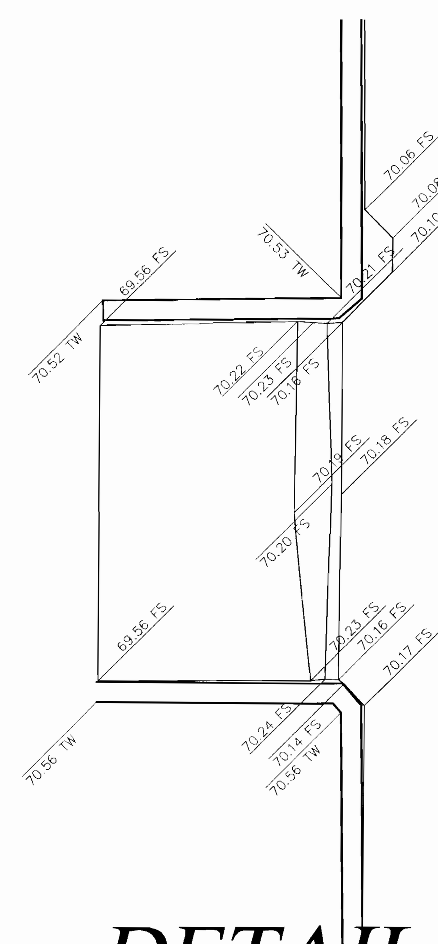
THIS IS A TOPOGRAPHIC MAP BASED ON AN AERIAL PROVIDED BY VERTICAL MAPPING AND VERIFIED BY A FIELD SURVEY PERFORMED OCTOBER 2007 UNDER MY SUPERVISION

W R RALLS III
RLS 41741

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
41741
WILLIAM R
RALLS III
Date Signed
ARIZONA U.S.A.

PREPARED FOR:
CLEAN HARBORS ARIZONA, LLC
1340 W LINCOLN STREET
PHOENIX, ARIZONA 85007

10' 5' 0' 10' 20'
SCALE IN FEET
1"= 20'



DETAIL E
NOT TO SCALE

BENCHMARK
CITY OF PHOENIX BENCHMARCK
NGVD-29 ELEVATION=1074.602
CHISLED SQUARE ON WEST WING OF CATCH BASIN ON NORTHEAST CORNER OF INTERSECTION OF 15TH AVENUE AND HARRISON

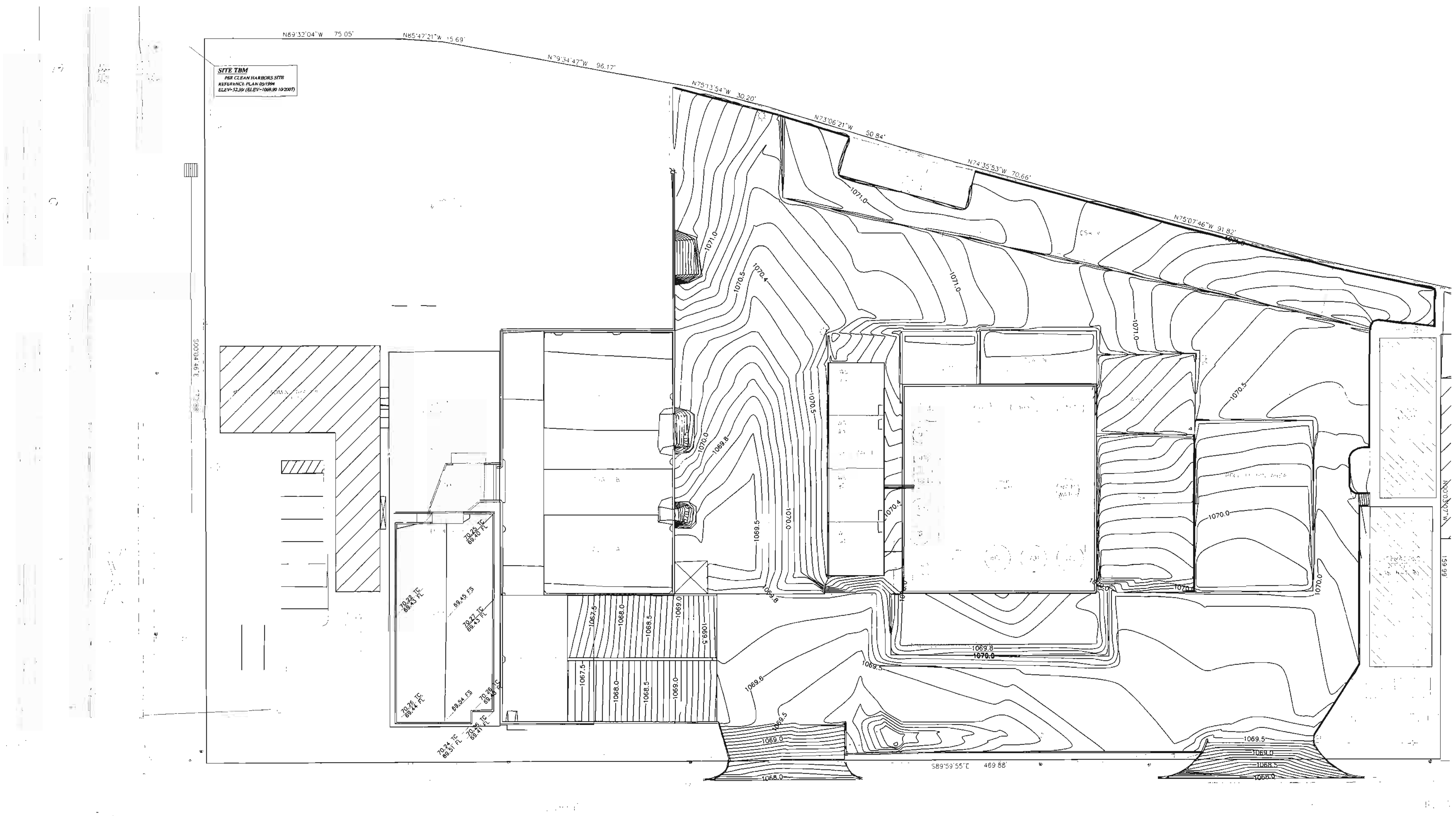
PREPARED BY:

GUIDA SURVEYING INC.
5016 S ASH AVE • SUITE 101
TEMPE, ARIZONA 85282
(480) 889-2232 • FAX (480) 355-1401
EMAIL gsicorp@guidasurveying.com

REVISIONS

NO.	DATE	DESCRIPTION	BY

CLEAN HARBORS ARIZONA, LLC



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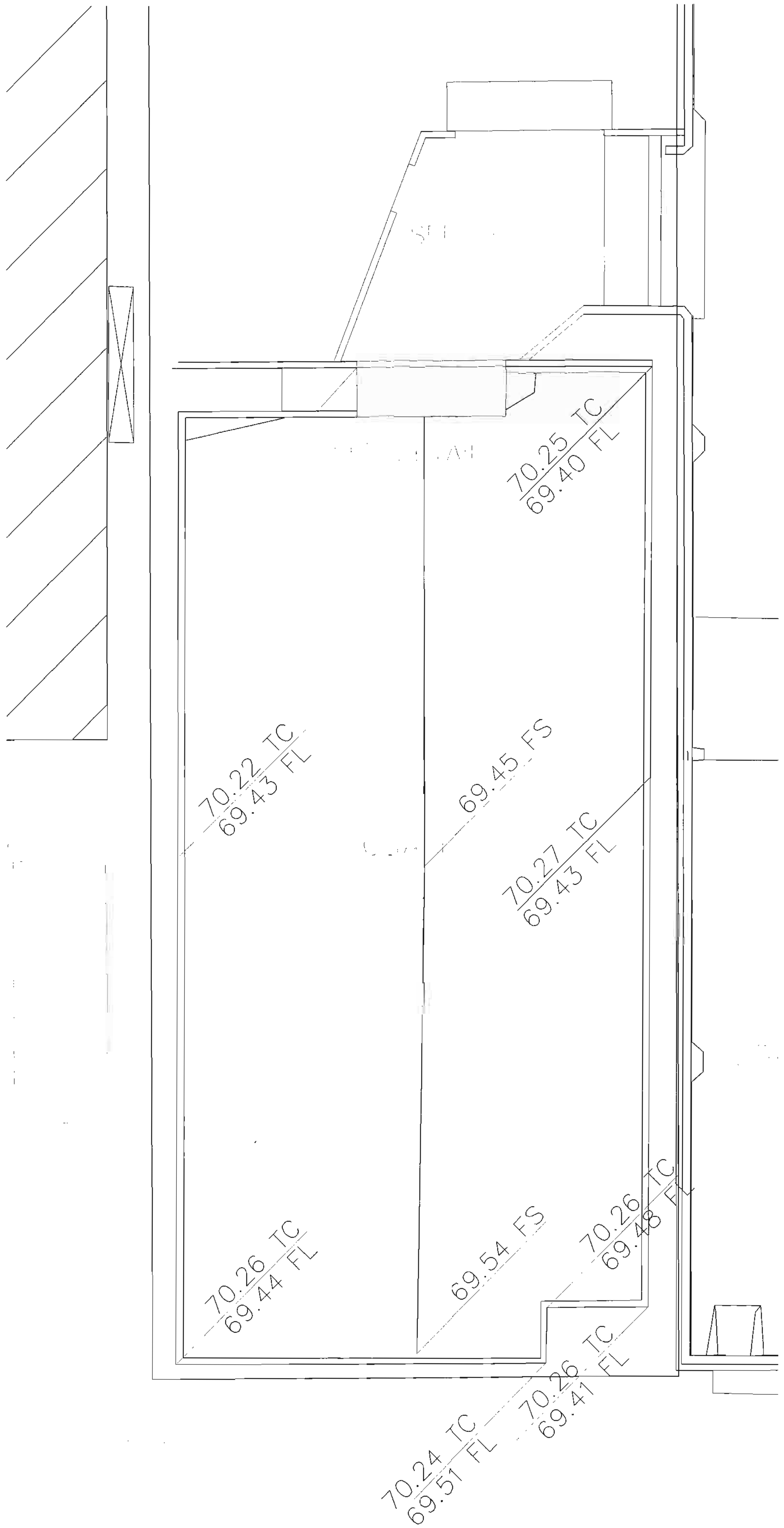
5016 S ASH AVE. ▪ SUITE 101
TEMPE, ARIZONA 85282
(480) 889-2232 ▪ FAX (480) 385-1401
EMAIL gsicorp@guidasurveying.com

BENCHMARK
CITY OF PHOENIX BENCHMARK
NGVD-29 ELEVATION=1074.602
CHISLED SQUARE ON WEST WING OF CATCH BASIN
ON NORTHEAST CORNER OF INTERSECTION OF
15TH AVENUE AND HARRISON

REGISTERED SURVEYOR
CERTIFICATE NO.
39002
RICHARD A.
ARMET
Date Signed 7-13-09
ARIZONA U.S.A.
EXP. 3-31-2012

SHT 1 OF 3



SURVEY STATEMENT:

I HEREBY CERTIFY THAT THE MEASUREMENTS SHOWN HEREON WERE MADE UNDER MY SUPERVISION OR AS NOTED AND ARE CORRECT TO THE BEST OF MY KNOWLEDE AND BELIEF

RICHARD A ARMET ______________________

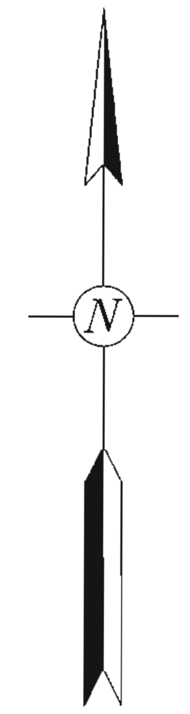
RLS 39002

REGISTERED LAND SURVEYOR CERTIFICATE NO. 39002 RICHARD A. ARMET Date Signed 7-1?-09 ARIZONA, U.S.A.

