Chemical Resistance Guide

General Information:

The following information is provided as a general guide for the selection of piping systems subjected to various chemical sub stances. The recommendations stated are based on information provided by our manufacturers, raw material suppliers, and our extensive field experience, 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.

Numerous variables and environmental factors such as percentage of chemical concentration, combinations of chemical substances, temperature, internal pressure, exposure to the elements, external mechanical stress, and product quality can affect chemical resistance of plastic piping systems when exposed to chemical media. 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 meant to be used as a general guide and is by no means complete. When test data on chemical resistance to particular chemicals under specific operating conditions is not available, Harrington Industrial Plastics LLC. 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 and product use).

In all cases, a physical test of the material under actual operating conditions is the only way to ensure the success of a particular material for the application.

Using the Legend:

In this Chemical Compatibility guide, Harrington has provided a single resource of non-metallic and high-purity steel piping products. The chemicals listed are classified alphabetically according to their most common designation. Further descriptions include trivial/common names, and some trade names.

How to Select the Correct Material:

1. Locate the specific chemical in the guide.

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, place a call to our Harrington Technical staff for additional recommendations.

Examples:

1. Methylene chloride: in the table PVDF, Halar, or PTFE 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 PVDF, PTFE, or Halar.

2. Sodium hypochlorite, 15% at 100°F: PVC is good to 100°F and is the least expensive of the materials available, however, you must use 724 CPVC cement for this and caustic applications.

3. For nitric acid, 40% at 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 application.

Legend:

Plastic Pipe & Elastomeric Materials

°F	=	Recommended for use at or below this temperature
X	=	Unsuitable, do not use
C	=	Caution, testing necessary (see note displayed for detail)
–	=	Insufficient data, testing under actual use conditions required
*	=	See Note displayed for further explanation

Seals (Carbon & Ceramic)

A	=	Acceptable
NR	=	Not Recommended
–	=	No Data, testing under actual use conditions required

High Purity Metallic Tubing

A	=	Excellent
B	=	Good, minor effect
C	=	Fair, needs further testing under actual conditions
X	=	Not Recommended
–	=	Insufficient data, testing under actual use conditions required

NOTE: an A-rating for metals indicates that the rate of penetration is < 2 mils per year; a B-rating indicates rate of penetration < 20 mils per year; a C-rating indicates rate of penetration <50 mils per year.

Chemical Resistance Guide

Disclaimer of Liability:

The chemical resistance data in this guide has been obtained from numerous sources, and to the best of our knowledge, the information contained in this publication is accurate. However, Harrington Industrial Plastics, LLC does not assume any liability whatsoever for the accuracy or completeness of such information, and retains the right to revise this information at any time. As the conditions or methods used are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of this material. To the extent that any hazards have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. Final determination of 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 of any equipment, processing technique, or material mentioned in this publication verify that all applicable safety and health standards are met. We strongly recommend the users seek and adhere to manufacturers' or suppliers' current instructions for handling each material they use. Compliance with all applicable federal, state and local laws and regulations remains the responsibility of the user. This information is offered in good faith and believed to be accurate at the time of its preparation, but is offered without any warranty, expressed or implied, including WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

In all cases, a physical test of the material under actual operating conditions is the only way to ensure the success of a particular material for the application.

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 have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. Final determination of 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 of any equipment, processing technique, or material mentioned in this publication verify that all applicable safety and health standards are met. We strongly recommend the users seek and adhere to manufacturers' or suppliers' current instructions for handling each material they use.

Chemical Compatibility Awareness:

Plastic piping continues 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 and ancillary products found in construction products and specific site preparations can cause damage to plastic piping systems.

Plastic piping products 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.

Contact Harrington Technical Services or your local Harrington with questions regarding chemical compatibility.

Harrington Chemical Guide App:

Harrington Industrial Plastics is proud to announce the launch of our new Chemical Guide for Piping Systems, available for download on the Apple App Store. The Harrington Chemical Guide is a reliable tool that can be used in conjunction with other resources to help determine the most appropriate piping material for a given chemical.

The Harrington Chemical Guide includes data for 23 different types of plastic piping materials, elastomers, pump seals, and high purity metal tubing and compares them to over 880 different chemicals. This comprehensive data can be used by the engineering & end-user communities as a guide toward helping make informed decisions on chemical compatibility of various piping materials for their specific process or application. In addition to chemical compatibility, the App also has a Store Finder, Company Information, and links to Harrington's e-Commerce website.

The Harrington Chemical Guide for Piping Systems is available for free on the Apple App Store today for iPhone and iPad. Also, look for the Harrington Chemical Guide available for Android devices on Google Play.

