

Chemical Resistance

The following information is provided as a general guide for the selection of piping systems subjected to various chemical substances. The recommendations stated are based on information provided by our raw material suppliers and is believed to be reliable. This information is based on one or more of the following: actual chemical immersion testing, chemical structure comparison to substances that have been tested, past field experience, and various other sources.

It is well known that both PVC and CPVC thermoplastic piping products are generally immune to most types of corrosion typically experienced with metallic underground piping systems. The effects of galvanic and electrochemical corrosion are non-existent since both of these materials are non-conductors.

When compared to other piping materials, both PVC and CPVC piping products also exhibit exceptional chemical resistance to a wide variety of corrosive reagents and mixtures found in the chemical processing industries. This fact has been well demonstrated for over 30 years in numerous chemical-processing applications. In general, both PVC and CPVC are inert to most mineral acids, bases, salts, and paraffinic hydrocarbons.

Factors such as percentage of chemical concentration, combinations of chemical substances, temperature, pressure, external system stress, and product quality can affect chemical resistance. Although extensive research has been conducted over the years to better define use parameters, the possible combinations of chemical mixtures and their resultant reaction when mixed are endless. Therefore the following chemical resistance data is by no means complete. The absence of a specific chemical or solution from the chemical resistance chart does not imply that Harvel products are not suitable for use with that substance. When test data on chemical resistance to particular chemicals under specific operating conditions is not available, Harvel Plastics, Inc. recommends that chemical immersion testing be performed, and if successful, a small test assembly be constructed to test the product under actual use conditions (appropriate care and safety precautions must be followed with all in-service testing).

DISCLAIMER OF LIABILITY

As the conditions or methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of this material. Information contained herein is believed to be true and accurate but all statements or suggestions are made without warranty, expressed or implied, regarding accuracy of the information, the hazards connected with the use of the material or the results to be obtained from the use thereof. Compliance with all applicable federal, state and local laws and regulations remains the responsibility of the user.

Caution Areas

- Chlorinated and aromatic hydrocarbons, esters, or ketones are not recommended for use with PVC or CPVC thermoplastic piping materials. Although the chemical resistance of PVC and CPVC compounds is similar, they are not always the same. Caution should be used when comparing the chemical resistance properties of PVC Type I, PVC Type 11, PVC Clear, and CPVC as differences in chemical resistance exist.
- When investigating the chemical compatibility of a piping system, it is important to note that the piping system components must also be investigated for compatibility. Gaskets, o-rings, valve seats, solvent cements, and other components should be evaluated for compatibility and approved by their respective manufacturers for use with the fluid medium prior to use.
- Caution should be exercised when selecting thread paste compounds, lubricants, cleaning and wetting agents (surfactants), and other chemical substances that come into contact with the system for compatibility as well.
- The majority of the chemical resistance data provided in the following charts is based on chemical immersion testing run under non-pressurized conditions. Depending on the hazards of the chemical used, an additional pressure de-rating factor is typically applied to the standard working pressure rating of the product (shown for water). Standard temperature de-rating factors must also be applied to pressure applications at elevated temperatures.
- Applications involving certain oils, surfactants, and greases may result in environmental stress cracking. Environmental stress cracking occurs when the piping and components are weakened by contact with these chemicals, and failures are propagated by external stress (i.e. pressure, expansion/contraction, installation, etc.) on the system.
- Certain substances called out on the following pages reference chemicals in a gaseous state. These substances are not recommended for pressure service. They are shown to provide the chemical resistance of PVC and CPVC when coming into contact with these substances. (i.e. exposure to or immersion in these substances). Harvel Plastics does not recommend the use of its PVC and CPVC products for the testing, transporting or storing of compressed air or gases.
- Harvel Clear™ maintains its physical properties when exposed to many substances. However, exposure to certain chemicals can affect the clarity of the product over time. Certain nitrogen-containing organics, bleaches, oxidative agents and acids will

NOTE The data furnished herein is based on information provided by manufacturers of the raw material and is believed to be reliable. This information may be considered as a basis for recommendation only, and not as a guarantee for its accuracy, suitability for particular applications, or the results to be obtained there from. Materials should be tested under actual service conditions to determine suitability for a particular purpose.

result in discoloration. When investigating Harvel Clear for potential use in chemical applications testing under actual use conditions is recommended.

Chemical attack to the plastic generally appears as a swelling whereby the incompatible substance is absorbed into the piping resulting in softening and eventual degradation of physical properties. The rate of decomposition is related to the concentration of the chemicals present and temperature/stress issues related to the operational parameters of the system.

Past experience has shown that in many cases both PVC and CPVC have been used successfully in contaminated water monitoring/recovery systems where very low levels (PPM/PPB range) of certain incompatible substances are present. In many instances the life expectancy of the system is adequate enough to provide a cost effective piping solution for contaminated ground water recovery projects. This is a complicated issue due to the variety of substances being extracted and their method of extraction. However, since most remediation projects involve low pressure/vacuum type applications for a limited recovery period, the use of PVC; CPVC can provide a viable piping solution for these types of applications.

Chemical Compatibility Awareness

PVC and CPVC piping continue to gain wide acceptance and use in many different industries and applications, particularly increased use in commercial plumbing applications. As a result of increased use in the commercial construction environment, plastic piping products are exposed more frequently to contact with ancillary products as well as exposure to other trades. Occasionally certain chemicals found in construction products and specific site preparations can cause damage to plastic piping systems.

PVC and CPVC pipe materials can be damaged by contact with chemicals found in some construction and ancillary products such as thread sealants, lubricants, anti-freeze solutions, fire stop materials, etc. It is important to verify the compatibility of materials that come in contact with the plastic system to ensure long-term performance.

ALWAYS CHECK with Harvel Plastics, Inc. if you have questions regarding chemical compatibility. If chemical compatibility with the plastic remains in question, it is recommended to isolate the suspect product from direct contact with the PVC and CPVC pipe or fittings.

Compatibility Concerns:

In general, CPVC piping products may be more susceptible to stress cracking agents that can be found in certain ancillary products. The following list has been generated to create awareness that the potential for damage exists. Please note that a chemical compatibility program exists where a list of acceptable and -unacceptable products is maintained. Please contact Harvel Plastics, Inc. Technical Services Department for the latest information.

Thread Sealants: Some thread paste sealants contain solvents or other chemical additives that can cause damage to PVC and CPVC. Only compatible thread sealants and tapes should be used.

Fire Stops Materials: Some fire stop sealants contain solvents or other chemical additives that can cause damage to PVC and CPVC. Only compatible fire stop materials should be used.

Anti-Freeze Solutions: DO NOT USE GLYCOL BASE ANTI-FREEZE SOLUTIONS. The use of improper anti-freeze solutions such as ethylene glycol, propylene glycol and/or contaminated glycerin solutions can cause stress cracking of PVC and CPVC resulting piping system failure. Anti-Freeze solutions of U.S.P. or C.P. grade GLYCERIN are acceptable for use with CPVC fire sprinkler products. Refer to appropriate NFPA Standards concerning Anti-Freeze Systems and the CPVC manufacturers installation instructions for additional information.