Exp. 3-31-2012

PREPARED FOR:

CLEAN HARBORS ARIZONA, LLC
1340 W LINCOLN STREET
PHOENIX, ARIZONA 85007



NOT TO SCALE

REVISIONS

NO	DATE	DESCRIPTION	BY

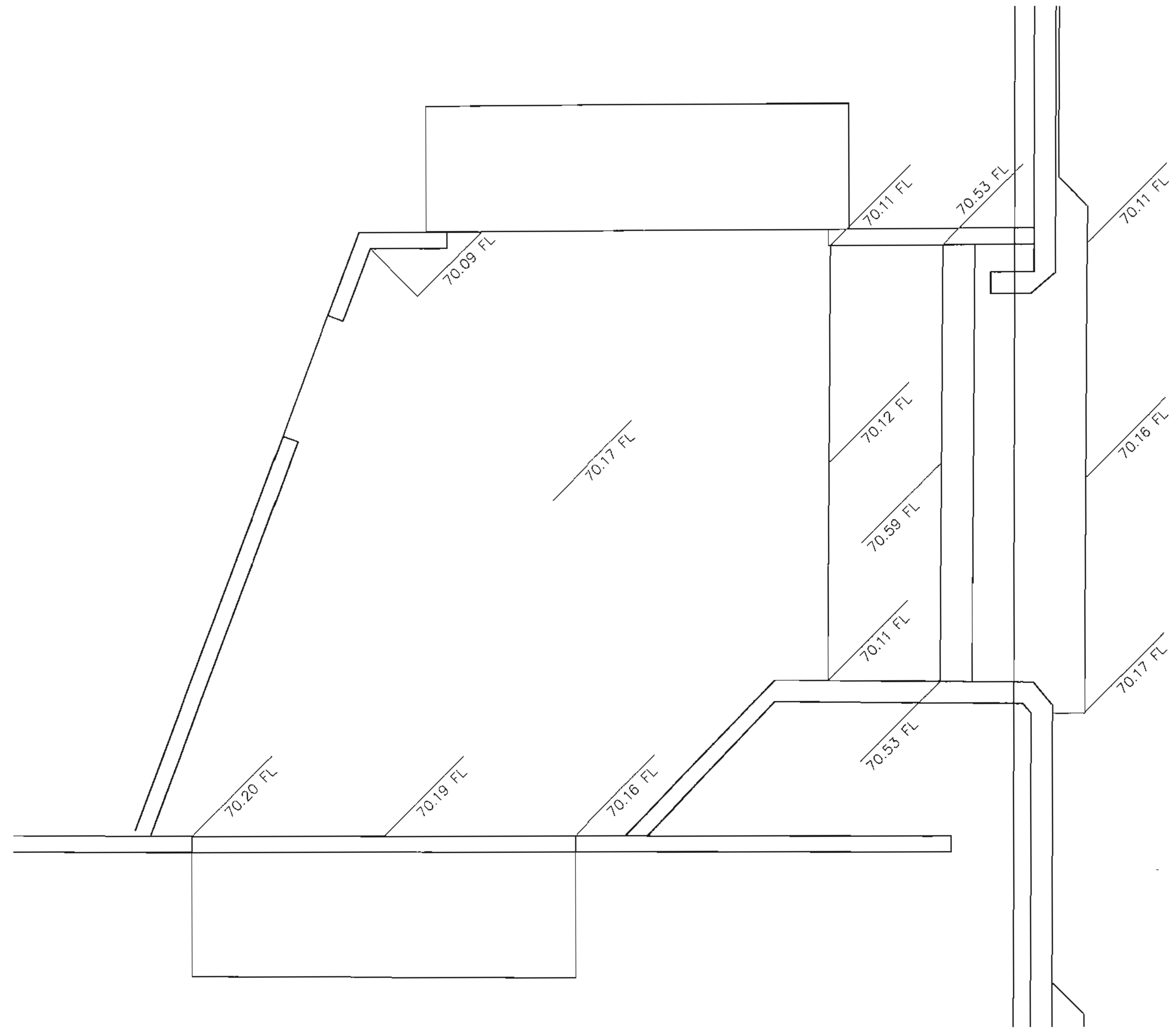
PREPARED BY:

GUIDA SURVEYING INC.
5018 S ASH AVE • SUITE 101
TEMPE, ARIZONA 85282
(480) 889-2232 • FAX (480) 355-1401
EMAIL gsicorp@guidasurveying.com

BENCHMARK
CITY OF PHOENIX BENCHMARCK
NGVD-29 ELEVATION=1074.602
CHISLED SQUARE ON WEST WING OF CATCH BASIN
ON NORTHEAST CORNER OF INTERSECTION OF
15TH AVENUE AND HARRISON

SHT 2 OF 3

DETAIL J
NOT TO SCALE



SURVEY STATEMENT:

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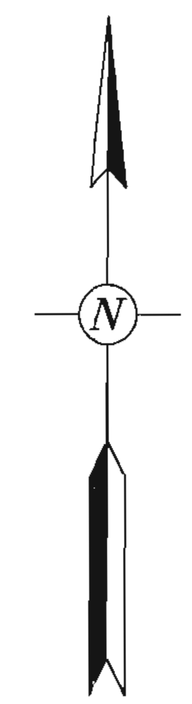
RICHARD A ARMET ______________

RLS 39002

REGISTERED LAND SURVEYOR CERTIFICATE NO. 39002 RICHARD A. ARMET Date Signed 7-15-09 ARIZONA, U.S.A.

Exp. 3-31-2012

PREPARED FOR:
CLEAN HARBORS ARIZONA, LLC
1340 W LINCOLN STREET
PHOENIX, ARIZONA 85007



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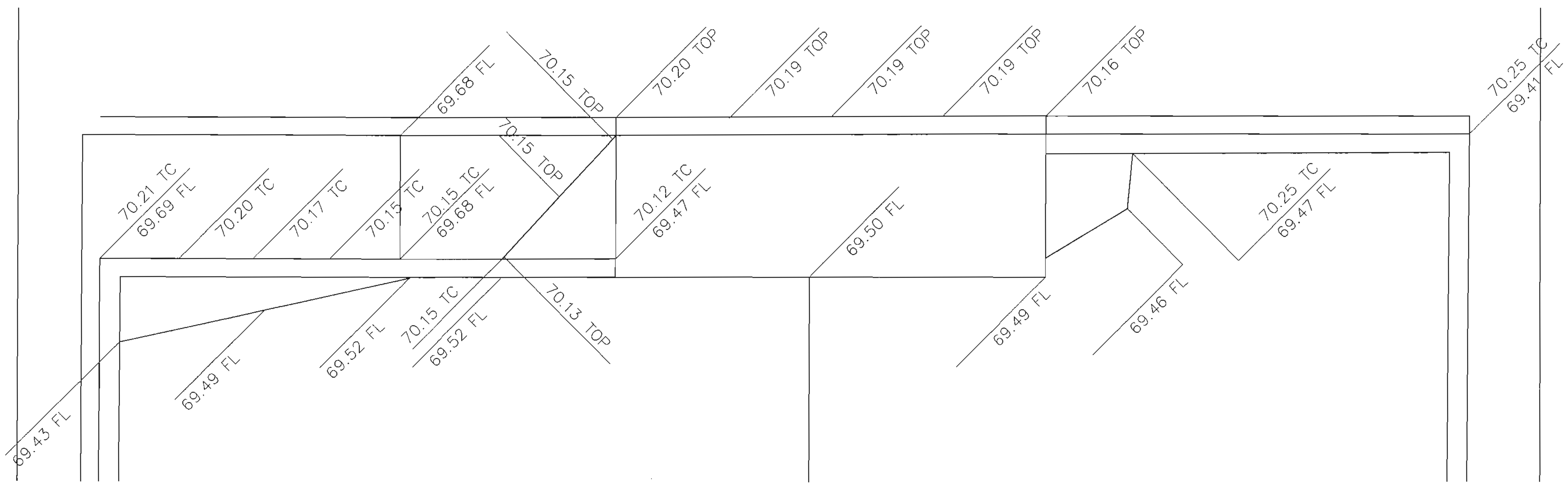

DETAIL K
NOT TO SCALE

REVISIONS

NO.	DATE	DESCRIPTION	BY

PREPARED BY:

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5016 S ASH AVE • SUITE 101
TEMPE, ARIZONA 85282
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BENCHMARK
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CHISLED SQUARE ON WEST WING OF CATCH BASIN
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15TH AVENUE AND HARRISON

SHT 3 OF 3

APPENDIX D-2

TANK ASSESSMENT

Certification Statement

I attest that I am a qualified Arizona Registered Professional Engineer. I have developed this written assessment and attest in writing that Tanks 101, 102, 104 and 301 have sufficient structural integrity, compatibility with the wastes to be stored and corrosion protection to ensure that they will not collapse, rupture or fail and are acceptable for the storing and treating of hazardous waste.

This assessment is based on TEAM tank inspections dated 7/15/09 which show that the foundation, structural support, seams, connections, and pressure controls (if applicable) are adequately designed and that the tank system has sufficient structural strength, compatibility with the waste(s) to be stored or treated, and corrosion protection to ensure that it will not collapse, rupture, or fail.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

John William Caldwell   07/30/09
Date

Registered Professional Engineer (Chemical)
CERTIFICATE NO. 49850
JOHN WILLIAM CALDWELL
DATE SIGNED 07/30/09
ARIZONA, U.S.A.
expires 06/30/12.

Certification Statement

I attest that I am a qualified AZ registered Engineer. I have developed this written assessment and attest in writing that tanks 103 and 303 have sufficient structural integrity, compatibility with the wastes to be stored and corrosion protection to ensure that they will not collapse, rupture or fail and are acceptable for the storing and treating of hazardous waste.

This assessment is based on TEAM tank inspections dated 10/14/09 which show that the foundation, structural support, seams, connections, and pressure controls (if applicable) are adequately designed and that the tank system has sufficient structural strength, compatibility with the waste(s) to be stored or treated, and corrosion protection to ensure that it will not collapse, rupture, or fail.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

William Caldwell 10/23/09

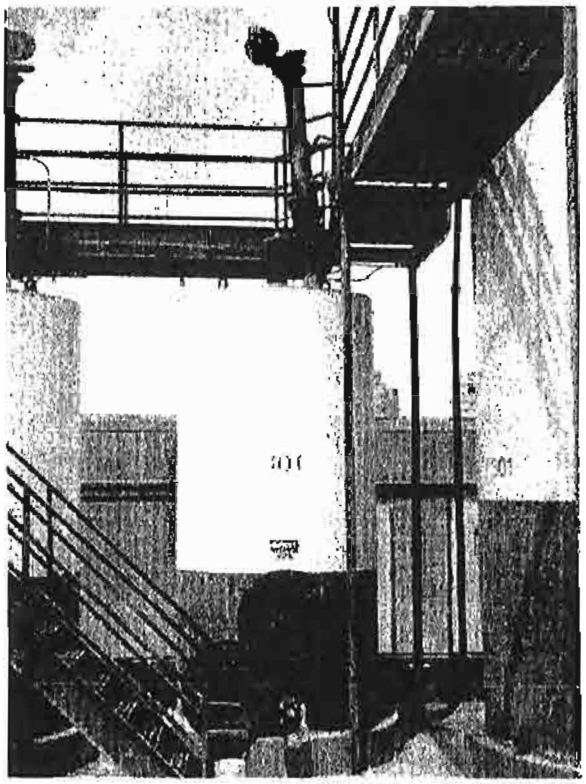
Date

Professional Engineer (Chemical)
CERTIFICATE NO.
49850
JOHN WILLIAM
CALDWELL
DATE SIGNED 10/23/09
ARIZONA, U.S.A.
expires 07/30/12

TEAM® Industrial Services, Inc.