Also Available @ www.hipco.com/chemGuide.cfm

Caution Areas:

Compressed air or gas – Warning! Plastic Piping Systems designed for corrosive and/or high purity liquid service are not recommended for Compressed Air or Gas applications. There are a few specially designed thermoplastics piping systems that are suitable for selected Compress Air or Gas applications. Consult your local Harrington Office for recommendations. 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 piping materials when coming into contact with these substances. (i.e. exposure to or immersion in these substances). Harrington Industrial Plastics LLC, does not recommend the use of plastic piping systems for the testing, transporting or storing of compressed air or gases unless specifically designed by the manufacturer to do so.

When investigating the chemical compatibility of a piping system, it is important to note that all piping system components must also be investigated for compatibility. Gaskets, o-rings, valve seats, pump seals, solvent cements, tanks, and other components and materials should be evaluated for compatibility and approved by their respective manufacturers for use with the fluid medium prior to use.

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 safety and pressure de-rating factors are 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.

Individual chemicals that do not have an effect on the pipe material may affect the pipe if combined with certain other chemicals – the information in this guide does not address combinations of chemicals.

The suitability for use of a piping material in a particular process piping application is a function of: the specific pipe material itself, piping dimensions, construction, and quality, joining system, concentration of chemicals and chemical mixtures, operating temperatures (including temperature swings), operating pressure (including cyclical variations), applied stress, and life cycle information (i.e. material costs, installation costs, desired service life, maintenance, repair and replacement costs etc.). Users must make their own assessment of the suitability of the product for the purposes required.

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.

Caution should be exercised when selecting thread paste compounds, lubricants, cleaning and wetting agents (surfactants), corrosion inhibitors and other chemical substances that come into contact with the system for compatibility as well.

Applications involving certain oils, surfactants, and greases and certain other chemicals 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.

Exposure of Clear PVC to certain chemicals can affect the clarity of the product over time. Clear PVC maintains its physical properties when exposed to many substances, however, exposure to sunlight (UV) and certain nitrogen containing organics, bleaches, oxidative agents and acids will result in discoloration. Testing under actual use conditions is recommended.

NOTE: Please contact Harrington Technical Services for additional technical and application information.

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

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. 1Polyethylene (PE) resins are used for storage tanks. The normal upper temperature rating for tanks is 100°F. Higher temperatures can be achieved with manufacturers approval. Air and gas applications have special considerations. Consult your local Harrington office for recommendations.