Soldering/Hot Work: Soldering of metallic components in close proximity to PVC and CPVC piping will cause damage to the plastic piping systems. Direct contact with heat (open flame), solder, and soldering flux is not recommended. These types of products should be isolated from direct contact with PVC and CPVC piping products. PVC and CPVC contact with solder flux can cause cracks, leaks and breaks in the piping system. Any PVC and CPVC pipe or fittings that have solder flux on them (as identified by staining or discoloration of the pipe and fittings) should be removed and replaced with new materials.

Flexible Wire: Direct contact with flexible wire and cable should be avoided as the insulation for the wire and cable can contain plasticizers that can cause PVC and CPVC piping systems to crack, leak or break. The finished installation should be inspected to verify that the plastic piping system is not being used to support wire or cable, and that runs of wire and cable have not been pulled over the installed PVC and CPVC system. Additionally, the PVC and CPVC piping systems should not be supported with electrical cable or flexible wiring, and all hanger support recommendations should be followed. Section 334.30 of the National Electric Code (2002 Edition) requires wire and cable to be secured by staples, cable ties, straps, or hangers. Air ducts, pipes and ceiling grid are not acceptable supports for wire and cable.

Steel Pipe Transitions: Transitions from steel pipe to PVC and CPVC pipe can be made through a variety of methods such as threaded, flanged, and grooved transition components. Occasionally steel pipe may contain residual oils that were used to aid in the metal cutting process. Some of the oils used for this purpose may be incompatible with PVC and CPVC. Cutting oils should be removed from steel pipe prior to connecting to PVC and CPVC pipe by fully cleaning the inside and outside of the pipe before it is assembled in the piping system. Care should be taken when selecting cleaning agents to avoid further contamination of the pipe with incompatible detergents. If cutting oil is used, consult with the manufacturer of the cutting oil for a specific recommendation as to compatibility with PVC and CPVC.

Paint: Oil or solvent-based paints may be chemically incompatible with PVC and CPVC. Water-based acrylic or latex paint is the preferred paint to use on PVC and CPVC pipe and fittings. The installation contractor must take responsibility for obtaining approval from the Authority Having Jurisdiction to cover the markings on the product (i.e. product identification, listing marks, etc.) and to change color of the pipe and fittings from its identifiable color prior to use.

Cooking Oils and Grease: When CPVC pipe is installed in kitchen areas the pipe must be protected from contact with grease or cooking oils. Certain cooking oils can cause the CPVC piping to crack, leak or break when applied to the piping system. Consideration must be given to not only protecting the pipe from direct contact with cooking oils and/or grease, but also contact that may occur from airborne grease or oil from the environment such as cooking. Exposed piping in areas where CPVC pipe might come in contact with cooking oils and grease should be protected using a soffit system or with a complete coating of high quality water based paint that fully protects the piping system.

Rubber and Flexible Materials: CPVC is typically not compatible with rubber and flexible plastic materials as these materials often contain certain types of plasticizers which when placed in contact with CPVC can cause the piping system to crack, leak or break. (Incompatible plasticizers include, but are not limited to, phthalates, adipates, trimellitates, dibenzoates, etc.) Incompatible rubber and flexible plastic materials can be found in hoses and tank linings and in the fluids that come in contact with them.

Spray On Coatings: Certain types of spray-on coatings that form a peelable film to protect fixtures during construction may be incompatible with CPVC. Care should be used to protect exposed piping from over-spray when this type of protective coating is applied.

Termiticides and Insecticides: When performing installations underslab or where the presence of insecticides or termiticides is likely, care should be taken to isolate PVC and CPVC pipe from direct contact with large quantities of these chemicals. PVC and CPVC can be damaged when termiticides or insecticides are injected into the annular space between the pipe wall and sleeving material trapping the termiticide against the pipe wall. Termiticide applications per label instructions in an open-air environment, such as slab pretreat applications, should not pose a problem. However, puddling of termiticides on or near PVC and CPVC pipe may cause failures. In areas where puddling is more likely, such as areas near tub boxes and retreat applications, extra care should be taken to avoid puddling of termiticides. Before using an insecticide or termiticide, be sure to consult the manufacturer's installation guide for proper application instructions. A list of compatible insecticides or termiticides is available. Additional precautions need to be taken when retreat applications are required. Termiticide retreatment is usually required when the concrete slab has been broken to relocate a pipe. The following recommendations should be followed in retreat applications:

- Remove all the plastic barrier material that was installed prior to the initial concrete pour from the area to be retreated. Do not reinstall the plastic barrier material.
- After the pipe has been relocated, the soil should be pretreated before it is placed in the hole around the pipe. Do not apply termiticide directly to the retreat area.

In situations where sleeving is required, the pipe should be protected with a compatible sleeving material extending at least 12" above and below the soil. The top of the sleeving should be securely taped to the pipe with a compatible tape product. Backfill over underground piping prior to termiticide spraying.

Mold Abatement and Fungicides: Building restoration projects used to repair water damage often include the use of mold abating products such as fungicides. These products can damage PVC and CPVC piping systems and can cause cracks, leaks, or breaks in the system. When performing repairs or modifications care should be taken to isolate the plastic piping system from direct contact with fungicide products. When repairs are made to an existing system, and the possibility exists that fungicides will be applied to treat damp drywall and wood framing surrounding the repair site, exposed piping should be sleeved with a compatible plastic sleeving or pipe insulation material to prevent direct contact of the fungicide with the plastic piping system.



R = Recommended NR = Not Recommended A = Case by case approval, contact Harvel
 C = Caution, actual testing suggested; suspect @ certain stress levels ? = Incomplete Data; actual testing required