2514 N. 33rd Ave.
Phoenix, AZ 85009
Phone: 602-269-7868
Fax: 602-269-9784
www.teamindustrialservices.com

TANK INSPECTION REPORT



CLEAN HARBORS
PHOENIX, AZ

STORAGE TANK 101

EXTERNAL / INTERNAL INSPECTION
COMPLETED 07-15-09

Team Work Order #12890168

TABLE OF CONTENTS

TANK / VESSEL DATA

Client: *Clean Harbors*
Location: *1340 West Lincoln St.*
Phoenix, AZ 85007

Inspection Type	Last Insp.	Current Insp.	Next Insp. Due
External	01-08-08	07-15-09	07-15-11
Internal	01-08-08	07-15-09	07-15-11

Service: *Flammable Liquid Waste Tank*
Tank Identification: *Tank 101*
Capacity: *2,500 Gals.* Height: *12' 2"*
Diameter or Length/Width: *6' 0"*
Orientation: ☒ *Vertical* ☐ *Horizontal*
Shape: ☒ *Circular* ☐ *Rectangular*

Mfg. By: *Unk.*
Mfg. Address: *Unk.*

Date of Manufacture: *1992 (assumed)*
Mfg. Serial Number: *Unk.*
Standard of Construction: *Unk.*
National Board Number: *N/A*
Specific Gravity: Design *Unk.* Product *<1.0*
Product Weight / cu. Ft.: *<62.4 pounds*
Max. Allow. Work. Pres. *2.5 psi (assumed)*
Max. Allow. Work. Temp. *200 °F (assumed)*
Operating Pressure: *Atmospheric*
Operating Temperature: *Ambient*
Design Seismic Zone: *Unk.*
Design Wind Load: *Unk.*
Operating Level: *Full*
Gallons / Ft.: *205*

FOUNDATION

Type: ☒ *Slab* ☐ *Ring Wall*
Material: ☒ *Concrete* ☐ *Gravel* ☐ *Soil*
Other:

TANK SUPPORT

Type: ☐ *Cradle* ☐ *Skirt* ☐ *Legs*
Other:
Material: ☐ *Steel* ☐ *Concrete*

ROOF OR UPPER HEAD CONSTRUCTION

Material: *Carbon Steel* Cor. Allow. *N/A*
Roof or Head Type: Thickness: *3/16"*
☐ *Flat* ☐ *Flat Flanged* ☐ *Torispherical (F&D)*
☒ *Conical* ☐ *Toriconical* ☐ *Hemispherical*
☐ *Elliptical* Other: *Self Supporting*
Dish Depth: *N/A* Flg. Length *N/A* Kn. Radius *N/A*
Joint Type:
☒ *Welded* ☐ *Riveted* ☐ *Bolted* ☐ *Lapped* ☒ *Butted*
Weld Type: *From both sides* Joint Eff. *N/A*

SHELL CONSTRUCTION

Material: *Carbon Steel* Cor. Allow. *N/A*

Course	1st	2nd	3rd	4th	5th	6th	7th	8th
Ht. or Length	50"	48"	48"					
Nom. Thk.	1/4"	1/4"	1/4"					

Joint Type:
☒ *Welded* ☐ *Riveted* ☐ *Bolted* ☐ *Lapped* ☒ *Butted*
Weld Type: *From both sides* Joint Eff. *N/A*

BOTTOM OR LOWER HEAD CONSTRUCTION

Material: *Carbon Steel* Cor. Allow. *N/A*
Bottom or Head Type: Thickness: *1/4"*
☒ *Flat* ☐ *Flat Flanged* ☐ *Torispherical (F&D)*
☐ *Conical* ☐ *Toriconical* ☐ *Hemispherical*
☐ *Elliptical* Other:
Dish Depth: *N/A* Flg. Length *N/A* Kn. Radius *N/A*
Joint Type:
☒ *Welded* ☐ *Riveted* ☐ *Bolted* ☒ *Lapped* ☐ *Butted*
Weld Type: *From both sides* Joint Eff. *N/A*

ADDITIONAL INFORMATION

☒ External Coating: *Painted Black & White*
☐ Internal Lining: *None*
☐ Atmospheric Vent: *None*
☒ Normal Vent: *8" Jayco, M/N; JT-20*
☒ Emergency Vent: *8" OPW, M/N; 202-F8*
☐ Pres. Relief Vent: *None*
☒ Roof Access: *Catwalk*
☒ Internal Access: *Shell mounted manway*
☐ Autogauge Device: *None*
☒ *High Level Indicator* ☐ *Internal Coils* ☒ *Grounded*
☐ *Overflow Vent* ☐ *External Jacket* ☒ *Anchored*
☐ *Cathodic Protection* ☐ *Agitator / Mixer*

METHODOLOGY

Team Industrial Services was contracted to perform an internal / external inspection on Storage Tank 101 located at Clean Harbors; Phoenix, AZ facility. This inspection is intended to meet the mechanical integrity requirements of the various state and federal agencies. This section describes the methods and procedures used to perform the inspection.

The inspection report is a compilation of data obtained through visual inspections, conversations with plant personal and client supplied information. This includes quantitative and qualitative data necessary to document the tank's condition. The inspector prepares the field data in accordance with generally accepted standards, codes and good engineering practice. Recommendations, such as repairs, service modifications, maintenance operations, and additional NDE, are based on the evaluation of the tank's condition. The contents contained within the tank are also taken into consideration when making decisions such as frequency and type of future inspections.

The latest editions of the below referenced codes and/or standards were used in determining the tanks acceptability.

- API 653; Tank Inspection, Repair, Alteration and Reconstruction.
- API 650; Welded Tanks for Oil Storage
- API 2000; Venting Atmospheric & Low-Pressure Storage Tanks
- UL-142; Steel Aboveground Tanks for Flammable & Combustible Liquids

<u>Other Codes and/or Standards related to work practices</u>

- ASME Sec. V; Nondestructive Testing.
- ASTM E 543-96; Standard Practice for Agencies Performing Nondestructive Testing.
- OSHA; 29 CRF 1910 "Occupational Safety and Health Standards"
- API 2015; Safe Entry & Cleaning of Petroleum Storage Tanks

The report is divided into six main activities:

1. Tank/Vessel Data
2. Visual Inspection
3. Drawings
4. Photographs
5. Data Evaluation & Analysis
6. Non-Destructive Examination

<u>Tank/Vessel Data</u>

The **Tank/Vessel Data** form was filled out after the inspection had been completed. It defines the original tank design parameters, the current design parameters, the tank history, the foundation configuration and the current tank configuration. Original client documents, verbal client information and field observations were used to complete this form.

Visual Inspection
The visual inspection was performed using guidelines set forth in current editions of API, ASME and/or ASTM. All accessible areas of the tank and its appurtenances were inspected. Observations made during this inspection are listed in the Summary and Recommendations portion of this report. The following are some of the essential elements of the Visual Inspection:

- Detection of leaks.
- Detection of cracks or potential crack initiators.
- Detection of physical damage, such as gouges and scratches.
- Detection of blisters, disbond or separations of fiberglass piles.
- Detection of external corrosion, erosion or gel coat failure.
- Detection of appurtenance's which may violate applicable codes, standards or good engineering practice.
- Detection of foundation and/or support deficiencies.
- Verification of venting used for normal breathing and/or emergency pressure release.

Drawings
The drawings show the tanks overall dimensions, general location of nozzles, as well as any other pertinent information.

Photographs
Photographs were taken to show the current condition of the tank and its appurtenances.

Data Evaluation & Analysis
Methods described in the current edition of API 653 were used to calculate items such as;

- Minimum required shell plate thickness
- Corrosion rates
- Inspection Intervals
- Remaining Life

Definitive Inspection
The **Definitive Inspection** is quantitative inspection of the tank components and consisted of the following:

Roof - UT Thickness Survey
Ultrasonic thickness readings were taken from the center of the roof to the outer perimeter at locations shown on the tank drawings

Shell - UT Thickness Survey
Ultrasonic thickness readings were taken from top to bottom at locations shown on the tank drawings.

Bottom (or Floor) - UT Thickness Survey
Ultrasonic thickness readings were taken on the tank bottom at locations shown on the tank drawings.

Corrosion Scans
A minimum of two 10 x 10" Ultrasonic corrosion scans were done on the tank bottom. One at the tanks center and another at the outer perimeter.
If applicable, additional corrosion scans were done on the exterior of the tank shell where the internal visual inspection found corrosion.

The results of the UT thickness surveys are shown on the tank drawings. The results of the corrosion scans are discussed in the summary portion of this report. Nozzle thickness measurements shown on the tank drawing were taken from the last inspection. Information such as the referenced codes, standards or procedures, type of equipment used, etc. can be found on the technique sheet (s).

Drawings or Layouts
The drawings show the tanks overall dimensions, general location of nozzles, nozzle identification numbers, as well as any other pertinent information. Ultrasonic thickness data was also recorded on the drawings.

SUMMARY & RECOMMENDATIONS

Recommendations Italicized

DISCUSION AND HISTORICAL INFORMATION

This tank is used for the storage of flammable and non-flammable waste liquids. This tank has a cone roof, a flat bottom, butt welded shell seams and is constructed of carbon steel. The tank has no name plate and the only records are of the inspection performed by myself on 01-08-08. The date and standard of construction is not known, the tank was probably built to either API or UL standards. For the purpose of estimating a corrosion rate, I'm using 1992 for a date of construction, since that's when the plant was built. All of the tanks at this facility were probably used elsewhere before being moved here in 1992. This tank has not been used since the last inspection. All recommended corrective actions mentioned in the previous inspection report have been fulfilled by the client and verified by myself during this inspection.

INSPECTION FINDINGS

Exterior

Roof, Shell & Appurtenances

1) Overall, the tanks coating is oxidized but in fair condition. Some light rust was found at random areas on the roof, shell, nozzles & anchors. The client has purchased paint and has plans on spot coating rusted areas.
   Spot coat rusted areas prior to the next scheduled inspection.
2) The NFPA warning label was replaced and is in good condition.
   No action necessary.
3) The area inside the pressure/vacuum vent has been cleaned and both pressure and vacuum relieving devices appear to be functioning properly.
   Plant personal should perform periodic inspections.

FOUNDATION &/OR SUPORT SYSTEM

4) A few tight radial cracks were found on the elevated pad. None are in need of repair at this time.
   Perform periodic visual inspections of the foundation and dike area and repair when needed.
5) Except for some rust, the anchors and anchor bolts appear to be in good shape.
   No action necessary.

INTERIOR

Roof, Shell, Bottom & Appurtenances

Prior to this inspection, the tank was cleaned so that a proper visual inspection could be performed on the roof, shell and tank bottom.

6) The internal visual inspection found the following:
   - The roof has a general overall pattern of corrosion; external thickness measurements indicate a minimum remaining thickness of .175" (estimated loss of .075", estimated corrosion rate .0031/year).
     Acceptable, according to API 653, para 4.2.1.2 the roof only has to have an average thickness of .090" in any 100 in.^{2} area and contain no holes.
   - The upper portion of the shell has a general overall pattern of corrosion. The worst of which was found on the west side, 21" from the top. External thickness measurements at this location indicate a minimum remaining thickness of .183" (estimated loss of .067", estimated corrosion rate .0028/year). At this rate the shell should reach the minimum allowable thickness of .100" in 29 years. API 653, para. 4.3.2.1 provides a formula to determine the inspection interval based on shell corrosion rates. The formula is as follows; RCA/4N, where RCA is the remaining corrosion allowance and N is the corrosion rate. The lesser of 5 years or the results of the formula is to be used for the inspection interval. In this case 5 years is the lesser of the two. See "Data Evaluation & Analysis" portion of this report for more information.
     Acceptable, according to formulas provided in API 653, para 4.3.2.1 re-inspection is not due for another 5 years. As an extra margin of safety, I'm recommending the next internal/external inspection be performed in another 2 years or by 07-15-11. The reason for the extra margin of safety is due to factors such as; inconsistency of products stored inside the tank, varying corrosion rates and lack of historical information.
   - Overall the tank bottom is in fairly good condition. The corrosion scans found no signs of bottom side corrosion. The tank bottom has a nominal thickness of .250". A few areas were found to contain isolated corrosion pits, most are less than .040" deep. One .090" deep pit was found on the east side of the tank, about 24" in from the shell (remaining thickness at pit is .160", estimated corrosion rate .0038/year). At this rate the bottom will reach the minimum allowable thickness of .100" in 16 years. API 653 allows for a maximum inspection interval of 20 years if the corrosion rate is known or 10 years if unknown. API also sets a minimum remaining tank bottom thickness at the next scheduled inspection; for this tank that thickness is .100". Reference API 653 paragraphs 4.4.5.1, 6.4.2.1, 6.4.2.2 & Table 6-1. See "Data Evaluation & Analysis" portion of this report for more information.
     Acceptable, according to API 653, re-inspection is not due for 10 years. As an extra margin of safety, I'm recommending the next internal/external inspection be performed in another 2 years or by 07-15-11. The reason for the extra margin of safety is due to factors such as; inconsistency of products stored inside the tank, varying corrosion rates and lack of historical information.
     Although not required at this time, the client should plan to have any corrosion pits in excess of .050" deep weld overlayed (puddle welded) during the next inspection. This action will keep the client form having to install patches sometime in the future. If considered, the client shall ensure the welding contractor has the proper documentation.

GENERAL NOTES

7) The client should insure that all mechanical and electrical equipment associated with this tank is checked periodically for proper function. In addition, visual Inspections should be performed by trained plant personal on a regular basis. These checks should also be done on before the tank is returned to service.

8) The client should retain a copy of this report in their tank files for the life of the tank.

9) Thickness measurements taken during this inspection are essentially the same as taken during the last inspection. Any differences in measured thicknesses are attributed to the varying locations where the measurements taken and not due to an actual loss or gain in thickness.

CONCLUSION

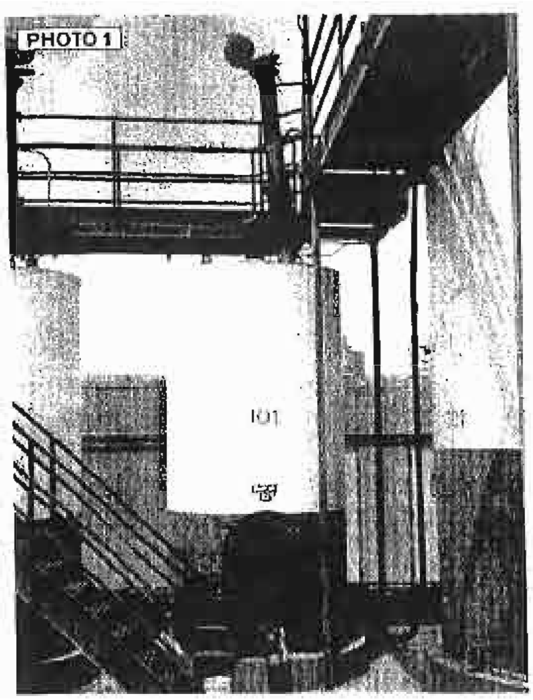
The tank and its appurtenances were inspected and evaluated to the best of my abilities. I found no evidence or issues during my inspection and evaluation that would keep the client from returning the tank to service.