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics													Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	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	X	140	X	-	X	X	100	350	140	X	X	X	140	X	X	A	A	A	A	A	A
Acetaldehyde, Aqueous	-	40	-	X	X	X	180	X	-	-	-	-	350	140	X	X	100	140	X	X	A	A	A	A	A	-
Acetamide	CH_3CONH_2	-	-	-	X	X	70	70	100	X	-	180	350	-	70	X	140	100	70	100	-	A	B	A	-	A
Acetate Solvents, Crude	-	-	-	X	X	X	70	-	70	-	X	100	350	-	X	X	X	-	X	X	-	A	A	A	A	A
Acetate Solvents, Pure	-	-	-	X	X	X	X	X	70	-	X	100	350	-	X	X	X	-	X	X	A	A	A	A	A	A
Acetic Acid*	CH_3COOH	5	-	140	140	180	180	210	100	140	70	250	350	140	210	140	70	140	100	70	-	A	A	A	A	A
Acetic Acid*	CH_3COOH	10	-	140	140	180	180	210	100	140	70	250	350	140	210	140	100	140	70	70	-	A	A	A	A	A
Acetic Acid*	CH_3COOH	20	-	140	73	C	140	140	100	140	X	250	350	140	210	140	100	140	X	X	-	A	A	A	A	A
Acetic Acid*	CH_3COOH	30	-	140	X	C	140	-	100	140	X	250	350	140	210	210	X	100	X	X	-	A	B	A	A	A
Acetic Acid*	CH_3COOH	50	-	100	X	C	140	210	100	140	X	250	350	140	210	210	X	70	X	X	-	A	A	A	A	A
Acetic Acid*	CH_3COOH	60	-	73	X	C	140	-	100	140	X	250	350	70	140	70	X	70	X	X	-	A	A	A	A	A
Acetic Acid*	CH_3COOH	80	-	X	X	X	100	100	100	X	X	210	350	70	70	70	X	X	X	X	-	A	A	A	A	A
Acetic Acid*, Glacial	CH_3COOH	100	1.05	X	X	X	X	100	70	100	X	210	350	70	X	70	X	X	X	X	A	A	B	A	A	A
Acetic Anhydride	$(CH_3CO)_2O$	-	-	X	X	X	X	X	X	X	X	180	350	X	X	X	X	X	70	X	A	A	B	A	A	A
Acetol® (hydroxyacetone, aka 1-hydroxy-2-proponone)	-	-	-	-	-	X	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	-	-	-
Acetone	CH_3COCH_3	-	-	X	X	X	100	X	-	-	X	100	350	70	X	X	X	100	X	X	A	A	A	A	A	A
Acetonitrile (Methyl Cyanide)	CH_3CN	-	0.8	X	X	X	X	X	100	-	-	210	350	-	X	X	X	70	70	X	A	A	A	A	-	B
Acetophenone	$C_6H_5COCH_3$	-	-	X	X	X	70	X	-	-	X	100	350	-	X	X	X	140	X	X	A	A	A	A	-	A
Acetyl Acetone	-	-	-	X	X	X	X	X	-	-	-	-	140	-	-	-	X	-	X	X	-	-	A	-	-	-
Acetyl Benzene	$C_6H_5COCH_3$	-	1.03	X	X	X	X	X	-	-	-	-	-	-	X	-	X	100	X	X	-	-	-	-	-	-
Acetyl Bromide	CH_3COBr	-	-	X	X	X	-	-	-	-	-	-	250	-	X	-	X	X	X	X	-	-	-	-	-	-
Acetyl Chloride, dry	CH_3COCl_3	-	-	X	X	X	X	70	X	-	X	140	210	X	X	X	X	X	X	X	A	A	A	A	-	A
Acetyl Oxide	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-
Acetyl Propane	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	X	-	X	X	-	-	-	-	-	-
Acetylene	-	-	-	140	140	C	140	180	70	-	70	180	350	-	-	-	180	70	70	14	A	A	A	A	-	A
Acetylene Dichloride	CIHC:CHIC	-	-	X	X	X	-	140	-	-	X	100	350	70	X	-	140	X	X	X	-	-	-	-	-	-
Acetylene Tetrachloride	$(CHCl_2)_2$	-	-	-	-	X	-	180	-	-	-	140	350	100	70	X	180	X	X	X	A	A	A	A	A	A
Acid Mine Water	-	-	-	100	100	180	180	250	100	140	-	250	350	-	100	-	180	70	-	140	A	NR	-	-	-	A
Acrylic Acid	$CH_2CHCOOH$	-	-	73	X	X	-	250	70	X	X	210	350	X	100	-	-	-	-	-	A	A	A	A	-	C
Acrylic Emulsions*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acrylonitrile	H_2CCHCN	-	-	X	X	X	X	70	100	-	X	140	350	X	X	X	X	X	X	X	-	A	A	A	A	A
Adipic Acid Aqueous	-	-	-	100	140	200	140	250	100	140	-	-	350	250	140	-	180	140	70	140	-	A	A	A	A	A
Alcohol (Ethyl Alcohol)	-	-	-	140	C	C	100	180	100	140	X	250	350	180	70	-	180	180	140	140	A	A	A	A	A	A
Alcohol, Allyl	-	-	0.82	X	X	X	100	210	70	140	X	100	350	-	140	-	140	70	70	70	A	A	A	A	-	A
Alcohol, Amyl	$C_5H_{11}OH$	-	1.05	100	X	C	180	250	70	140	X	250	350	70	210	180	180	180	140	140	A	A	A	A	A	A
Alcohol, Benzyl	$C_6H_5CH_2OH$	-	-	X	X	X	140	180	-	-	X	250	250	X	X	X	140	100	X	X	A	A	A	A	A	-
Alcohol, Butyl	-	-	-	100	X	C	180	250	100	140	X	250	250	140	100	180	100	180	140	140	A	A	A	A	A	A
Alcohol, Diacetone	-	-	-	X	X	X	70	70	100	-	X	100	350	180	140	-	X	70	X	X	A	A	A	A	A	A
Alcohol, Ethyl	C_2H_5OH	-	0.82	140	X	C	100	180	100	140	X	250	350	180	70	-	180	180	140	140	A	A	A	A	A	A