CHEMICAL REAGENT	PVCType I 1120 (12454)		PVC Clear 2110 (12454)		CPVC Type IV, Grade I 4120 (23447)		
	73°F	140°F	73°F	140°F	73°F	140°F	180°F
	Acetaldehyde	NR	NR	NR	NR	NR	NR
Acetamide	NR	NR	NR	NR	NR	NR	NR
Acetic Acid, 10%	R	R	R	R	R	R	R
Acetic Acid, 20%	R	R	R	NR	NR	NR	NR
Acetic Acid, Glacial	R	NR	NR	NR	NR	NR	NR
Acetic Acid, pure	NR	NR	NR	NR	NR	NR	NR
Acetic Anhydride	NR	NR	NR	NR	NR	NR	NR
Acetone, < 5%	?	?	NR	NR	R	R	R
Acetone, > 5%	NR	NR	NR	NR	NR	NR	NR
Acetyl Nitrile	NR	NR	NR	NR	NR	NR	NR
Acetylene	R	R	R	R	C	C	C
Acrylic Acid	NR	NR	NR	NR	NR	NR	NR
Adipic Acid; sat. in water	R	R	R	R	R	R	R
Allyl Alcohol, 96%	R	NR	NR	NR	C	C	C
Allyl Chloride	NR	NR	NR	NR	NR	NR	NR
Alum, all varieties	R	R	R	R	R	R	R
Aluminum Acetate	R	R	R	R	R	R	R
Aluminum Alum	R	R	R	R	R	R	R
Aluminum Chloride	R	R	R	R	R	R	R
Aluminum Fluoride	R	R	R	R	R	R	R
Aluminum Hydroxide	R	R	R	R	R	R	R
Aluminum Nitrate	R	R	R	R	R	R	R
Aluminum Oxylchloride	R	R	R	R	?	?	?
Aluminum Sulfate	R	R	R	R	R	R	R
Amines	NR	NR	NR	NR	NR	NR	NR
Ammonia (gas;dry)	R	R	R	R	NR	NR	NR
Ammonia (liquid)	NR	NR	NR	NR	NR	NR	NR
Ammonium Acetate	R	R	R	R	R	R	R
Ammonium Alum	R	R	R	R	R	R	R
Ammonium Bisulfate	R	R	?	?	R	R	R
Ammonium Carbonate	R	R	R	R	R	R	R
Ammonium Chloride	R	R	R	R	R	R	R
Ammonium Dichromate	R	?	?	?	R	R	R
Ammonium Fluoride, < 25%	R	NR	NR	NR	R	R	R
Ammonium Fluoride, > 25%	?	NR	NR	NR	R	R	R
Ammonium Hydroxide	R	R	R	R	NR	NR	NR
Ammonium Metaphosphate	R	R	R	R	R	R	R
Ammonium Nitrate	R	R	R	R	R	R	R
Ammonium Persulfate	R	R	R	R	R	?	?
Ammonium Phosphate	R	R	R	R	R	R	C
Ammonium Sulfate	R	R	R	R	R	R	R
Ammonium Sulfide	R	R	R	R	R	R	R

CHEMICAL REAGENT	PVCType I 1120 (12454)		PVC Clear 2110 (12454)		CPVC Type IV, Grade I 4120 (23447)		
	73°F	140°F	73°F	140°F	73°F	140°F	180°F
	Ammonium Tartrate	R	R	R	R	R	R
Ammonium Thiocyanate	R	R	R	R	R	R	R
Amyl Acetate	NR	NR	NR	NR	NR	NR	NR
Amyl Alcohol	R	NR	NR	NR	C	C	NR
Amyl Chloride	NR	NR	NR	NR	NR	NR	NR
Aniline	NR	NR	NR	NR	NR	NR	NR
Aniline Chlorohydrate	NR	NR	NR	NR	NR	NR	NR
Aniline Hydrochloride	NR	NR	NR	NR	NR	NR	NR
Anthraquinone	?	?	?	?	?	?	?
Anthraquinone Sulfonic Acid	R	R	R	R	?	?	?
Antimony Trichloride	R	R	R	R	R	R	R
Aqua Regia	NR	NR	NR	NR	R	NR	NR
Aromatic Hydrocarbons	NR	NR	NR	NR	NR	NR	NR
Arsenic Acid, 80%	R	R	R	R	R	R	R
Arsenic Trioxide (powder)	R	?	?	?	R	NR	NR
Arylsulfonic Acid	R	R	R	NR	?	?	?
Barium Carbonate	R	R	R	R	R	R	R
Barium Chloride	R	R	R	R	R	R	R
Barium Hydroxide, 10%	R	R	R	R	R	R	R
Barium Nitrate	R	?	?	?	R	R	R
Barium Sulfate	R	R	R	R	R	R	R
Barium Sulfide	R	R	R	R	R	R	R
Beer	R	R	R	R	R	R	R
Beet Sugar Liquors	R	R	R	R	R	R	R
Benzaldehyde; ≤ 10%	R	NR	NR	NR	NR	NR	NR
Benzaldehyde; > 10%	NR	NR	NR	NR	NR	NR	NR
Benzalkonium Chloride	R	?	?	?	NR	NR	NR
Benzene	NR	NR	NR	NR	NR	NR	NR
Benzoic Acid	R	R	R	R	R	C	NR
Benzyl Alcohol	NR	NR	NR	NR	NR	NR	NR
Benzyl Chloride	NR	NR	NR	NR	NR	NR	NR
Bismuth Carbonate	R	R	R	R	R	R	R
Black Liquor	R	R	R	R	R	R	R
Bleach (15% CL)	R	R	R	R	R	R	R
Borax	R	R	R	R	R	R	R
Boric Acid	R	R	R	R	R	R	R
Brine (acid)	R	?	?	?	R	R	R
Bromic Acid	R	R	R	R	R	R	R
Bromine Liquid	NR	NR	NR	NR	NR	NR	NR
Bromine Vapor, 25%	R	R	R	R	NR	NR	NR
Bromine Water	R	R	NR	NR	?	?	?
Bromobenzene	NR	NR	NR	NR	NR	NR	NR
Bromotoluene	NR	NR	NR	NR	NR	NR	NR
Butadiene	R	R	NR	NR	C	C	C
Butane	R	R	NR	NR	C	C	C

Chemical Resistance Data



R = Recommended NR = Not Recommended A = Case by case approval, contact Harvel

C = Caution, actual testing suggested; suspect @ certain stress levels ? = Incomplete Data; actual testing required

CHEMICAL REAGENT	PVCType I 1120 (12454)		PVC Clear 2110 (12454)		CPVC Type IV, Grade I 4120 (23447)		
	73°F	140°F	73°F	140°F	73°F	140°F	180°F
	Butanol, primary	R	R	NR	NR	C	C
Butanol, secondary	R	NR	NR	NR	C	C	C
Butyl Acetate	R	NR	NR	NR	NR	NR	NR
Butyl Carbitol	?	?	?	?	NR	NR	NR
Butyl Mercaptan	NR	NR	NR	NR	NR	NR	NR
Butyl Phenol	R	NR	R	NR	NR	NR	NR
Butyl Stearate	R	?	?	?	NR	NR	NR
ButylCellosolve	R	?	?	?	NR	NR	NR
Butyne Diol	R	?	?	?	?	?	?
Butyric Acid, < 1%	R	NR	NR	NR	R	R	R
Butyric Acid, > 1%	R	NR	NR	NR	NR	NR	NR
Cadmium Acetate	R	R	?	?	R	R	R
Cadmium Chloride	R	R	?	?	R	R	R
Cadmium Cyanide	R	R	R	R	R	R	R
Cadmium Sulfate	?	?	?	?	R	R	R
Caffeine Citrate	R	?	?	?	R	R	R
Calcium Acetate	R	R	R	R	R	R	R
Calcium Bisulfide	R	R	R	R	R	R	R
Calcium Bisulfite	R	R	R	R	R	R	R
Calcium Bisulfite Bleach Liquor	R	?	?	?	R	R	R
Calcium Carbonate	R	R	R	R	R	R	R
Calcium Chlorate	R	R	?	?	R	R	R
Calcium Chloride	R	R	R	R	R	R	R
Calcium Hydroxide	R	R	R	R	R	R	R
Calcium Hypochlorite	R	R	R	R	R	R	R
Calcium Nitrate	R	R	R	R	R	R	R
Calcium Oxide	R	R	?	?	R	R	R
Calcium Sulfate	R	R	R	R	R	R	R
Camphor (crystals)	R	?	?	?	NR	NR	NR
Cane Sugar Liquors	R	R	R	R	R	R	R
Caprolactam	?	?	?	?	NR	NR	NR
Caprolactone	?	?	?	?	NR	NR	NR
Carbitol	R	?	?	?	NR	NR	NR
Carbon Dioxide	R	R	R	R	R	R	R
Carbon Dioxide (aqueous solution)	R	R	?	?	R	R	R
Carbon Disulfide	NR	NR	NR	NR	NR	NR	NR
Carbon Monoxide	R	R	R	R	R	R	R
Carbon Tetrachloride	R	NR	NR	NR	NR	NR	NR
Carbonic Acid	R	R	R	R	R	R	R
Carene 500	R	?	NR	NR	?	?	?
Castor oil	R	R	R	R	NR	NR	NR
Caustic Potash	R	R	R	R	A	A	A
Caustic Soda	R	R	R	R	A	A	A
Cellosolve	R	NR	R	NR	NR	NR	NR
Cellosolve Acetate	R	?	R	?	NR	NR	NR
Chloral Hydrate	R	R	R	R	NR	NR	NR
Chloramine	R	?	?	?	R	R	R