INSPECTED BY: ____________ John Morton

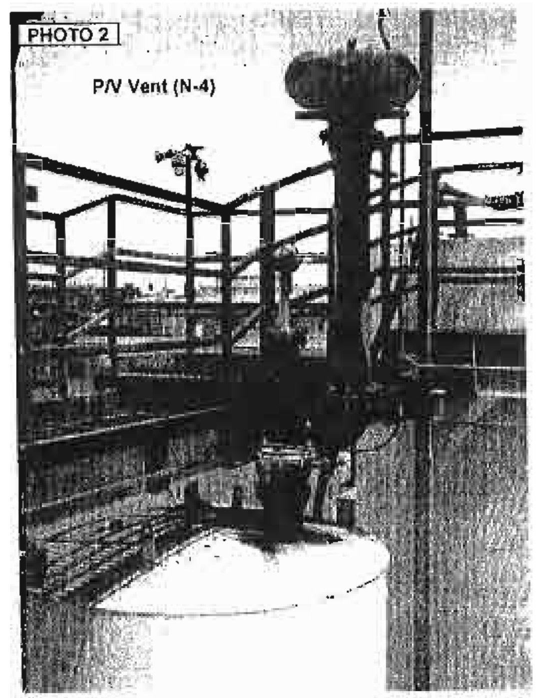
API 653 Cert. #[illegible]
API 510 Cert. #[illegible]
API 570 Cert. #[illegible]
API TES Cert. #[illegible]
AWS-CWI Cert. #[illegible]
ASNT Level II MT, PT & UT

DATE: 07-15-09

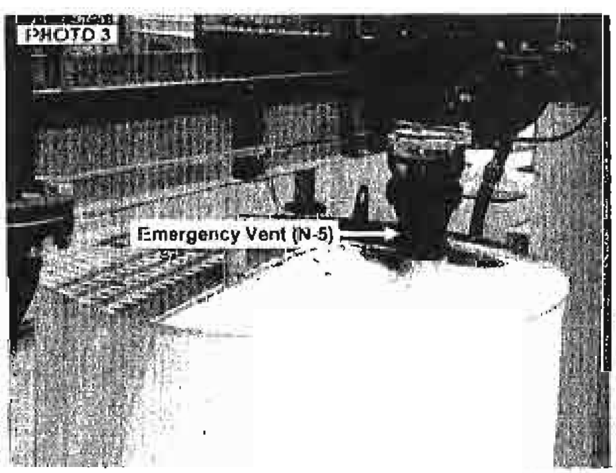
Any recommendations made by the API Tank Inspector are to be used only as a guideline for making repairs, as required by the client. Neither Team Industrial Services nor their inspectors accept responsibility for the tank's integrity, even after these recommendations are followed. All of the data compiled within this tank report should be reviewed by an engineer experienced in the design, construction and repair of above ground storage tanks. Calculations, recommendations and evaluations contained within this report do not take into consideration the effects of additional loads imposed by wind, seismic activity or attached components. Corrosion rate and remaining life calculations are based on conditions caused by products previously stored inside the tank. Chemical, physical or mechanical changes to the tank and/or its contents may be cause for re-evaluation. Formulas contained in API 650 & 653 and good engineering judgment was used to determine the inspection frequency and next inspection dates. These dates and/or frequencies may differ from agencies other than API, in which case the more stringent should be followed.



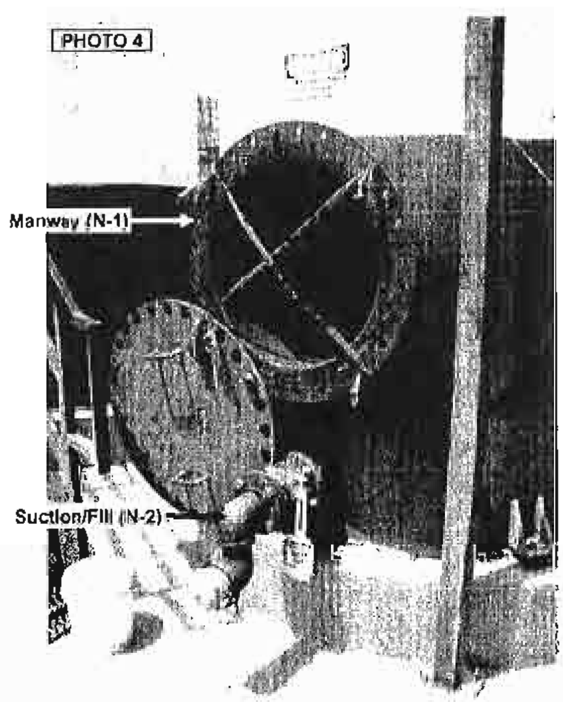
TANK AS VIEWED FROM THE EAST



ROOF AND VENTS
AS VIEWED FROM THE SOUTHEAST

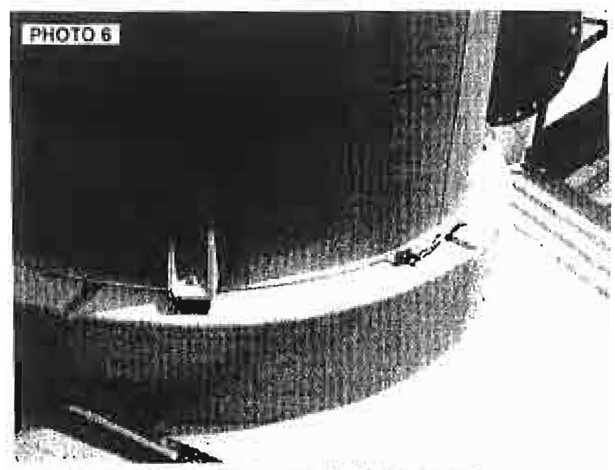


ROOF AS VIEWED FROM THE SOUTHEAST

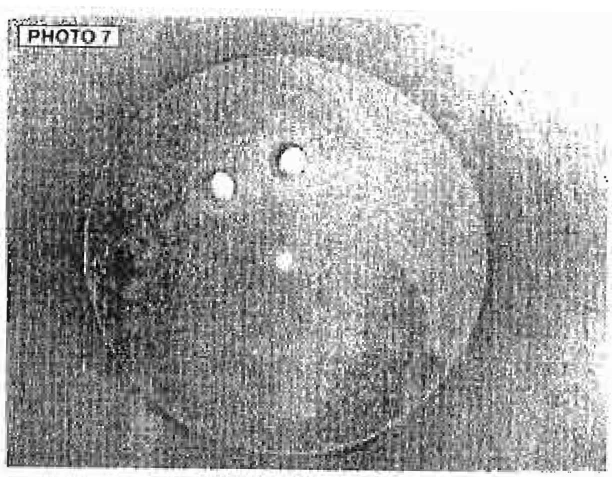


LOWER EAST SIDE OF TANK

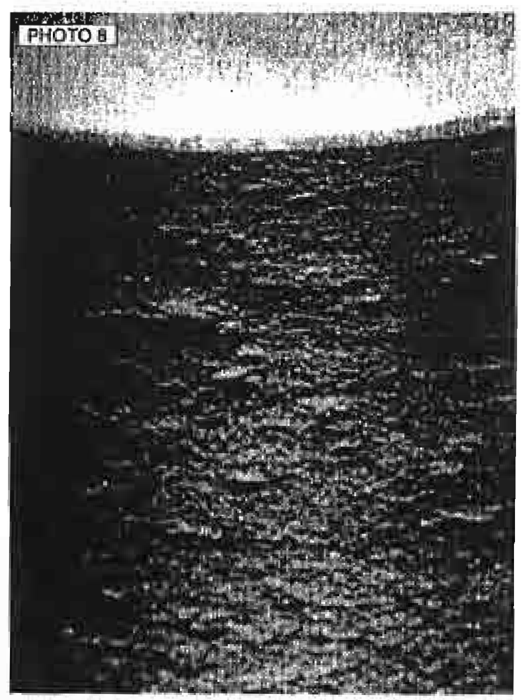
LOWER WEST SIDE OF TANK



LOWER SOUTH SIDE OF TANK;
VIEW SHOWING TYPICAL ANCHOR & GROUND WIRE



INTERIROR, ROOF



INTERIOR, UPPER WEST SIDE OF SHELL;
VIEW SHOWING CORROSION

INTERIOR, LOWER EAST SIDE OF TANK;

INTERIOR, TANK BOTTOM;
VIEW SHOWING CORROSION

DATA EVALUATION & ANALYSIS
CORROSION RATE & REMAINING LIFE CALCULATIONS

Date		Time In Service			
Built	Current	Days	Weeks	Months	Years
7/15/1985	7/15/2009	8766 00	1248.00	288.00	24.00

☐ Date Built obtained from Records or Nameplate

☑ Date Built Estamated

Tank Bottom Corrosion

Area Affected	Date Built	Date Inspected	Years of Service	Beginning Thickness	Depth Corrosion	Remaining Wall	Corrosion Rate	Req'ed Thickness	Corrosion Allowance	Years to Retirement	Retirement Date
Internal	07/15/85	07/15/09	24.00	0.250	0.090	0.160	0.0038	0 100	0.060	16.000	7/15/2025
External	07/15/85	07/15/09	24.00	0.250	0.000	0.250	0 0000	0 100	0.150	N/A	N/A
Combined	07/15/85	07/15/09	24.00	0.250	0.090	0.160	0.0038	0.100	0.060	16.000	7/15/2025

Notes: 1) Calculated using formulas provided in the 2008 edition of API 653, para. 4 4.5 1

✓ Un-repaired Bottom ☐ Repaired Bottom

MTR = (Minimum of RT_{bc} or RT_{ip})-Or(StP_r+Up_r)

MTR	0.153	Minimum remaining thickness at the end of interval Or
O_r	2	In service interval; Max 10 yrs if unknown, 20 yrs if known
RT_{bc}	0.250	Minumum thickness from external corrosion after repairs
Rt_{ip}	0.160	Minumum thickness from internal corrosion after repairs
StP_r	0.0038	Maximum rate of un-repaired internal corrosion
Ut_r	0.0000	Maximum rate of external corrosion

Tank Shell Corrosion

Area Affected	Date Built	Date Inspected	Years of Service	Beginning Thickness	Depth Corrosion	Remaining Wall	Corrosion Rate	Req'ed Thickness	Corrosion Allowance	Years to Retirement	Retirement Date
Internal	07/15/85	07/15/09	24.00	0.250	0.067	0.183	0.0028	0.100	0.083	29.731	4/8/2039
External	07/15/85	07/15/09	24.00	0.250	0 000	0.250	0.0000	0.100	0.150	N/A	N/A
Combined	07/15/85	07/15/09	24.00	0.250	0.067	0.183	0.0028	0.100	0.083	29 731	4/8/2039

Notes: 1) The required thickness shall be the lesser of the current calculated thickness or .100"

Average Shell Thickness Determination of Corroded Areas

$L = 3.7\sqrt{Dt_2}$

D	t_2	t_2 Elev.	L	L / 5
6.00	0.183	21.00	3.88	0.78

Thickness Location	Distance form Top	Measured Thickness
1	19.45	0.198
2	20.22	0.192
3	21.00	0.183
4	21.78	0.194
5	22.55	0.198
Average t_1 →		0.193

L = Length in inches where hoop stress is assumed to average out around local discontinuities

D = Tank Diameter in feet

t_2 = Least Thickness In inches of Corroded Area

t_2 Elev. = Elevation or Distance from the top of the tank to the area of least thickness

t_1 = Average Thickness of five equily spaced thicness measurements

Notes: 1) Calculated using formulas provided in the 2008 edition of API 853, para. 4.3.2.1

2) t_2 & t_1 values shall be used in shell's required thickness calculations on page F-2

UT Inspection Interval = Lesser of RCA/2N or 15 years

RCA/2N = 14.87

External Inspection Interval = Lesser of RCA/4N or 5 years

RCA/4N = 7.43

Conclusion:

Tank Bottom Corrosion Evaluation: Tank can be returned to service and used for two years before another internal inspection is required

Tank Shell Corrosion Evaluation: Tank can be returned to service and used for two years before another external inspection is required.