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

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics														Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Alcohol, Hexyl	-	-	-	140	C	C	70	180	100	140	-	70	250	-	-	-	210	140	70	104	-	A	A	A	A	-
Alcohol, Isobutyl	$(CH_3)_2CHCH_2OH$	-	-	100	100	C	140	210	100	-	-	250	350	140	100	70	70	70	70	70	A	A	A	A	A	A
Alcohol, Isopropyl	CH_3OH	-	-	140	-	C	140	280	100	140	X	250	350	140	100	100	180	140	100	70	A	A	A	A	A	A
Alcohol, Methyl	-	-	0.8	140	140	C	140	250	100	140	X	250	350	180	-	-	70	180	140	70	A	A	A	A	A	A
Alcohol, Octyl	-	-	-	73	-	X	-	210	100	-	X	-	70	X	-	-	70	140	70	100	A	A	A	A	A	A
Alcohol, Polyvinyl	-	-	-	140	-	180	180	250	-	-	-	-	210	-	-	-	140	100	70	100	-	-	-	-	-	-
Alcohol, Propargyl	-	-	-	73	73	C	100	140	100	140	-	-	-	-	-	-	210	-	-	-	-	-	-	-	-	-
Alkanes	-	-	-	-	-	73	100	250	-	-	-	-	300	-	-	-	-	-	-	-	A	A	-	-	-	-
Alkazene	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	70	X	X	X	-	-	-	-	-	-
Allyl Aldehyde	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	70	-	-	-	-	-	-	-	-	-
Allyl Bromide	C_3H_5Br	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-	-	-	-	-	-
Allyl Chloride	C_3H_5Cl	-	-	X	X	X	-	70	70	-	X	250	350	140	X	-	100	X	X	70	A	A	A	A	A	A
Alum (Aluminum Sulfate)	$Al_2(SO_4)_3$	-	-	140	140	200	180	250	100	140	180	250	350	250	250	70	140	140	140	140	A	A	A	A	A	A
Alum, Ammonium	-	-	-	140	140	200	180	250	70	140	180	250	350	250	210	-	180	180	140	140	-	-	B	-	-	-
Alum, Chrome	-	-	-	140	140	200	180	250	-	140	180	250	350	250	210	-	210	140	70	140	A	A	B	-	-	-
Alum, Potassium	$AlK(SO_4)_2$	-	-	140	140	200	180	250	100	140	180	250	350	180	250	70	210	180	70	140	A	A	B	-	A	A
Aluminum Acetate	-	-	-	100	140	200	100	210	-	-	-	-	350	-	-	-	X	180	100	100	A	A	A	A	A	A
Aluminum Bromide	$AlBr_3$	-	-	140	140	200	180	250	-	-	-	-	250	-	-	-	180	140	100	140	-	-	-	-	-	-
Aluminum Chloride	$AlCl_3$	-	-	100	140	200	180	210	100	140	180	250	250	210	250	180	210	180	140	100	A	A	X	X	A	A
Aluminum Citrate	-	-	-	-	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum Fluoride	AlF_3	-	-	140	140	200	180	250	70	140	180	250	250	140	210	180	210	180	140	180	A	A	X	C	A	A
Aluminum Formate	$Al(HCOO)_3$	-	-	-	-	200	-	-	-	-	-	-	-	-	-	-	X	-	-	X	A	A	-	-	-	-
Aluminum Hydroxide	$Al(OH)_3$	-	-	140	140	200	180	250	100	140	180	250	250	140	180	-	180	140	140	140	A	A	A	A	A	A
Aluminum Nitrate	$Al(NO_3)_3$	-	-	140	140	200	180	250	100	140	180	250	250	210	180	180	210	180	140	140	A	A	A	A	A	-
Aluminum Phosphate	$AlPO_4$	-	-	-	-	200	-	-	-	140	-	-	-	-	-	-	70	-	70	70	-	-	-	-	-	-
Aluminum Potassium Sulfate (Potash Alum)	-	-	-	140	140	200	180	250	70	-	-	250	350	180	250	70	180	180	140	140	A	A	X	A	A	A
Aluminum Sulfate	$Al_2(SO_4)_3$	10	-	140	140	200	180	250	100	140	180	250	350	250	250	70	140	140	140	140	A	A	X	A	A	A
Amines	-	15	-	X	X	X	100	-	X	-	-	X	350	-	70	-	X	-	X	X	A	A	A	A	A	A
Ammonia	NH_3	25	-	100	X	X	-	210	-	-	-	210	250	70	140	180	70	-	-	70	A	-	-	A	A	A
Ammonia	NH_3	99	-	73	X	X	-	210	-	-	-	210	250	70	-	-	X	-	-	70	A	-	-	A	A	A
Ammonia Gas	NH_3	-	-	100	140	X	100	100	100	140	X	250	250	140	180	-	X	140	70	100	A	A	A	A	X	-
Ammonia, Anhydrous	-	-	-	73	X	X	X	210	100	-	70	250	350	X	-	70	X	104	210	70	A	A	A	A	A	A
Ammonium Acetate	-	-	-	140	140	200	140	210	100	-	-	140	350	-	70	100	140	140	70	140	A	A	A	A	-	A
Ammonium Alum (Aluminum Ammonium Sulfate)	-	-	-	140	140	200	180	250	70	-	-	250	350	250	210	-	210	180	70	140	-	-	A	A	-	A
Ammonium Bichromate	$(NH_4)_2Cr_2O_7$	-	-	73	-	200	-	-	-	-	-	-	-	-	-	-	-	70	70	70	-	-	-	-	-	-
Ammonium Bifluoride	NH_4HF_2	-	-	140	X	200	140	250	-	-	-	250	300	180	140	-	140	140	70	140	A	-	X	X	X	A
Ammonium Bisulfide	NH_4HS	-	-	140	140	200	140	210	100	-	-	250	250	-	-	-	-	-	-	-	A	-	-	-	-	-
Ammonium Carbonate	NH_4HCO_3	-	-	140	140	200	180	250	70	140	70	250	250	210	140	180	210	180	140	140	A	A	A	A	A	A