CHEMICAL REAGENT	PVCType I 1120 (12454)		PVC Clear 2110 (12454)		CPVC Type IV, Grade I 4120 (23447)		
	73°F	140°F	73°F	140°F	73°F	140°F	180°F
	Chloric Acid, up to 20%	R	R	R	R	R	R
Chloride Water	R	R	R	R	R	R	R
Chlorinated Solvents	NR	NR	NR	NR	NR	NR	NR
Chlorinated Water (Hypochlorite)	R	R	R	R	R	R	R
Chlorine (dry liquid)	NR	NR	NR	NR	NR	NR	NR
Chlorine (liquid under pressure)	NR	NR	NR	NR	NR	NR	NR
Chlorine Dioxide, aqueous (sat'd 0.1%)	?	?	?	?	R	?	?
Chlorine Gas (dry)	NR	NR	NR	NR	NR	NR	NR
Chlorine Gas (wet)	NR	NR	NR	NR	A	A	A
Chlorine Water (sat'd 0.3%)	R	R	R	R	R	R	R
Chlorine(trace in air)	R	?	R	?	R	R	R
Chloroacetic Acid	R	R	R	NR	NR	NR	NR
Chloroacetyl Chloride	R	?	R	?	NR	NR	NR
Chlorobenzene	NR	NR	NR	NR	NR	NR	NR
Chloroform	NR	NR	NR	NR	NR	NR	NR
Chloropicrin	NR	NR	NR	NR	NR	NR	NR
Chlorosulfonic Acid	R	NR	R	NR	NR	NR	NR
Chlorox Bleach Solution	R	?	?	?	C	C	C
Chrome Alum	R	R	R	R	R	R	R
Chromic Acid, 10%	R	R	R	R	R	R	R
Chromic Acid, 40%	?	?	?	?	R	R	R
Chromic Acid, 50%	NR	NR	NR	NR	?	?	?
Chromic Acid/Sulfuric Acid/water-50%/15%/35%	R	NR	?	?	?	?	?
Chromic/Nitric Acid (15%/35%)	R	R	?	?	R	C	NR
Chromium Nitrate	R	?	?	?	R	R	R
Citric Acid	R	R	R	R	R	R	R
Citrus Oils	?	?	?	?	NR	NR	NR
Coconut Oil	R	R	?	?	NR	NR	NR
Copper Acetate	R	R	R	R	R	R	R
Copper Carbonate	R	R	R	R	R	R	R
Copper Chloride	R	R	R	R	R	R	R
Copper Cyanide	R	R	R	R	R	R	R
Copper Fluoride	R	R	R	R	R	R	R
Copper Nitrate	R	R	R	R	R	R	R
Copper Sulfate	R	R	R	R	R	R	R
Corn Oil	R	?	R	?	NR	NR	NR
Corn Syrup	R	R	R	R	R	R	R
Cottonseed Oil	R	R	R	R	NR	NR	NR
Creosote	NR	NR	NR	NR	NR	NR	NR



R = Recommended NR = Not Recommended A = Case by case approval, contact Harvel
 C = Caution, actual testing suggested; suspect @ certain stress levels ? = Incomplete Data; actual testing required

CHEMICAL REAGENT	PVCType I 1120 (12454)		PVC Clear 2110 (12454)		CPVC TypeIV, Grade I 4120 (23447)		
	73°F	140°F	73°F	140°F	73°F	140°F	180°F
	Cresylic Acid,50%	R	R	R	NR	NR	NR
Crotonaldehyde	NR	NR	NR	NR	NR	NR	NR
Crude Oil	R	R	R	NR	NR	NR	NR
Cumene	?	?	?	?	NR	NR	NR
Cupric Fluoride	R	R	R	R	R	R	R
Cupric Sulfate	R	R	R	R	R	R	R
Cuprous Chloride	R	R	R	R	R	R	R
Cyclanones	R	R	?	?	?	?	?
Cyclohexane	NR	NR	NR	NR	NR	NR	NR
Cyclohexanol	NR	NR	NR	NR	NR	NR	NR
Cyclohexanone	NR	NR	NR	NR	NR	NR	NR
D.D.T. (Xylene Base)	NR	NR	NR	NR	NR	NR	NR
Desocyphephrine Hydrochloride	R	?	R	?	?	?	?
Detergents	R	R	R	R	C	C	C
Dextrin	R	R	R	R	R	R	R
Dextrose	R	R	R	R	R	R	R
Diacetone Alcohol	R	?	?	?	C	?	?
Diazo Salts	R	R	R	R	?	?	?
Dibutoxy Ethyl Phthalate	NR	NR	NR	NR	NR	NR	NR
Dibutyl Phthalate	NR	NR	NR	NR	NR	NR	NR
Dibutyl Sebacate	R	NR	?	?	NR	NR	NR
Dichlorobenzene	NR	NR	NR	NR	NR	NR	NR
Dichloroethylene	NR	NR	NR	NR	NR	NR	NR
Diesel Fuels	R	R	R	R	NR	NR	NR
Diethyl Ether	R	?	R	?	NR	NR	NR
Diethylamine	NR	NR	NR	NR	NR	NR	NR
Diglycolic Acid	R	R	R	R	NR	NR	NR
Dill Oil	?	?	?	?	NR	NR	NR
Dimethyl Hydrazine	NR	NR	NR	NR	NR	NR	NR
Dimethylamine	R	R	NR	NR	NR	NR	NR
Dimethylformamide	NR	NR	NR	NR	NR	NR	NR
Dioctylphthalate	NR	NR	NR	NR	NR	NR	NR
Dioxane (1, 4)	NR	NR	NR	NR	NR	NR	NR
Disodium Phosphate	R	R	R	R	R	R	R
Distilled Water	R	R	R	R	R	R	R
EDTA, Tetrasodium	?	?	?	?	R	R	R
Ethyl Ester (ethyl acrylate)	NR	NR	NR	NR	NR	NR	NR
Epsom Salt	R	?	R	?	R	R	R
Esters	NR	NR	NR	NR	NR	NR	NR
Ethanol, > 5%	R	R	R	NR	C	C	C
Ethanol, up to 5%	R	R	R	NR	R	R	R
Ethers	NR	NR	NR	NR	NR	NR	NR
Ethyl Acetate	NR	NR	NR	NR	NR	NR	NR
Ethyl Acrylate	NR	NR	NR	NR	NR	NR	NR
Ethyl Alcohol	R	R	R	NR	C	C	C
Ethyl Chloride	NR	NR	NR	NR	NR	NR	NR
Ethyl Chloroacetate	NR	NR	NR	NR	NR	NR	NR
Ethyl Ether	NR	NR	NR	NR	NR	NR	NR
Ethylene Bromide	NR	NR	NR	NR	NR	NR	NR