DATA EVALUATION & ANALYSIS
REQUIRED THICKNESS DETERMINATION

Shell Design Method To Be Used **OFM**

Enter "VDP" for variable design point method
or "OFM" for one foot method.

Tank Diameter 6'
Specific Gravity 1.0

Table 1: Original Tank Data

Course Number	Height (in.)	Height (ft.)	T orig. (in.)	Materl al Spec.	Min. Yield*	Min. Tensile*	Allow. Stress		Joint Efficiency
							Product	Water	
1	50.00	04.167	3/16"	C.S.	30,000	55,000	23,600	26,000	0.70
2	48.00	04.000	3/16"	C.S.	30,000	55,000	23,600	26,000	0.70
3	48.00	04.000	3/16"	C.S.	30,000	55,000	26,000	27,000	0.70
Total	146.00	12.17							

* If shell material is known; Minimum yield, Minimum Tensile & Allowable Stress figures were obtained from API 653, table 4.1.
* If shell material is unknown; Minimum yield, Minimum Tensile & Allowable Stress figures derived by using the formulas in API 653. Welded tanks - para. 4.3.3 Riveted tanks – para. 4.3.4.

Table 2: Calculated Tank Data

Course Number	T_1 (Inch)	T_2 (Inch)	T_{min}		Calculated H. (ft.)	Shell Check Product		Shell check Water	
			Product	Water		T_1 Check	T_2 Check	T_1 Check	T_2 Check
1	0.242	0.240	.011	.010	11.17	Yes	Yes	Yes	Yes
2	0.226	0.220	.007	.006	7.00	Yes	Yes	Yes	Yes
3	0.201	0.185	.003	.002	3.00	Yes	Yes	Yes	Yes

Calculate:

New Fill Height For Product: No **New Fill Height For Water:** No

Calculate only if shell courses are not adequate due to: minimum or average thickness' (T1 or T2) being less than thickness required (T req'd). See next page if answer is yes.

Notes:

Requirements for continued operations per API 653, Section 4.3.3 or 4.3.4:

1. T_{min} (or required thickness) = 2.6*H-1*D*G / S*E (use the greater of T_{min} in Table 2 or .100" thick)
2. No pitting shall be greater than one half the T_{min} or exceed 2" in 8" in a vertical direction.
3. The value of T_1 shall be greater than or equal to T_{min}.
4. The value of T_2 shall be greater than or equal to 60% of T_{min}.
5. The external inspection interval shall not exceed five years, as per API 653, para. 4.3.3.2a.
6. Any corrosion allowance for service until the time of the next inspection shall be added to the $T_{min's}$ in items 3 & 4.

CONCLUSION

The evaluation shows that the tank can be safely filled to the top of the tank shell or 12' 2"

ULTRASONIC EXAMINATION - TECHNIQUE SHEET

Client Name: *Clean Harbors*	Jobsite: *Phoenix, AZ*
Job Description: *UT thickness Measurements*	
Project Number:	Job or Operation No.:
Drawing / Part No.: *Tank 101*	Serial or Item No.: *N/A*

Specification:	Procedure:	Acceptance:
API 653 / ASME Sec. V Art. 5	*UT.ASME.3 Rev.1*	*API 650, 653 &/or ASME Sec. VIII*

SCOPE OF WORK PERFORMED

Thickness measurements were taken on portions of the; Roof, Shell & Tank Bottom

COMPONENT INFORMATION

Material: ☒ C.S. ☐ S.S. ☐ Al. ☐ Babbitt ☐ Other: Dimensions: *N/A* Thickness: *N/A*

Component Type: ☒ Plate ☐ Bar ☒ Pipe ☐ Tube ☐ Forging ☐ Extrusion ☐ Billet ☐ Other:

EXAMINATION TECHNIQUE

☒ Contact	☒ Pulse Echo	☒ Longitudinal	☐ Water Path: *in.*
☐ Immersion	☐ Thru-Transmission	☐ Shear	☐ Delay Line: *in.*

Equipment	Calibration Information
Scope Manufacturer: *Panametrics*	☒ Back Wall Technique — Ref. Signal Amp.: *100+%*
Model: *Epoch LT* — S/N: *070149004*	Calibration Standard Type: *Step Wedge*
Transducer Manufacturer: *Panametrics*	Calibration Standard Material: *Carbon Steel*
Model: *D-790* — S/N: *803018*	Reflector: ☐ FBH ☐ SDH ☐ Notch
Freq.: *5MHz* — Size: *.375"* — Angle: *0°*	Reflector Size(s): *N/A*
Transducer Manufacturer: *N/A*	Reflector Depth(s): *.100" to .500"*
Model: *N/A* — S/N: *N/A*	DAC Settings: *N/A*
Freq.: *N/A* — Size: *N/A* — Angle: *N/A*	Reference Level: *N/A* — Attenuation Correction: *N/A*
Couplant: *Cellulose Gell* — Batch No.: *N/A*	Scanning Gain: *N/A*

EXAMINATION RESULTS

Remarks	Sketch / Drawing
Thickness measurements are shown on the tank drawings and discussed in the summary portion of the report.	

Inspector: John Morton ASNT UT Level: *II* Date: *07-15-09*

ULTRASONIC EXAMINATION - TECHNIQUE SHEET

Client Name: *Clean Harbors*	Jobsite: *Phoenix, AZ*
Job Description: *UT Corrosion Scans*	
Project Number:	Job or Operation No.:
Drawing / Part No.: *Tank 101*	Serial or Item No.: *N/A*

Specification:	Procedure:	Acceptance:
API 653 / ASME Sec. V Art. 5	*UT-ASME-1 Rev.1*	*API 650, 653 &/or ASME Sec. VIII*

SCOPE OF WORK PERFORMED

Ultrasonic (corrosion) scans were performed on random areas of the tank bottom, shell and roof.

COMPONENT INFORMATION

Material: ☒ C.S. ☐ S.S. ☐ Al. ☐ Babbitt ☐ Other: Dimensions: *N/A* Thickness: *N/A*

Component Type: ☒ Plate ☐ Bar ☐ Pipe ☐ Tube ☐ Forging ☐ Extrusion ☐ Billet ☐ Other:

EXAMINATION TECHNIQUE

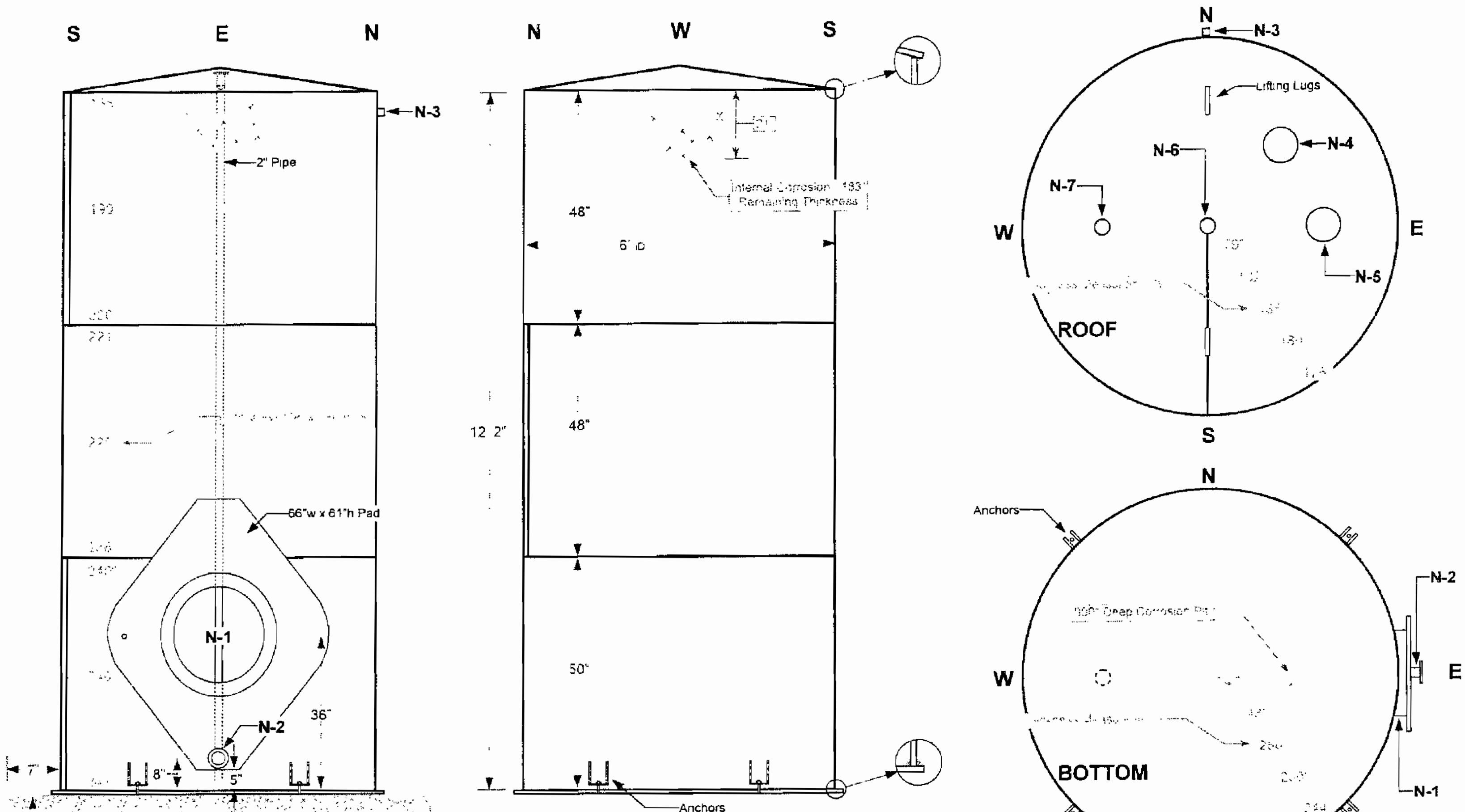
☒ Contact	☒ Pulse Echo	☒ Longitudinal	☐ Water Path: *in.*
☐ Immersion	☐ Thru-Transmission	☐ Shear	☐ Delay Line: *in.*

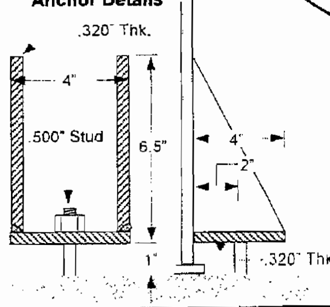
Equipment	Calibration Information
Scope Manufacturer: *Panametrics*	☐ Back Wall Technique | Ref. Signal Amp.: *N/A*
Model: *Epoch LT* | S/N: *070149004*	Calibration Standard Type: *Step Wedge*
Transducer Manufacturer: *Krautkramer*	Calibration Standard Material: *Carbon Steel*
Model: *Gamma* | S/N: *009YWH*	Reflector: ☐ FBH ☐ SDH ☐ Notch
Freq.: *5 MHz* | Size: *.5" x .5"* | Angle: *0°*	Reflector Size(s): *N/A*
Transducer Manufacturer: *N/A*	Reflector Depth(s): *.100" to .500"*
Model: *N/A* | S/N: *N/A*	DAC Settings: *N/A*
Freq.: *N/A* | Size: *N/A* | Angle: *N/A*	Reference Level: *N/A* | Attenuation Correction: *N/A*
Couplant: *Cellulose Gell* | Batch No.: *N/A*	Scanning Gain: *N/A*

EXAMINATION RESULTS

Remarks	Sketch / Drawing
Corrosion data is shown on the tank drawings and discussed in the summary portion of the report.	

Inspector: [signature] John Morton ASNT UT Level: *II* Date: *07-15-09*





Noz.	Size	Nozzle Description	Thickness	
			Noz.	PAD
N-1	24"	Manway Nozzle	.223"	.250"
N-2	3"	Suction Line Nozzle	N/A	N/A
N-3	3/4"	Plugged Coupling	N/A	N/A
N-4	6"	8" Pres./Vac. Conservation Vent Nozzle	N/A	N/A

Noz.	Size	Nozzle Description	Thickness	
			Noz.	PAD
N-5	6"	8" Emergency Pressure Relief	.203"	N/A
N-6	2"	Plugged Coupling	N/A	N/A
N-7	2"	Plugged Coupling	N/A	N/A

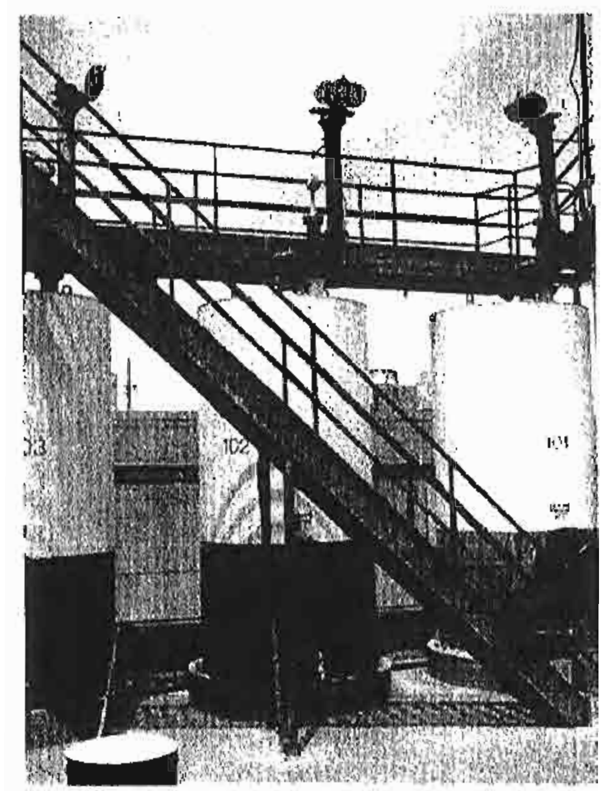
TEAM Industrial Services, Inc.