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

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics													Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Ammonium Casenite	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonium Chloride	NH_4Cl	-	-	140	140	200	180	250	100	140	180	250	250	250	210	180	210	180	140	140	A	A	A	A	A	A
Ammonium Dichromate	$(NH_4)_2Cr_2O_7$	-	-	73	-	200	70	250	-	-	-	70	350	-	-	-	-	70	70	70	A	A	-	-	-	-
Ammonium Fluoride	NH_4F	10	-	100	140	200	180	250	100	-	70	250	350	140	210	-	140	140	100	100	A	-	B	X	A	A
Ammonium Fluoride	NH_4F	20	-	100	100	200	180	250	100	-	70	250	350	140	210	-	140	140	100	100	A	-	-	X	B	A
Ammonium Fluoride	NH_4F	25	-	100	100	200	70	250	100	140	70	250	350	140	210	-	140	140	100	100	A	-	-	X	-	A
Ammonium Hydroxide	NH_4OH	20	-	100	100	X	180	140	100	140	180	250	350	210	140	180	70	180	140	X	A	A	A	A	A	A
Ammonium Metaphosphate	-	-	-	140	-	200	180	250	100	140	-	250	350	-	140	-	180	180	180	140	-	A	A	A	-	-
Ammonium Nitrate	NH_4NO_3	-	-	140	140	200	180	250	100	104	170	250	350	210	210	180	180	180	180	180	A	A	A	A	A	A
Ammonium Oxalate	$(NH_4)_2C_2O_4$	-	-	73	-	200	70	100	100	140	-	100	100	-	-	100	-	140	180	X	A	A	A	A	-	A
Ammonium Persulfate	$(NH_4)_2S_2O_8$	-	-	140	140	73	100	210	70	140	180	140	350	70	180	70	140	100	X	180	A	-	A	A	A	B
Ammonium Phosphate	$NH_4H_2PO_4$	-	-	140	140	73	180	250	-	-	180	-	250	-	-	-	180	180	140	100	A	-	A	A	A	A
Ammonium Phosphate Dibasic	$(NH_4)_2HPO_4$	-	-	140	140	73	180	250	70	140	180	250	350	140	210	180	140	140	140	140	A	A	A	A	A	A
Ammonium Phosphate Monobasic	$NH_4H_2PO_4$	-	-	140	140	73	180	250	70	140	70	250	350	180	210	180	140	140	140	140	A	A	A	A	A	A
Ammonium Phosphate Tribasic	-	-	-	140	140	73	180	250	70	140	-	250	350	-	210	-	140	140	70	140	A	A	A	A	A	A
Ammonium Salts	-	-	-	140	140	180	180	250	100	140	-	140	350	70	70	100	-	70	180	180	-	-	-	-	-	-
Ammonium Sulfate	$(NH_4)_2SO_4$	5	1.8	140	140	200	180	250	100	100	180	250	350	300	210	180	180	180	180	180	A	A	A	A	A	A
Ammonium Sulfide	$(NH_4)_2S$	-	1.3	100	100	200	180	250	100	140	-	250	350	140	180	140	X	140	X	X	A	A	X	A	-	A
Ammonium Thiocyanate	NH_4SCN	-	1.3	100	100	200	70	250	100	140	180	-	350	180	140	-	70	70	70	70	A	A	A	A	-	A
Ammonium Thiosulfate	$(NH_4)_2S_2O_3$	-	0.86	100	100	200	-	250	100	140	-	-	350	250	140	140	70	70	100	140	A	A	A	A	A	-
Amyl Acetate	$CH_3COOC_5H_{11}$	-	0.86	X	X	X	X	100	X	X	X	140	350	70	100	X	X	70	X	X	A	A	A	A	A	A
Amyl Alcohol (Alcohol Amyl)	-	-	0.8	100	x	C	180	250	70	140	X	250	350	70	210	180	180	180	140	140	A	A	A	A	A	A
Amyl Chloride	-	-	1.02	X	X	X	X	210	X	X	X	250	350	70	100	X	70	X	X	X	A	A	A	A	X	A
Aniline	$C_6H_5NH_2$	-	1.02	X	X	X	100	70	-	70	X	70	350	70	X	X	140	70	X	X	A	A	A	A	A	A
Aniline Chlorohydrate	-	-	-	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aniline Hydrochloride	$C_6H_5NH_2HCl$	20	-	X	X	X	X	100	X	-	X	X	350	X	210	-	140	-	X	X	A	-	X	X	A	X
Anisole	$C_2H_3OCH_3$	-	1	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anthraquinone Sulfonic Acid	-	-	-	100	100	-	70	210	100	-	-	140	350	-	140	-	-	-	-	-	A	A	-	-	-	-
Anti-Freeze (Ethylene Glycol)	-	-	-	100	100	X	180	250	70	140	70	180	350	210	70	180	210	180	140	140	A	A	A	A	-	A
Antichlor	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	70	70	70	-	-	-	-	-	-
Antimony Chloride (Antimony Trichloride)	-	-	-	140	140	200	100	X	100	140	-	70	199	-	210	-	70	70	X	X	A	A	X	A	A	A
Antimony Pentachloride	-	-	-	73	-	200	70	-	-	-	-	-	-	-	70	-	-	-	-	-	A	A	X	-	-	-
Antimony Trichloride	$SbCl_3$	-	3.1	140	140	200	180	X	100	140	100	70	350	140	210	X	180	70	-	70	A	A	X	-	A	A
Aqua Ammonia	-	-	-	-	100	X	140	70	100	140	70	-	350	210	-	-	-	-	-	70	A	-	-	-	A	-
Aqua Regia	HNO_3/HCl	20	-	X	X	73	X	100	X	X	X	250	350	X	X	X	70	100	X	X	NR	NR	A	X	A	X
Aroclor 1248	-	-	-	-	-	X	-	-	X	-	-	-	-	-	-	-	210	100	X	-	A	A	B	B	A	A
Aromatic Hydrocarbons	-	-	-	X	X	X	X	140	X	X	X	180	350	180	100	X	210	X	X	X	A	A	-	-	-	-