CHEMICAL REAGENT	PVCType I 1120 (12454)		PVC Clear 2110 (12454)		CPVC TypeIV, Grade I 4120 (23447)		
	73°F	140°F	73°F	140°F	73°F	140°F	180°F
	Ethylene Chlorohydrin	NR	NR	NR	NR	NR	NR
Ethylene Diamine	NR	NR	NR	NR	NR	NR	NR
Ethylene Dichloride	NR	NR	NR	NR	NR	NR	NR
Ethylene Glycol	R	R	R	R	C	C	C
Ethylene Oxide	NR	NR	NR	NR	NR	NR	NR
Fatty Acids	R	R	R	R	C	C	C
Ferric Acetate	R	NR	?	?	R	R	R
Ferric Chloride	R	R	R	R	R	R	R
Ferric Hydroxide	R	R	R	R	R	R	R
Ferric Nitrate	R	R	R	R	R	R	R
Ferric Sulfate	R	R	R	R	R	R	R
Ferrous Chloride	R	R	R	R	R	R	R
Ferrous Hydroxide	R	?	R	?	R	R	R
Ferrous Nitrate	R	?	R	?	R	R	R
Ferrous Sulfate	R	R	R	R	R	R	R
Fish Solubles	R	R	R	R	?	?	?
Fluorine Gas	R	NR	NR	NR	NR	NR	NR
Fluorine Gas (wet)	R	NR	R	NR	NR	NR	NR
Fluoroboric Acid	R	R	R	R	?	?	?
Fluorosilicic Acid, 25%	R	R	R	R	R	C	C
Formaldehyde	R	R	NR	NR	NR	NR	NR
Formic Acid, < 25%	R	NR	R	NR	R	R	R
Formic Acid, > 25%	?	?	?	?	C	?	NR
Freon 11	R	R	NR	NR	NR	NR	NR
Freon 113	R	?	R	?	NR	NR	NR
Freon 114	R	?	R	?	NR	NR	NR
Freon 12	R	R	R	R	NR	NR	NR
Freon 21	NR	NR	NR	NR	NR	NR	NR
Freon 22	NR	NR	NR	NR	NR	NR	NR
Fructose	R	R	R	R	R	R	R
Fruit juices & pulp	R	R	R	R	R	R	R
Furfural	NR	NR	NR	NR	NR	NR	NR
Gallic Acid	R	R	R	R	?	?	?
Gas (Coke Oven)	NR	NR	NR	NR	?	?	?
Gasoline	NR	NR	NR	NR	NR	NR	NR
Gasoline, HighOctane	NR	NR	NR	NR	NR	NR	NR
Gasoline, Jet Fuel	NR	NR	NR	NR	NR	NR	NR
Glucose	R	R	R	R	R	R	R
Glycerine	R	R	R	R	R	R	R
Glycol	R	R	R	R	C	C	C
Glycol Ethers	?	?	?	?	NR	NR	NR
Glycolic Acid	R	R	R	R	?	?	?
Grape Sugar	R	R	R	R	R	R	R
Green Liquor	R	R	?	?	R	R	R
Halocarbon Oils	?	?	?	?	NR	NR	NR
Heptane	R	R	R	NR	C	?	?
Hercolyn	R	?	?	?	?	?	?
Hexane	R	NR	NR	NR	C	C	C
Hexanol, Tertiary	R	R	R	NR	C	C	C

Chemical Resistance Data



R = Recommended NR = Not Recommended A = Case by case approval, contact Harvel

C = Caution, actual testing suggested; suspect @ certain stress levels ? = Incomplete Data; actual testing required

CHEMICAL REAGENT	PVCType I 1120 (12454)		PVC Clear 2110 (12454)		CPVC Type IV, Grade I 4120 (23447)		
	73°F	140°F	73°F	140°F	73°F	140°F	180°F
	Hydrazine	NR	NR	NR	NR	NR	NR
Hydrobromic Acid, 20%	R	R	R	R	?	?	?
Hydrochloric Acid, 10%	R	R	R	R	R	R	R
Hydrochloric Acid, 30%	R	R	R	R	R	R	R
Hydrochloric Acid, 36%	R	R	R	R	R	R	C
Hydrochloric Acid, Concentrated	R	R	R	NR	?	?	?
Hydrochloric Acid, pickling	R	R	R	R	R	R	R
Hydrocyanic Acid	R	R	R	R	?	?	?
Hydrofluoric Acid, ≤3%	R	R	R	R	R	?	?
Hydrofluoric Acid, 48%	R	NR	R	NR	NR	NR	NR
Hydrofluoric Acid, 50%	R	NR	NR	NR	NR	NR	NR
Hydrofluoric Acid, 70%	NR	NR	NR	NR	NR	NR	NR
Hydrofluorsilicic Acid, 30%	R	R	R	R	R	?	C
Hydrogen	R	R	R	R	C	C	C
Hydrogen Peroxide, 30%	R	R	R	R	R	?	?
Hydrogen Peroxide, 90%	R	R	R	R	?	?	?
Hydrogen Phosphide	R	R	NR	NR	?	?	?
Hydrogen Sulfide	R	R	R	R	R	R	R
Hydroquinone	R	R	R	R	R	R	R
Hydroxylamine Sulfate	R	R	R	R	?	?	?
Hypochlorite (Potassium & Sodium)	R	?	R	?	R	R	R
Hypochlorous Acid	R	R	R	R	C	C	C
Iodine	NR	NR	NR	NR	R	R	R
Iodine Solution, 10%	NR	NR	NR	NR	?	?	?
Isopropanol	?	?	?	?	C	C	C
Kerosene	R	R	R	R	C	C	C
Ketones	NR	NR	NR	NR	NR	NR	NR
Kraft Liquors	R	R	R	R	R	R	R
Lactic Acid, 25%	R	R	R	R	R	R	R
Lactic Acid, 80%	R	?	?	?	R	C	C
Lard Oil	R	R	R	R	C	C	C
Lauric Acid	R	R	R	R	C	C	C
Lauryl Chloride	R	?	R	NR	NR	NR	NR
Lead Acetate	R	R	R	R	R	R	R
Lead Chloride	R	R	R	R	R	R	R
Lead Nitrate	R	R	R	R	R	R	R
Lead Sulfate	R	R	R	R	R	R	R
Lemon Oil	?	?	?	?	NR	NR	NR