Client: Clean Harbors	Drawn By: J. Martin
Location: Phoenix, AZ	Date: 07-15-09
Tank Number or Identification: Tank 101	Page: D-1

2514 N. 33rd Ave.
Phoenix, AZ 85009
Phone: 602-269-7868
Fax: 602-269-9784
www.teamindustrialservices.com

TEAM Industrial Services, Inc.

TANK INSPECTION REPORT



CLEAN HARBORS
PHOENIX, AZ

STORAGE TANK 102

EXTERNAL / INTERNAL INSPECTION
COMPLETED 07-15-09

Team Work Order #12890168

TABLE OF CONTENTS

DESCRIPTION **PAGE(s)**

TANK / VESSEL DATA

Client: *Clean Harbors*
Location: *1340 West Lincoln St.*
Phoenix, AZ 85007

Inspection Type	Last Insp.	Current Insp.	Next Insp. Due
External	01-08-08	07-15-09	07-15-11
Internal	01-08-08	07-15-09	07-15-11

Service: *Flammable Liquid Waste Tank*
Tank Identification: *Tank 102*
Capacity: *2,500 Gals.* Height: *12' 2"*
Diameter or Length/Width: *6' 0"*
Orientation: ☒ Vertical ☐ Horizontal
Shape: ☒ Circular ☐ Rectangular

Mfg. By: *Unk.*
Mfg. Address: *Unk.*
Date of Manufacture: *1992 (assumed)*
Mfg. Serial Number: *Unk.*
Standard of Construction: *Unk.*
National Board Number: *N/A*
Specific Gravity: Design *Unk.* Product *<1.0*
Product Weight / cu. Ft.: *<62.4 pounds*
Max. Allow. Work. Pres. *2.5 psi (assumed)*
Max. Allow. Work. Temp. *200°F (assumed)*
Operating Pressure: *Atmospheric*
Operating Temperature: *Ambient*
Design Seismic Zone: *Unk.*
Design Wind Load: *Unk.*
Operating Level: *Full*
Gallons / Ft.: *205*

FOUNDATION

Type: ☒ Slab ☐ Ring Wall
Material: ☒ Concrete ☐ Gravel ☐ Soil
Other:

TANK SUPPORT

Type: ☐ Cradle ☐ Skirt ☐ Legs
Other:
Material: ☐ Steel ☐ Concrete

ROOF OR UPPER HEAD CONSTRUCTION

Material: *Carbon Steel* Cor. Allow. *N/A*
Roof or Head Type: Thickness: *3/16"*
☐ Flat ☐ Flat Flanged ☐ Torispherical (F&D)
☒ Conical ☐ Toriconical ☐ Hemispherical
☐ Elliptical Other: *Self Supporting*
Dish Depth: *N/A* Flg. Length *N/A* Kn. Radius *N/A*
Joint Type:
☒ Welded ☐ Riveted ☐ Bolted ☐ Lapped ☒ Butted
Weld Type: *From both sides* Joint Eff. *N/A*

SHELL CONSTRUCTION

Material: *Carbon Steel* Cor. Allow. *N/A*

Course	1st	2nd	3rd	4th	5th	6th	7th	8th
Ht. or Length	50"	48"	48"					
Nom. Thk.	1/4"	1/4"	1/4"					

Joint Type:
☒ Welded ☐ Riveted ☐ Bolted ☐ Lapped ☒ Butted
Weld Type: *From both sides* Joint Eff. *N/A*

BOTTOM OR LOWER HEAD CONSTRUCTION

Material: *Carbon Steel* Cor. Allow. *N/A*
Bottom or Head Type: Thickness: *1/4"*
☒ Flat ☐ Flat Flanged ☐ Torispherical (F&D)
☐ Conical ☐ Toriconical ☐ Hemispherical
☐ Elliptical Other:
Dish Depth: *N/A* Flg. Length *N/A* Kn. Radius *N/A*
Joint Type:
☒ Welded ☐ Riveted ☐ Bolted ☒ Lapped ☐ Butted
Weld Type: *From both sides* Joint Eff. *N/A*

ADDITIONAL INFORMATION

☒ External Coating: *Painted Black & White*
☐ Internal Lining: *None*
☐ Atmospheric Vent: *None*
☒ Normal Vent: *8" Jayco, M/N; JT-20*
☒ Emergency Vent: *8" OPW, M/N; 202-F8*
☐ Pres. Relief Vent: *None*
☒ Roof Access: *Catwalk*
☒ Internal Access: *Shell mounted manway*
☐ Autogauge Device: *None*
☒ High Level Indicator ☐ Internal Coils ☒ Grounded
☐ Overflow Vent ☐ External Jacket ☒ Anchored
☐ Cathodic Protection ☐ Agitator / Mixer

METHODOLOGY

Team Industrial Services was contracted to perform an internal / external inspection on Storage Tank 102 located at Clean Harbors; Phoenix, AZ facility. This inspection is intended to meet the mechanical Integrity requirements of the various state and federal agencies. This section describes the methods and procedures used to perform the inspection.

The inspection report is a compilation of data obtained through visual inspections, conversations with plant personal and client supplied information. This includes quantitative and qualitative data necessary to document the tank's condition. The inspector prepares the field data in accordance with generally accepted standards, codes and good engineering practice. Recommendations, such as repairs, service modifications, maintenance operations, and additional NDE, are based on the evaluation of the tank's condition. The contents contained within the tank are also taken into consideration when making decisions such as frequency and type of future inspections.

The latest editions of the below referenced codes and/or standards were used in determining the tanks acceptability.

- API 653; Tank Inspection, Repair, Alteration and Reconstruction.
- API 650; Welded Tanks for Oil Storage
- API 2000; Venting Atmospheric & Low-Pressure Storage Tanks
- UL-142; Steel Aboveground Tanks for Flammable & Combustible Liquids

<u>Other Codes and/or Standards related to work practices</u>

- ASME Sec. V; Nondestructive Testing.
- ASTM E 543-96; Standard Practice for Agencies Performing Nondestructive Testing.
- OSHA; 29 CRF 1910 "Occupational Safety and Health Standards"
- API 2015; Safe Entry & Cleaning of Petroleum Storage Tanks

The report is divided into six main activities:

1. Tank/Vessel Data
2. Visual Inspection
3. Drawings
4. Photographs
5. Data Evaluation & Analysis
6. Non-Destructive Examination

<u>Tank/Vessel Data</u>

The **Tank/Vessel Data** form was filled out after the inspection had been completed. It defines the original tank design parameters, the current design parameters, the tank history, the foundation configuration and the current tank configuration. Original client documents, verbal client information and field observations were used to complete this form.

Visual Inspection
The visual inspection was performed using guidelines set forth in current editions of API, ASME and/or ASTM. All accessible areas of the tank and its appurtenances were inspected. Observations made during this inspection are listed in the Summary and Recommendations portion of this report. The following are some of the essential elements of the Visual Inspection:

- Detection of leaks.
- Detection of cracks or potential crack initiators.
- Detection of physical damage, such as gouges and scratches.
- Detection of blisters, disbond or separations of fiberglass piles.
- Detection of external corrosion, erosion or gel coat failure.
- Detection of appurtenance's which may violate applicable codes, standards or good engineering practice.
- Detection of foundation and/or support deficiencies.
- Verification of venting used for normal breathing and/or emergency pressure release.

Drawings
The drawings show the tanks overall dimensions, general location of nozzles, as well as any other pertinent information.

Photographs
Photographs were taken to show the current condition of the tank and its appurtenances.

Data Evaluation & Analysis
Methods described in the current edition of API 653 were used to calculate items such as;

- Minimum required shell plate thickness
- Corrosion rates
- Inspection Intervals
- Remaining Life

Definitive Inspection
The **Definitive Inspection** is quantitative inspection of the tank components and consisted of the following:

Roof - UT Thickness Survey
Ultrasonic thickness readings were taken from the center of the roof to the outer perimeter at locations shown on the tank drawings.

Shell - UT Thickness Survey
Ultrasonic thickness readings were taken from top to bottom at locations shown on the tank drawings.

Bottom (or Floor) - UT Thickness Survey
Ultrasonic thickness readings were taken on the tank bottom at locations shown on the tank drawings.

Corrosion Scans
A minimum of two 10 x 10" Ultrasonic corrosion scans were done on the tank bottom. One at the tanks center and another at the outer perimeter.
If applicable, additional corrosion scans were done on the exterior of the tank shell where the internal visual inspection found corrosion.

The results of the UT thickness surveys are shown on the tank drawings. The results of the corrosion scans are discussed in the summary portion of this report. Nozzle thickness measurements shown on the tank drawing were taken from the last inspection. Information such as the referenced codes, standards or procedures, type of equipment used, etc, can be found on the technique sheet (s).

Drawings or Layouts
The drawings show the tanks overall dimensions, general location of nozzles, nozzle identification numbers, as well as any other pertinent information. Ultrasonic thickness data was also recorded on the drawings.

SUMMARY & RECOMMENDATIONS

Recommendations Italicized

DISCUSION AND HISTORICAL INFORMATION

This tank is used for the storage of flammable and non-flammable waste liquids. This tank has a cone roof, a flat bottom, butt welded shell seams and is constructed of carbon steel. The tank has no name plate and the only records are of the inspection performed by myself on 01-08-08. The date and standard of construction is not known, the tank was probably built to either API or UL standards. For the purpose of estimating a corrosion rate, I'm using 1992 for a date of construction, since that's when the plant was built. All of the tanks at this facility were probably used elsewhere before being moved here in 1992. This tank has not been used since the last inspection. All recommended corrective actions mentioned in the previous inspection report have been fulfilled by the client and verified by myself during this inspection.

INSPECTION FINDINGS

Exterior

Roof, Shell & Appurtenances

1) Overall, the tanks coating is oxidized but in fair condition. Some light rust was found at random areas on the roof, shell, nozzles & anchors. The client has purchased paint and has plans on spot coating rusted areas.
Spot coat rusted areas prior to the next scheduled inspection.
2) The NFPA warning label was replaced and is in good condition.
No action necessary.
3) The area inside the pressure/vacuum vent has been cleaned and both pressure and vacuum relieving devices appear to be functioning properly.
Plant personal should perform periodic inspections.
4) The break pin for the emergency pressure vent was found to be damaged during the last inspection; the pin has been replaced.
No action necessary.

FOUNDATION &/OR SUPORT SYSTEM

5) A few tight radial cracks were found on the elevated pad. None are in need of repair at this time.
Perform periodic visual inspections of the foundation and dike area and repair when needed.
6) Except for some rust, the anchors and anchor bolts appear to be in good shape.
No action necessary.

INTERIOR

Roof, Shell, Bottom & Appurtenances

Prior to this inspection, the tank was cleaned so that a proper visual inspection could be performed on the roof, shell and tank bottom.