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

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics														Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Arsenic Acid	H_3AsO_4	80	-	100	100	73	140	210	100	140	100	250	350	-	180	180	140	140	140	140	A	A	A	A	A	A
Aryl Sulfonic Acid	-	-	-	73	73	73	X	X	70	-	-	-	350	-	-	-	-	-	-	-	-	-	-	-	-	-
Asphalt	-	-	-	X	X	X	140	250	70	-	X	250	350	-	-	-	180	X	70	100	A	-	A	A	A	A
Aviation Fuel	-	-	-	X	X	X	-	180	-	-	X	-	350	-	180	-	70	X	X	180	-	-	A	A	-	A
Aviation Turbine Fuel	-	-	-	X	X	X	-	250	X	-	-	250	350	210	100	180	-	-	-	-	-	-	-	A	A	A
Baking Soda (Sodium Bicarbonate)	-	-	-	140	140	200	180	250	100	140	100	250	350	180	210	180	180	180	140	140	A	-	A	A	A	A
Barium Acetate	-	-	-	-	-	200	-	-	100	140	-	-	70	-	180	140	-	-	-	-	-	-	-	B	-	-
Barium Carbonate	$BaCO_3$	-	4.3	140	140	200	180	250	100	140	180	250	350	210	210	180	250	180	140	140	A	A	B	B	A	B
Barium Chloride	$BaCl_2$	-	3.1	140	-	200	180	250	100	140	180	250	350	210	250	180	250	180	140	140	A	A	A	A	A	A
Barium Cyanide	$Ba(CN)_2$	-	-	X	X	200	-	-	100	140	-	-	180	-	-	-	140	140	140	-	A	A	A	A	-	A
Barium Hydrate	-	-	-	-	-	200	-	-	-	-	-	-	-	-	-	-	70	70	70	70	-	-	A	A	-	A
Barium Hydroxide	$Ba(OH)_2$	10	2.2	140	140	200	180	250	100	-	180	250	350	210	70	180	250	180	140	140	A	A	B	A	A	B
Barium Nitrate	$Ba(NO_3)_2$	-	-	140	-	200	180	250	100	140	70	70	350	-	-	-	250	180	140	140	A	A	A	B	A	-
Barium Salts	-	-	4.4	140	140	200	180	250	100	140	-	140	180	180	210	180	70	70	70	70	-	-	-	-	-	-
Barium Sulfate	$BaSO_4$	-	4.3	140	140	200	180	250	100	140	180	250	350	210	210	180	250	180	140	140	A	A	A	A	A	A
Barium Sulfide	BaS	-	-	140	140	200	180	250	100	140	100	250	350	250	70	180	250	140	70	140	A	A	A	A	A	-
Beer	-	-	-	140	140	200	180	250	100	X	70	250	350	180	180	-	180	140	140	140	A	A	A	A	A	A