CHEMICAL REAGENT	PVCType I 1120 (12454)		PVC Clear 2110 (12454)		CPVC Type IV, Grade I 4120 (23447)		
	73°F	140°F	73°F	140°F	73°F	140°F	180°F
	Limonene	?	?	?	?	NR	NR
Linoleic Acid	R	R	R	R	C	C	C
Linoleic Oil	R	R	R	NR	C	C	C
Linseed Oil	R	R	R	R	NR	NR	NR
Liquors	R	R	?	?	?	?	?
Lithium Bromide	R	R	R	R	R	R	R
Lithium Sulfate	R	R	R	R	R	R	R
Lubricating Oils, ASTM#1	R	R	R	R	?	?	?
Lubricating Oils, ASTM#2	R	R	R	R	?	?	?
Lubricating Oils, ASTM#3	R	R	R	NR	?	?	?
Lux Liquid	R	NR	R	NR	?	?	?
Machine Oil	R	R	R	R	C	C	C
Magnesium Carbonate	R	R	R	R	R	R	R
Magnesium Chloride	R	R	R	R	R	R	R
Magnesium Citrate	R	R	?	?	R	R	R
Magnesium Fluoride	R	R	R	R	R	R	R
Magnesium Hydroxide	R	R	R	R	R	R	R
Magnesium Nitrate	R	R	R	R	R	R	R
Magnesium Oxide	R	R	R	R	R	R	R
Magnesium Salts	R	R	R	R	R	R	R
Magnesium Sulfate	R	R	R	R	R	R	R
Maleic Acid, 50%	R	R	R	R	R	R	R
Manganese Chloride	R	R	R	R	R	R	R
Manganese Sulfate	R	R	R	R	R	R	R
Mercural Ointment, Blue 5%	R	?	R	?	?	?	?
Mercuric Chloride	R	R	R	R	R	R	R
Mercuric Cyanide	R	R	R	R	R	R	R
Mercuric Sulfate	R	R	R	R	R	R	R
Mercurous Nitrate	R	R	R	R	R	R	R
Mercury	R	R	R	R	R	R	R
Mercury Ointment, Ammoniated	R	?	R	?	?	?	?
Methanol, <10%	R	R	R	R	R	R	R
Methanol, >10%	R	R	R	R	NR	NR	NR
Methoxyethyl Oleate	R	?	R	?	NR	NR	NR
Methyl Cellosolve	NR	NR	NR	NR	NR	NR	NR
Methyl Chloride	NR	NR	NR	NR	NR	NR	NR
Methyl Ethyl Ketone	NR	NR	NR	NR	NR	NR	NR
Methyl Formate	?	?	?	?	NR	NR	NR
Methyl Iso-Butyl Ketone	NR	NR	NR	NR	NR	NR	NR
Methyl Methacrylate	R	?	R	?	NR	NR	NR
Methyl Salicylate	R	?	R	?	NR	NR	NR
Methyl Sulfate	R	NR	R	NR	?	?	?
Methyl Sulfuric Acid	R	R	R	R	?	?	?
Methylamine	NR	NR	NR	NR	NR	NR	NR
Methylene Bromide	NR	NR	NR	NR	NR	NR	NR



R = Recommended NR = Not Recommended A = Case by case approval, contact Harvel
 C = Caution, actual testing suggested; suspect @ certain stress levels ? = Incomplete Data; actual testing required

CHEMICAL REAGENT	PVCType I 1120 (12454)		PVC Clear 2110 (12454)		CPVC TypeIV, Grade I 4120 (23447)		
	73°F	140°F	73°F	140°F	73°F	140°F	180°F
	Methylene Chloride	NR	NR	NR	NR	NR	NR
Methylene Chlorobromide	NR	NR	NR	NR	NR	NR	NR
Methylene Iodine	NR	NR	NR	NR	NR	NR	NR
Milk	R	R	R	R	R	R	?
Mineral Oil	R	R	R	?	R	?	?
Molasses	R	R	R	R	R	R	R
Monoethanolamine	NR	NR	NR	NR	NR	NR	NR
Motor Oil	R	R	R	R	R	?	?
Muriatic Acid	R	R	R	R	R	R	C
Naphtha	R	R	R	NR	C	C	C
Naphthalene	NR	NR	NR	NR	NR	NR	NR
Natural Gas	R	R	R	R	C	C	C
Nickel Acetate	R	?	R	?	R	R	R
Nickel Chloride	R	R	R	R	R	R	R
Nickel Nitrate	R	R	R	R	R	R	R
Nickel Sulfate	R	R	R	R	R	R	R
Nicotine	R	R	R	R	R	R	R
Nicotine Acid	R	R	R	R	R	R	R
Nitric Acid, 10%	R	R	R	NR	R	R	R
Nitric Acid, 25%	R	R	R	NR	R	R	R
Nitric Acid, 25-35%	R	R	R	NR	R	C	C
Nitric Acid, 60%	R	R	R	NR	R	?	NR
Nitric Acid, 68%	R	NR	NR	NR	R	?	NR
Nitric Acid, Anhydrous	NR	NR	NR	NR	NR	NR	NR
Nitrobenzene	NR	NR	NR	NR	NR	NR	NR
Nitroglycerine	NR	NR	NR	NR	NR	NR	NR
Nitroglycol	NR	NR	NR	NR	?	?	?
Nitrous Oxide	R	NR	R	NR	R	R	R
Ocenol	R	R	?	?	?	?	?
Octanol (1)	R	R	R	R	C	NR	NR
Oil, Sour Crude	R	R	R	R	NR	NR	NR
Oils & Fats	R	R	R	R	C	C	C
Oils, Edible	R	R	R	R	NR	NR	NR
Oleic Acid	R	R	R	R	C	C	C
Oleum	NR	NR	NR	NR	NR	NR	NR
Olive Oil	R	R	R	R	NR	NR	NR
Oxalic Acid, sat'd	R	R	R	R	R	C	C
Oxygen	R	R	R	R	R	R	R
Ozone	R	R	R	R	R	R	R
Ozonized water	R	R	R	R	R	?	?
Palm Oil	R	R	R	R	NR	NR	NR
Palmitic Acid, 10%	R	R	R	R	C	C	C
Palmitic Acid, 70%	R	NR	?	NR	C	C	C
Paraffin	R	R	?	?	R	R	?
Peanut Oil	R	R	R	R	NR	NR	NR
Peracetic Acid, 40%	R	NR	?	NR	NR	NR	NR
Perchloric Acid, 10%	R	R	R	R	R	?	?
Perchloric Acid, 15%	R	NR	NR	NR	?	?	?
Perchloric Acid, 70%	R	NR	NR	NR	?	?	?
Perphosphate	R	?	R	?	?	?	?