7) The internal visual inspection found the following:
   - The roof has a general overall pattern of corrosion; external thickness measurements indicate a minimum remaining thickness of .223" (estimated loss of .027", estimated corrosion rate .0001/year).
     Acceptable, according to API 653, para 4.2.1.2 the roof only has to have an average thickness of .090" in any 100 in.^{2} area and contain no holes.
   - The upper portion of the shell has a general overall pattern of corrosion. The worst of which was found on the west side, 4" from the top. External thickness measurements at this location indicate a minimum remaining thickness of .195" (estimated loss of .055", estimated corrosion rate .0002/year). At this rate the shell should reach the minimum allowable thickness of .100" in 41 years. API 653, para. 4.3.2.1 provides a formula to determine the inspection interval based on shell corrosion rates. The formula is as follows; RCA/4N, where RCA is the remaining corrosion allowance and N is the corrosion rate. The lesser of 5 years or the results of the formula is to be used for the inspection interval. In this case 5 years is the lesser of the two. See "Data Evaluation & Analysis" portion of this report for more information.
     Acceptable, according to formulas provided in API 653, para 4.3.2.1 re-inspection is not due for another 5 years. As an extra margin of safety, I'm recommending the next internal/external inspection be performed in another 2 years or by 07-15-11. The reason for the extra margin of safety is due to factors such as; inconsistency of products stored inside the tank, varying corrosion rates and lack of historical information.
   - Overall the tank bottom is in fairly good condition. The corrosion scans found no signs of bottom side corrosion. The tank bottom has a nominal thickness of .250". Numerous areas were found to contain corrosion pits up to .020" deep (remaining thickness at pits is .230", estimated corrosion rate .0008/year). At this rate the bottom won't reach the minimum allowable thickness of .100" for over 50 years. API 653 allows for a maximum inspection interval of 20 years if the corrosion rate is known or 10 years if unknown. API also sets a minimum remaining tank bottom thickness at the next scheduled inspection; for this tank that thickness is .100". Reference API 653 paragraphs 4.4.5.1, 6.4.2.1, 6.4.2.2 & Table 6-1. See "Data Evaluation & Analysis" portion of this report for more information.
     Acceptable, according to API 653, re-inspection is not due for 10 years. As an extra margin of safety, I'm recommending the next internal/external inspection be performed in another 2 years or by 07-15-11. The reason for the extra margin of safety is due to factors such as; inconsistency of products stored inside the tank, varying corrosion rates and lack of historical information.
     Although not required at this time, the client should plan to have any corrosion pits in excess of .050" deep weld overlayed (puddle welded) during the next inspection. This action will keep the client form having to install patches sometime in the future. If considered, the client shall ensure the welding contractor has the proper documentation.

GENERAL NOTES

8) The client should insure that all mechanical and electrical equipment associated with this tank is checked periodically for proper function. In addition, visual inspections should be performed by trained plant personal on a regular basis. These checks should also be done on before the tank is returned to service.

9) The client should retain a copy of this report in their tank files for the life of the tank.

10) Thickness measurements taken during this inspection are essentially the same as taken during the last inspection. Any differences in measured thicknesses are attributed to the varying locations where the measurements taken and not due to an actual loss or gain in thickness.

CONCLUSION

The tank and its appurtenances were inspected and evaluated to the best of my abilities. I found no evidence or issues during my inspection and evaluation that would keep the client from returning the tank to service.

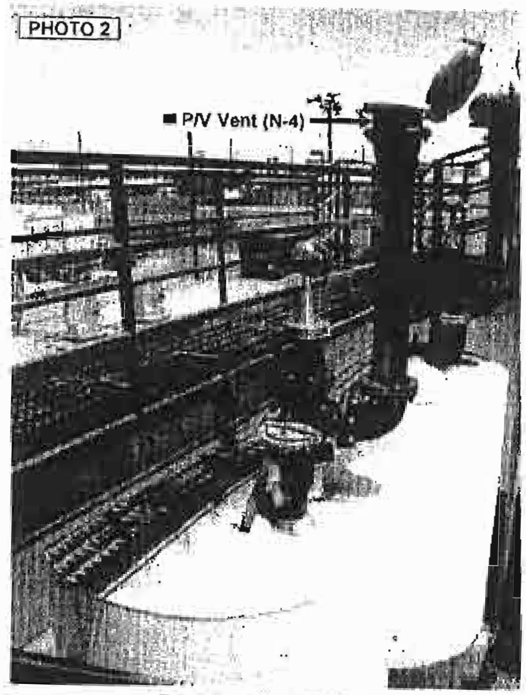
INSPECTED BY: [signature] John Morton

API 653 Cert. #0445
API 510 Cert. #32819
API 570 Cert. #30787
API 1ES Cert. #34018
AWS/CWI Cert. 99-[illegible]0101
ASNT Level II MT, PT & UT

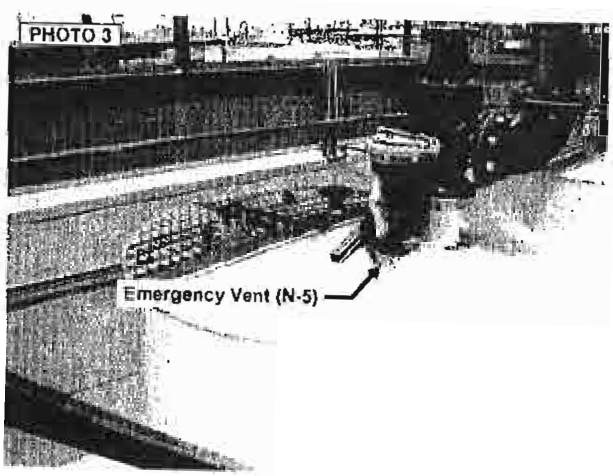
DATE: 07-15-09

Any recommendations made by the API Tank Inspector are to be used only as a guideline for making repairs, as required by the client. Neither Team Industrial Services nor their inspectors accept responsibility for the tank's integrity, even after these recommendations are followed. All of the data compiled within this tank report should be reviewed by an engineer experienced in the design, construction and repair of above ground storage tanks. Calculations, recommendations and evaluations contained within this report do not take into consideration the effects of additional loads imposed by wind, seismic activity or attached components. Corrosion rate and remaining life calculations are based on conditions caused by products previously stored inside the tank. Chemical, physical or mechanical changes to the tank and/or its contents may be cause for re-evaluation. Formulas contained in API 650 & 653 and good engineering judgment was used to determine the inspection frequency and next inspection dates. These dates and/or frequencies may differ from agencies other than API, in which case the more stringent should be followed.

TANK AS VIEWED FROM THE EAST



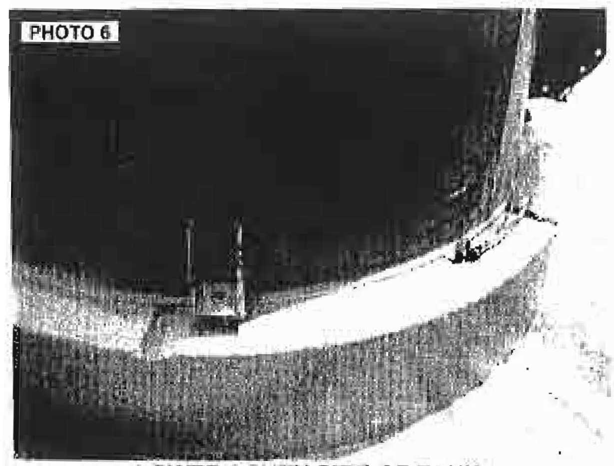
ROOF AND VENTS
AS VIEWED FROM THE SOUTHEAST



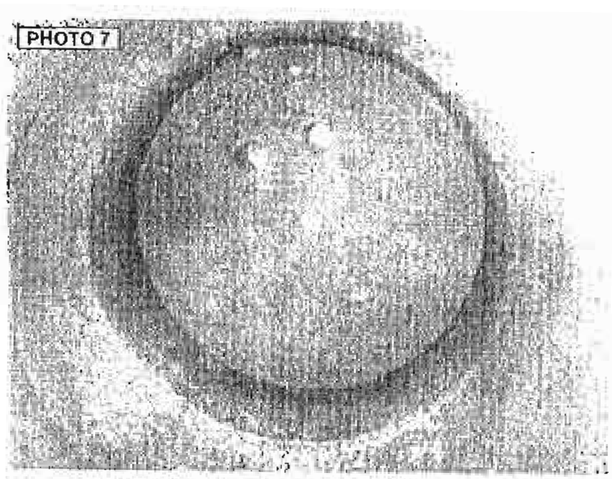
ROOF AS VIEWED FROM THE SOUTHEAST

LOWER EAST SIDE OF TANK

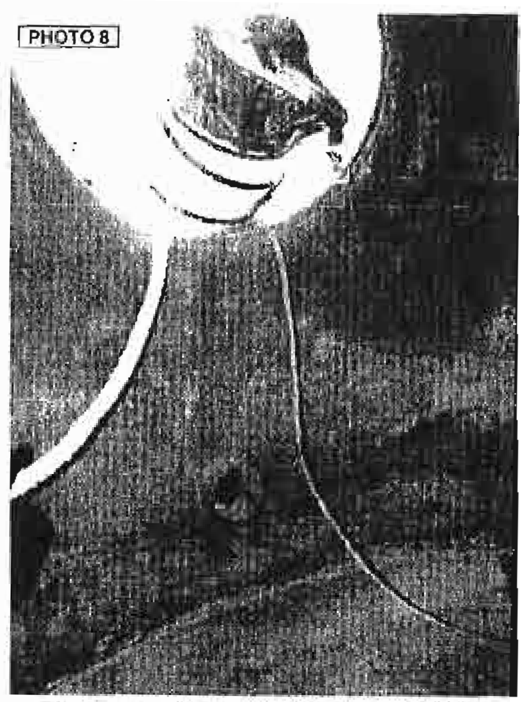
LOWER WEST SIDE OF TANK



LOWER SOUTH SIDE OF TANK;
VIEW SHOWING TYPICAL ANCHOR & GROUND WIRE



INTERIOR, ROOF



INTERIOR, LOWER EAST SIDE OF TANK

DATA EVALUATION & ANALYSIS

CORROSION RATE & REMAINING LIFE CALCULATIONS

Date		Time In Service			
Built	Current	Days	Weeks	Months	Years
7/15/1985	7/15/2009	8766 00	1248.00	288.00	24.00

☐ Date Built obtained from Records or Nameplate

☑ Date Built Estamated

Tank Bottom Corrosion

Area Affected	Date Built	Date Inspected	Years of Service	Beginning Thickness	Depth Corrosion	Remaining Wall	Corrosion Rate	Req'ed Thickness	Corrosion Allowance	Years to Retirement	Retirement Date
Internal	07/15/85	07/15/09	24.00	0 250	0.020	0.230	0.0008	0.100	0.130	156.000	7/16/2165
External	07/15/85	07/15/09	24.00	0.250	0.000	0 250	0.0000	0.100	0.150	N/A	N/A
Combined	07/15/85	07/15/09	24 00	0.250	0.020	0 230	0.0008	0.100	0.130	156.000	7/16/2165

Notes: 1) Calculated using formulas provided in the 2008 edition of API 653, para. 4.4.5.1

✓ Un-repaired Bottom ☐ Repaired Bottom

MTR = (Minimum of RT_{bc} or RT_{ip})-Or(StP_r+Up_r)

MTR	0.228	Minimum remaining thickness at the end of interval Or
O_r	2	In service interval; Max 10 yrs if unknown, 20 yrs if known
RT_{bc}	0.250	Minumum thickness from external corrosion after repairs
Rt_{ip}	0.230	Minumum thickness from internal corrosion after repairs
StP_r	0.0008	Maximum rate of un-repaired internal corrosion
Ut_r	0.0000	Maximum rate of external corrosion

Tank Shell Corrosion

Area Affected	Date Built	Date Inspected	Years of Service	Beginning Thickness	Depth Corrosion	Remaining Wall	Corrosion Rate	Req'ed Thickness	Corrosion Allowance	Years to Retirement	Retirement Date
Internal	07/15/85	07/15/09	24.00	0.250	0.055	0.195	0.0023	0.100	0.095	41.455	12/28/2050
External	07/15/85	07/15/09	24.00	0.250	0.000	0.250	0.0000	0.100	0.150	N/A	N/A
Combined	07/15/85	07/15/09	24.00	0.250	0.055	0.195	0.0023	0.100	0.095	41.455	12/28/2050

Notes: 1) The required thickness shall be the lesser of the current calculated thickness or .100"

Average Shell Thickness Determination of Corroded Areas

$L = 3.7\sqrt{Dt_2}$

D	t_2	t_2 Elev.	L	L / 5
6.00	0.195	4.00	4.00	0 80

Thickness Location	Distance form Top	Measured Thickness
1	2 40	0.197
2	3.20	0.199
3	4.00	0 195
4	4.80	0.230
5	5.60	0.240
Average t_1 →		0.212

L = Length in inches where hoop stress is assumed to average out around local discontinuities

D = Tank Diameter in feet

t_2 = Least Thickness in inches of Corroded Area

t_2 Elev. = Elevation or Distance from the top of the tank to the area of least thickness

t_1 = Average Thickness of five equily spaced thicness measurements

Notes: 1) Calculated using formules provided in the 2008 edition of API 653, para 4.3.2.1

2) t_2 & t_1 values shall be used in shell's required thickness calculetions on page F-2

UT Inspection Interval = Lesser of RCA/2N or 15 years
RCA/2N = 20 73

External Inspection Interval = Lesser of RCA/4N or 5 years
RCA/4N = 10.36

Conclusion:

Tank Bottom Corrosion Evaluation: Tank can be returned to service and used for two years before another internal inspection is required.