Beet Sugar Liquors	-	-	1.05	100	140	200	180	250	70	-	70	140	-	-	180	-	180	140	140	140	A	A	A	A	A	A
Benzaldehyde	C_6H_5CHO	-	-	X	X	X	70	100	X	X	X	10	350	X	X	X	X	-	X	X	A	A	B	A	A	A
Benzalkonium Chloride	-	-	0.9	-	-	73	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	C_6H_6	-	-	X	X	X	X	100	-	X	X	-	350	180	X	X	140	X	X	X	A	A	A	B	A	A
Benzene Sulfonic Acid	$C_6H_5SO_3H_4$	80	-	X	X	X	-	-	100	70	-	-	350	-	210	X	140	X	X	X	-	A	A	A	-	B
Benzene Sulfonic Acid	$C_6H_5SO_3H_4$	-	1.3	X	X	X	X	-	100	-	-	100	350	-	210	X	180	X	70	X	-	A	A	A	A	B
Benzoic Acid	C_6H_5COOH	10	-	100	-	73	100	210	100	140	70	250	350	210	70	-	180	X	70	X	A	A	A	X	A	A
Benzol (Benzene)	-	-	-	X	X	X	X	100	-	X	X	-	350	180	X	X	140	X	X	X	A	A	A	B	A	A
Benzyl Alcohol (Alcohol, Benzyl)	-	-	-	X	X	X	140	180	-	-	X	250	250	X	X	X	140	100	X	X	A	A	A	A	A	-
Benzyl Benzoate	-	-	1.1	-	-	X	-	70	-	-	-	-	140	-	-	-	70	70	X	X	A	A	A	A	-	B
Benzyl Chloride	$C_6H_5CH_2Cl$	-	6.8	X	X	X	70	180	70	-	X	100	350	100	X	-	X	X	X	X	A	A	A	A	-	A
Bismuth Carbonate	$(BiO)_2CO_3$	-	-	140	140	200	140	250	100	140	-	70	350	-	-	-	180	140	70	70	-	A	-	-	-	-
Black Liquor	-	-	-	100	100	200	180	250	100	-	-	250	350	180	210	210	210	180	140	140	-	NR	A	A	-	-
Borax (Sodium Borate)	$Na_2B_4O_7$	-	1.4	140	140	200	180	250	100	140	180	250	350	210	210	180	180	140	140	100	A	A	A	A	A	A
Boric Acid	H_3BO_3	-	-	140	140	200	180	250	100	140	180	250	350	210	210	X	180	180	140	140	-	-	B	A	A	A
Brake Fluid	-	-	-	X	X	X	-	-	-	-	X	70	250	-	X	X	X	210	-	X	-	-	A	A	-	A
Brewery Slop	-	-	-	140	140	200	-	-	-	-	-	-	-	-	X	-	-	-	-	-	A	-	-	-	-	-
Brine	-	-	-	140	140	200	180	250	100	140	180	250	350	140	210	180	250	140	140	180	A	A	A	A	A	A
Bromic Acid	$HBrO_3$	3.1	-	140	140	180	X	210	100	-	100	250	350	140	140	-	-	-	-	-	A	A	X	X	-	A
Bromine Dry	Br_2	-	-	X	X	X	X	210	X	X	X	140	350	X	100	X	-	X	-	X	NR	-	X	X	A	A
Bromine, Gas, Wet	-	-	-	X	X	X	X	210	X	X	X	70	350	X	100	X	140	X	X	X	NR	-	X	X	A	A