CHEMICAL REAGENT	PVCType I 1120 (12454)		PVC Clear 2110 (12454)		CPVC TypeIV, Grade I 4120 (23447)		
	73°F	140°F	73°F	140°F	73°F	140°F	180°F
	Petroleum Liquifier	R	R	R	R	?	?
Petroleum Oils (Sour)	R	NR	R	NR	C	C	C
Phenol	NR	NR	NR	NR	R	R	R
Phenylhydrazine	NR	NR	NR	NR	NR	NR	NR
Phenylhydrazine Hydrochloride	NR	NR	NR	NR	NR	NR	NR
Phosgene, Gas	R	?	R	?	NR	NR	NR
Phosgene, Liquid	NR	NR	NR	NR	NR	NR	NR
Phosphoric Acid, up to 85%	R	R	R	R	R	R	R
Phosphorous Pentoxide	R	NR	R	NR	R	R	R
Phosphorous Trichloride	NR	NR	NR	NR	NR	NR	NR
Phosphorous, (Yellow)	R	NR	R	NR	R	R	R
Photographic Solutions: Dektal Developer	R	R	R	R	?	?	?
Photographic Solutions: DK #3	R	R	R	R	?	?	?
Photographic Solutions: Kodak Fixer	R	R	R	R	?	?	?
Photographic Solutions: Kodak Short Stop	R	R	R	R	?	?	?
Picric Acid	NR	NR	NR	NR	NR	NR	NR
Plating Solutions: Brass	R	R	R	R	R	R	R
Plating Solutions: Cadmium	R	R	R	R	R	R	R
Plating Solutions: Copper	R	R	R	R	R	R	R
Plating Solutions: Gold	R	R	R	R	R	R	R
Plating Solutions: Indium	R	R	R	R	R	R	R
Plating Solutions: Lead	R	R	R	R	R	R	R
Plating Solutions: Nickel	R	R	R	R	R	R	R
Plating Solutions: Rhodium	R	R	R	R	R	R	R
Plating Solutions: Silver	R	R	R	R	R	R	R
Plating Solutions: Tin	R	R	R	R	R	R	R
Plating Solutions: Zinc	R	R	R	R	R	R	R
Polyethylene Glycol	?	?	?	?	NR	NR	NR
Potash (Sat.Aq.)	R	R	?	?	R	R	R
Potassium Acetate	R	R	R	R	R	R	R

Chemical Resistance Data



R = Recommended NR = Not Recommended

C = Caution, actual testing suggested; suspect @ certain stress levels ? = Incomplete Data; actual testing required

CHEMICAL REAGENT	PVCType I 1120 (12454)		PVC Clear 2110 (12454)		CPVC TypeIV, Grade I 4120 (23447)		
	73°F	140°F	73°F	140°F	73°F	140°F	180°F
	Potassium Alum	R	R	R	R	R	R
Potassium Amyl Xanthate	R	NR	NR	NR	?	?	?
Potassium Bicarbonate	R	R	R	R	R	R	R
Potassium Bichromate	R	R	R	R	R	R	R
Potassium Bisulfate	R	R	R	R	R	R	R
Potassium Borate	R	R	R	R	R	R	R
Potassium Bromate	R	R	R	R	R	R	R
Potassium Bromide	R	R	R	R	R	R	R
Potassium Carbonate	R	R	R	R	R	R	R
Potassium Chlorate	R	R	R	R	R	R	R
Potassium Chloride	R	R	R	R	R	R	R
Potassium Chromate	R	R	R	?	R	R	R
Potassium Cyanate	R	R	R	R	R	R	R
Potassium Cyanide	R	R	R	R	R	R	R
Potassium Dichromate	R	R	R	R	R	R	R
Potassium Ethyl Xanthate	R	NR	NR	NR	?	?	?
Potassium Ferricyanide	R	R	R	R	R	R	R
Potassium Ferrocyanide	R	R	R	R	R	R	R
Potassium Fluoride	R	R	R	R	R	R	R
Potassium Hydroxide	R	R	R	R	A	A	A
Potassium Hypochlorite	R	R	R	R	R	R	R
Potassium Iodide	R	R	R	R	R	R	R
Potassium Nitrate	R	R	R	R	R	R	R
Potassium Perborate	R	R	R	R	R	R	R
Potassium Perchlorate	R	R	R	R	R	R	R
Potassium Permanganate, 10%	R	R	R	R	R	R	R
Potassium Permanganate, 25%	R	NR	R	NR	R	R	C
Potassium Persulfate	R	R	R	R	R	?	?
Potassium Phosphate	R	R	R	R	R	R	R
Potassium Sulfate	R	R	R	R	R	R	R
Potassium Sulfide	R	R	R	R	R	R	R
Potassium Sulfite	R	R	R	R	R	R	R
Potassium Triphosphate	R	R	R	R	R	R	R
Propane	R	R	R	R	C	C	C
Propane Gas	R	R	R	R	C	C	C
Propanol, ≤ 0.5%	R	R	R	?	R	?	R
Propanol, > 0.5%	R	R	R	NR	C	C	C
Propargyl Alcohol	R	R	R	NR	C	C	C
Propionic Acid, ≤ 2% ?	?	?	?	?	R	R	R
Propionic Acid, > 2% ?	?	?	?	?	NR	NR	NR
Propylene Dichloride	NR	NR	NR	NR	NR	NR	NR

CHEMICAL REAGENT	PVCType I 1120 (12454)		PVC Clear 2110 (12454)		CPVC TypeIV, Grade I 4120 (23447)		
	73°F	140°F	73°F	140°F	73°F	140°F	180°F
	Propylene Glycol, ≤ 25%	?	?	?	?	C	C
Propylene Glycol, > 25%	?	?	?	?	NR	NR	NR
Propylene Oxide	NR	NR	NR	NR	NR	NR	NR
Pyridine	NR	NR	NR	NR	NR	NR	NR
Pyrogalllic Acid	R	NR	R	NR	?	?	?
Rayon							
Coagulating Bath	R	R	R	R	?	?	?
Refinery Crudes	R	R	?	?	C	C	C
Rochelle Salts	R	R	?	?	R	R	R
Salicylic Acid	R	R	R	R	R	R	R
Santizicer	NR	NR	NR	NR	?	?	?
Sea Water	R	R	R	R	R	R	R
Selenic Acid	R	R	R	?	?	?	?
Sewage	R	R	R	R	R	R	R
Silicic Acid	R	R	R	R	R	?	?
Silicone Oil	?	?	?	?	R	?	?
Silver Chloride	R	R	R	R	R	R	R
Silver Cyanide	R	R	R	R	R	R	R
Silver Nitrate	R	R	R	R	R	R	R
Silver Sulfate	R	R	R	R	R	R	R
Soaps	R	R	R	R	R	R	R
Sodium Acetate	R	R	R	R	R	R	R
Sodium Alum	R	R	R	R	R	R	R
Sodium Arsenate	R	R	R	R	R	?	?
Sodium Benzoate	R	R	R	R	R	R	R
Sodium Bicarbonate	R	R	R	R	R	R	R
Sodium Bichromate	R	R	R	R	R	R	R
Sodium Bisulfate	R	R	R	R	R	R	R
Sodium Bisulfite	R	R	R	R	R	R	R
Sodium Borate	R	R	R	R	R	R	R
Sodium Bromide	R	R	R	R	R	R	R
Sodium Carbonate	R	R	R	R	R	R	R
Sodium Chlorate	R	NR	R	NR	R	R	R
Sodium Chloride	R	R	R	R	R	R	R
Sodium Chlorite	NR	NR	NR	NR	R	R	R
Sodium Chromate	R	R	R	R	R	R	R
Sodium Cyanide	R	R	R	R	R	R	R
Sodium Dichromate	R	R	R	R	R	R	R
Sodium Ferricyanide	R	R	R	R	R	R	R
Sodium Ferrocyanide	R	R	R	R	R	R	R
Sodium Fluoride	R	R	R	R	R	R	R
Sodium Formate	?	?	?	?	R	R	R
Sodium Hydroxide, 50%	R	R	R	R	A	A	A
Sodium Hypobromite	R	R	R	R	R	R	R
Sodium Hypochlorite	R	R	R	R	R	R	R
Sodium Iodide	R	R	R	R	R	R	R
Sodium Metaphosphate	R	R	R	R	R	R	R