Tank Shell Corrosion Evaluation: Tank can be returned to service and used for two years before another external inspection is required.

DATA EVALUATION & ANALYSIS
REQUIRED THICKNESS DETERMINATION

Shell Design Method To Be Used **OFM**
Enter "VDP" for variable design point method
or "OFM" for one foot method.

Tank Diameter 6'
Specific Gravity 1.0

Table 1: Original Tank Data

Course Number	Height (In.)	Height (ft.)	T orig. (in.)	Material Spec.	Min. Yield*	Min. Tensile*	Allow. Stress		Joint Efficiency
							Product	Water	
1	50.00	04.167	3/16"	C.S.	30,000	55,000	23,600	26,000	0.70
2	48.00	04.000	3/16"	C.S.	30,000	55,000	23,600	26,000	0.70
3	48.00	04.000	3/16"	C.S.	30,000	55,000	26,000	27,000	0.70
Total	146.00	12.17							

* If shell material is known; Minimum yield, Minimum Tensile & Allowable Stress figures were obtained from API 653, table 4.1.
* If shell material is unknown; Minimum yield, Minimum Tensile & Allowable Stress figures derived by using the formulas in API 653. Welded tanks - para. 4.3.3 Riveted tanks - para. 4.3.4.

Table 2: Calculated Tank Data

Course Number	T_1 (Inch)	T_2 (Inch)	T_{min}		Calculated H. (ft.)	Shell Check Product		Shell check Water	
			Product	Water		T_1 Check	T_2 Check	T_1 Check	T_2 Check
1	0.245	0.243	.011	.010	11.17	Yes	Yes	Yes	Yes
2	0.245	0.244	.007	.006	7.00	Yes	Yes	Yes	Yes
3	0.212	0.195	.003	.002	3.00	Yes	Yes	Yes	Yes

Calculate:
New Fill Height For Product: No **New Fill Height For Water:** No
Calculate only if shell courses are not adequate due to minimum or average thickness' (T1 or T2) being less than thickness required (T req'd). See next page if answer is yes.

Notes:
Requirements for continued operations per API 653, Section 4.3.3 or 4.3.4:

1. T_{min} (or required thickness) = 2.6*H-1*D*G / S*E (use the greater of T_{min} in Table 2 or .100" thick)
2. No pitting shall be greater than one half the T_{min} or exceed 2" in 8" in a vertical direction.
3. The value of T_1 shall be greater than or equal to T_{min}.
4. The value of T_2 shall be greater than or equal to 60% of T_{min}.
5. The external Inspection interval shall not exceed five years, as per API 653, para. 4.3.3.2a.
6. Any corrosion allowance for service until the time of the next inspection shall be added to the $T_{min's}$ in items 3 & 4.

CONCLUSION
The evaluation shows that the tank can be safely filled to the top of the tank shell or 12' 2"

ULTRASONIC EXAMINATION - TECHNIQUE SHEET

Client Name: *Clean Harbors*	Jobsite: *Phoenix, AZ*
Job Description: *UT thickness Measurements*	
Project Number:	Job or Operation No.:
Drawing / Part No.: *Tank 102*	Serial or Item No.: *N/A*

Specification	Procedure:	Acceptance:
API 653 / ASME Sec. V Art. 5	*UT.ASME.3 Rev.1*	*API 650, 653 &/or ASME Sec. VIII*

SCOPE OF WORK PERFORMED

Thickness measurements were taken on portions of the; Roof, Shell & Tank Bottom

COMPONENT INFORMATION

Material: ☒ C.S. ☐ S.S. ☐ Al. ☐ Babbitt ☐ Other: Dimensions: *N/A* Thickness: *N/A*

Component Type: ☒ Plate ☐ Bar ☒ Pipe ☐ Tube ☐ Forging ☐ Extrusion ☐ Billet ☐ Other:

EXAMINATION TECHNIQUE

☒ Contact	☒ Pulse Echo	☒ Longitudinal	☐ Water Path:	*In.*
☐ Immersion	☐ Thru-Transmission	☐ Shear	☐ Delay Line:	*In.*

EQUIPMENT			CALIBRATION INFORMATION	
Scope Manufacturer: *Panametrics*			☒ Back Wall Technique	Ref. Signal Amp.: *100+%*
Model: *Epoch LT*	S/N: *070149004*		Calibration Standard Type: *Step Wedge*	
Transducer Manufacturer: *Panametrics*			Calibration Standard Material: *Carbon Steel*	
Model: *D-790*	S/N: *803018*		Reflector: ☐ FBH ☐ SDH ☐ Notch	
Freq.: *5MHz*	Size: *.375"*	Angle: *0°*	Reflector Size(s): *N/A*	
Transducer Manufacturer: *N/A*			Reflector Depth(s): *.100" to .500"*	
Model: *N/A*	S/N: *N/A*		DAC Settings: *N/A*	
Freq.: *N/A*	Size: *N/A*	Angle: *N/A*	Reference Level: *N/A*	Attenuation Correction: *N/A*
Couplant: *Cellulose Gell*	Batch No.: *N/A*		Scanning Gain: *N/A*	

EXAMINATION RESULTS

Remarks	Sketch / Drawing
Thickness measurements are shown on the tank drawings and discussed in the summary portion of the report.	

Inspector: [signature] John Morton ASNT UT Level: *II* Date: *07-15-09*

ULTRASONIC EXAMINATION - TECHNIQUE SHEET

Client Name: *Clean Harbors*	Jobsite: *Phoenix, AZ*
Job Description: *UT Corrosion Scans*	
Project Number:	Job or Operation No.:
Drawing / Part No.: *Tank 102*	Serial or Item No.: *N/A*

Specification:	Procedure:	Acceptance:
API 653 / ASME Sec. V Art. 5	*UT-ASME-1 Rev.1*	*API 650, 653 &/or ASME Sec. VIII*

SCOPE OF WORK PERFORMED

Ultrasonic (corrosion) scans were performed on random areas of the tank bottom, shell and roof.

COMPONENT INFORMATION

Material: ☒ C.S. ☐ S.S. ☐ Al. ☐ Babbitt ☐ Other: Dimensions: *N/A* Thickness: *N/A*

Component Type: ☒ Plate ☐ Bar ☐ Pipe ☐ Tube ☐ Forging ☐ Extrusion ☐ Billet ☐ Other:

EXAMINATION TECHNIQUE

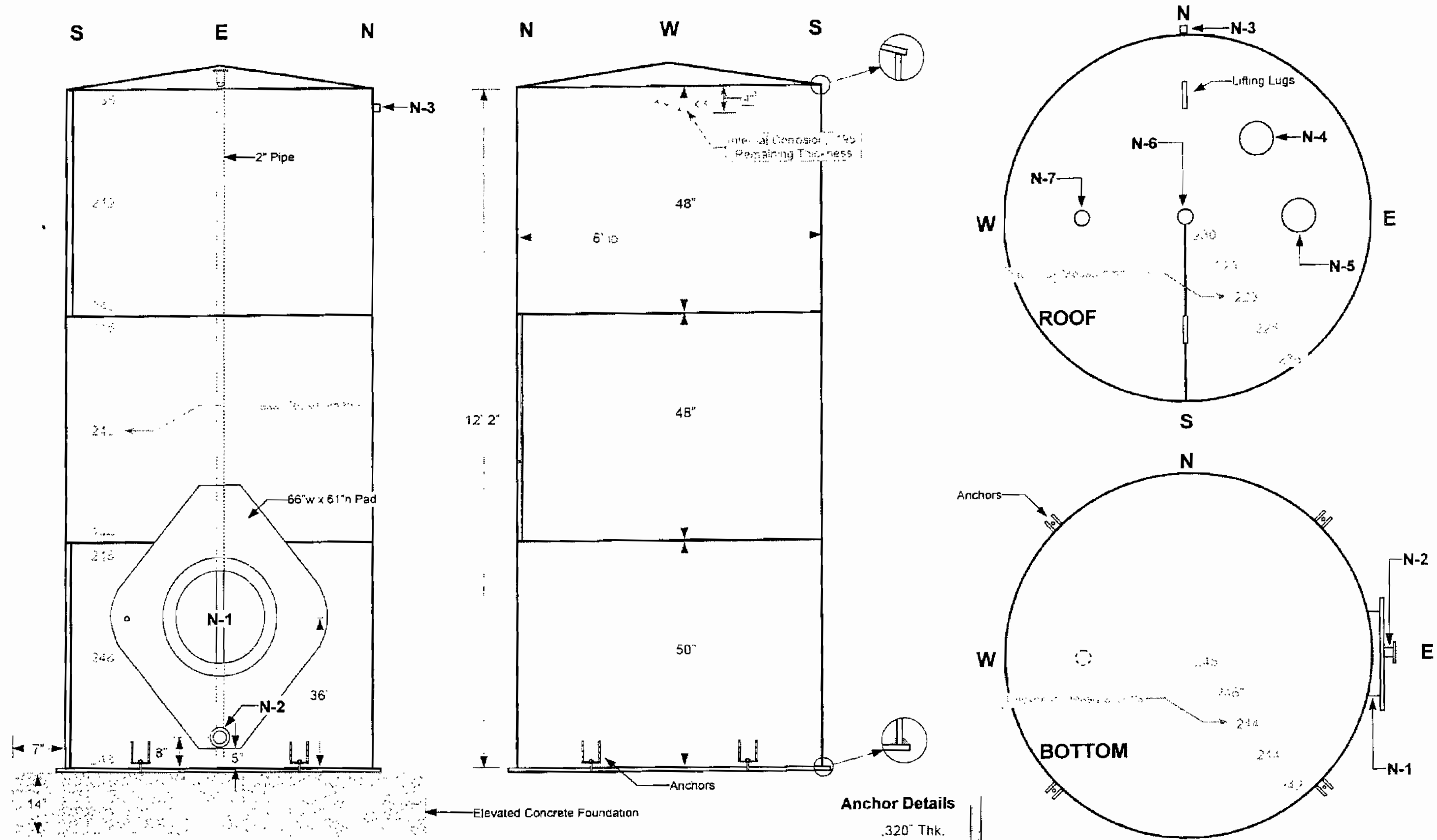
☒ Contact	☒ Pulse Echo	☒ Longitudinal	☐ Water Path: *in.*
☐ Immersion	☐ Thru-Transmission	☐ Shear	☐ Delay Line: *in.*

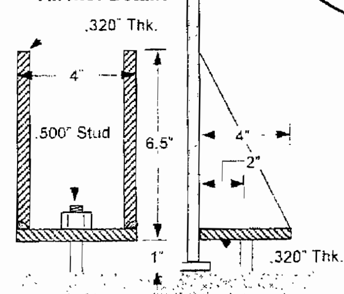
Equipment			Calibration Information	
Scope Manufacturer: *Panametrics*			☐ Back Wall Technique	Ref. Signal Amp.: *N/A*
Model: *Epoch LT*	S/N: *070149004*		Calibration Standard Type: *Step Wedge*	
Transducer Manufacturer: *Krautkramer*			Calibration Standard Material: *Carbon Steel*	
Model: *Gamma*	S/N: *009YWH*		Reflector: ☐ FBH ☐ SDH ☐ Notch	
Freq.: *5 MHz*	Size: *.5" x .5"*	Angle: *0°*	Reflector Size(s): *N/A*	
Transducer Manufacturer: *N/A*			Reflector Depth(s): *.100" to .500"*	
Model: *N/A*	S/N: *N/A*		DAC Settings: *N/A*	
Freq.: *N/A*	Size: *N/A*	Angle: *N/A*	Reference Level: *N/A*	Attenuation Correction: *N/A*
Couplant: *Cellulose Gell*	Batch No.: *N/A*		Scanning Gain: *N/A*	

EXAMINATION RESULTS

Remarks	Sketch / Drawing
Corrosion data is shown on the tank drawings and discussed in the summary portion of the report.	

Inspector: [signature] John Morton ASNT UT Level: *II* Date: *07-15-09*





Noz.	Size	Nozzle Description	Thickness Noz.	Thickness PAD
N-1	24"	Manway Nozzle	.238"	.250"
N-2	3"	Suction Line Nozzle	N/A	N/A
N-3	3/4"	Plugged Coupling	N/A	N/A
N-4	6"	8" Pres./Vac. Conservation Vent Nozzle	N/A	N/A

Noz.	Size	Nozzle Description	Thickness Noz.	Thickness PAD
N-5	6"	8" Emergency Pressure Relief	.226"	N/A
N-6	2"	Plugged Coupling	N/A	N/A
N-7	2"	Plugged Coupling	N/A	N/A

TEAM Industrial Services, Inc.

Client: Clean Harbors	Drawn By: J. Martin
Location: Phoenix, AZ	Date: 07-15-09
Tank Number or Identification: Tank 102	Page: D-1