R = Recommended NR = Not Recommended
 C = Caution, actual testing suggested; suspect @ certain stress levels ? = Incomplete Data; actual testing required

CHEMICAL REAGENT	PVC Type I 1120 (12454)		PVC Clear 2110 (12454)		CPVC TypeIV, Grade I 4120 (23447)		
	73°F	140°F	73°F	140°F	73°F	140°F	180°F
	Sodium Nitrate	R	R	R	R	R	R
Sodium Nitrite	R	R	R	R	R	R	R
Sodium Perchlorate	R	R	R	R	R	R	R
Sodium Peroxide	R	R	R	R	R	R	R
Sodium Silicate	R	NR	R	NR	R	R	R
Sodium Sulfate	R	R	R	R	R	R	R
Sodium Sulfide	R	R	R	R	R	R	R
Sodium Sulfite	R	R	R	R	R	R	R
Sodium Thiosulfate	R	R	R	R	R	R	R
Sodium Tripolyphosphate	?	?	?	?	R	R	R
Sour Crude Oil	R	R	R	R	C	C	C
Soybean Oil	R	R	R	R	NR	NR	NR
Stannic Chloride	R	R	R	R	R	R	R
Stannous Chloride	R	R	R	R	R	R	R
Stannous Sulfate	R	R	R	R	R	R	R
Starch	R	R	R	R	R	R	R
Stearic Acid	R	R	R	R	R	?	?
Stoddards Solvent	NR	NR	NR	NR	C	C	C
Styrene	NR	NR	NR	NR	NR	NR	NR
Succinic Acid	R	R	R	R	R	R	R
Sugar	R	R	R	R	R	R	R
Sulfamic Acid	NR	NR	NR	NR	R	R	R
Sulfite Liquor	R	R	R	R	?	?	?
Sulfur	R	R	R	R	R	?	?
Sulfur Dioxide, dry	R	R	R	R	R	R	R
Sulfur Dioxide, wet	R	NR	NR	NR	R	R	R
Sulfur Trioxide	R	R	R	R	R	R	R
Sulfuric Acid, 70%	R	R	R	R	R	R	R
Sulfuric Acid, 80%	R	R	NR	NR	R	R	R
Sulfuric Acid, 85%	R	R	NR	NR	R	C	NR
Sulfuric Acid, 90%	R	NR	NR	NR	R	C	NR
Sulfuric Acid, 98%	?	NR	NR	NR	R	NR	NR
Sulfuric Acid, Fuming	NR	NR	NR	NR	NR	NR	NR
Sulfuric Acid, Pickling	R	R	?	?	R	R	R
Sulfurous Acid	R	R	R	R	?	?	?
Tall Oil	R	R	R	R	C	C	C
Tan Oil	R	R	R	R	?	?	?
Tannic Acid, 30%	R	R	R	R	R	?	?
Tanning Liquors	R	R	R	R	?	?	?
Tartaric Acid	R	R	R	R	R	?	?
Terpenes	?	?	?	?	NR	NR	NR
Terpineol	R	?	R	?	NR	NR	NR
Tetraethyl Lead	R	?	R	NR	?	?	?
Texanol	?	?	?	?	NR	NR	NR
Thionyl Chloride	NR	NR	NR	NR	NR	NR	NR
Thread Cutting Oil	R	?	R	?	C	C	C
Titanium Tetrachloride	R	NR	R	NR	?	?	?
Toluol or Toluene	NR	NR	NR	NR	NR	NR	NR
Transformer Oil	R	R	R	R	C	C	C
Tributyl Citrate	R	?	R	?	NR	NR	NR

CHEMICAL REAGENT	PVC Type I 1120 (12454)		PVC Clear 2110 (12454)		CPVC TypeIV, Grade I 4120 (23447)		
	73°F	140°F	73°F	140°F	73°F	140°F	180°F
	Tributyl Phosphate	NR	NR	NR	NR	NR	NR
Trichloroacetic Acid	R	?	R	?	NR	NR	NR
Trichloroethylene	NR	NR	NR	NR	NR	NR	NR
Triethanolamine	R	NR	R	NR	NR	NR	NR
Trilones	NR	NR	NR	NR	?	?	?
Trimethyl Propane	R	R	R	NR	?	?	?
Trimethylamine	R	NR	R	NR	?	?	?
Trisodium Phosphate	R	R	R	R	R	R	R
Turpentine	R	R	NR	NR	NR	NR	NR
Urea	R	R	R	R	R	R	R
Urine	R	R	R	R	R	R	R
Vaseline	NR	NR	NR	NR	?	?	?
Vegetable Oils	R	?	R	?	NR	NR	NR
Vinegar	R	R	R	R	R	R	R
Vinyl Acetate	NR	NR	NR	NR	NR	NR	NR
Water, Acid Mine	R	R	R	R	R	R	R
Water, Deionized	R	R	R	R	R	R	R
Water, Demineralized	R	R	R	R	R	R	R
Water, Distilled	R	R	R	R	R	R	R
Water, Fresh & Salt	R	R	R	R	R	R	R
Water, Swimming Pool	R	R	R	R	R	R	R
WD-40	?	?	?	?	C	C	C
Whiskey	R	R	R	R	R	R	R
White Liquor	R	R	R	R	R	R	R
Wines	R	R	R	R	R	R	R
Xylene or Xylol	NR	NR	NR	NR	NR	NR	NR
Zinc Acetate	R	R	R	R	R	R	R
Zinc Carbonate	R	R	R	R	R	R	R
Zinc Chloride	R	R	R	R	R	R	R
Zinc Nitrate	R	R	R	R	R	R	R
Zinc Sulfate	R	R	R	R	R	R	R