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

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics													Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Bromine Liquid	-	-	-	X	X	X	X	-	X	X	X	250	-	X	X	-	70	X	X	X	-	-	X	X	X	A
Bromine Water	-	-	-	73	X	200	X	210	X	X	-	250	350	X	180	180	100	X	X	X	-	-	X	X	A	A
Bromobenzene	C_6H_5Br	-	-	X	X	X	X	140	-	-	-	70	350	-	-	X	70	X	X	X	A	A	-	-	-	-
Bromotoluene	$C_6H_5CH_2Br$	-	-	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Butadiene Gas	-	-	0.8	100	X	*	X	250	-	-	-	250	250	140	-	X	210	-	X	X	A	-	A	A	-	A
Butane	C_4H_10	-	-	100	X	*	X	180	-	X	180	250	250	70	-	X	180	X	70	70	A	A	A	A	A	A
Butanediol (Butylene glycol)	-	-	-	100	X	C	-	180	100	140	-	140	350	-	180	-	70	X	-	70	A	A	-	A	-	-
Butanol (Alcohol, Butyl)	-	-	-	100	X	c	180	250	100	140	X	250	250	140	100	180	100	180	140	140	A	A	A	A	A	A
Butter	-	-	-	73	73	X	-	-	100	140	-	250	350	-	-	-	140	140	-	180	-	-	A	A	A	A
Buttermilk	-	-	-	73	73	C	-	180	70	-	70	-	180	-	-	-	140	70	140	180	-	-	A	A	-	A
Butyl Acetate	-	-	0.9	X	X	X	X	70	-	70	X	70	140	180	X	X	X	X	X	X	A	A	B	A	A	A
Butyl Acrylate Saturated	-	-	-	X	X	X	X	100	-	-	-	-	140	X	-	-	X	X	X	X	-	-	-	-	-	-
Butylamine	$C_4H_9NH_2$	-	-	X	X	X	X	X	-	-	-	X	140	X	X	X	X	X	X	X	A	A	A	A	A	A
Butylbenzene	$C_6H_5C(CH_3)_3$	-	-	X	X	X	-	-	-	-	-	-	-	-	-	-	70	-	-	X	-	-	-	-	-	-
Butyl Benzoate	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	70	70	X	X	A	A	-	-	-	-
Butyl Bromide	C_4H_9Br	-	-	-	-	X	X	210	-	-	-	-	250	-	100	-	-	-	-	X	-	-	-	-	-	-
Butyl Butyrate (Butyl Butanoate)	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	70	70	X	X	A	A	-	-	-	-
Butyl Carbitol	-	-	-	-	-	X	70	70	70	-	-	-	140	100	100	-	-	70	-	X	-	-	-	-	-	-
Butyl Cellosolve (Ethylene Glycol Monobutyl Ether)	-	-	-	X	X	X	70	100	X	-	-	180	180	140	210	70	X	140	X	X	-	-	A	A	A	A
Butyl Chloride (Chlorobutane)	-	-	-	X	X	X	X	250	X	-	-	100	250	100	100	X	70	-	-	X	A	A	A	A	A	A
Butyl Ether	$C_4H_9OC_4H_9$	-	-	X	X	X	X	100	70	-	X	180	140	-	X	180	X	X	X	X	-	-	A	A	-	-
Butyl Formate	$HCOOC_4H_9$	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	X	X	A	A	-	-	-	-
Butyl Mercaptan	C_4H_9SH	-	-	X	X	X	-	180	70	-	-	250	180	-	-	-	70	-	-	-	A	A	-	-	-	-
Butyl Phenol	-	-	-	X	X	X	X	140	-	-	-	210	250	-	-	-	X	X	X	X	A	A	A	A	-	A
Butyl Phthalate	-	-	-	X	X	X	140	70	-	70	X	210	100	210	180	180	100	70	X	X	A	A	A	A	A	A
Butyl Stearate	-	-	-	-	-	X	-	250	70	-	-	70	250	-	-	-	140	X	X	100	A	A	A	A	-	-
Butylene (Liquified Petroleum Gas)	-	-	-	-	-	X	X	250	-	X	70	250	250	70	-	X	140	X	-	180	A	A	A	A	-	A
Butyraldehyde	-	-	-	-	x	X	-	140	210	-	-	-	350	-	-	-	X	-	X	X	-	-	B	X	-	A
Butyric Acid	-	-	-	X	X	X	180	250	X	-	X	180	350	180	100	-	100	-	X	X	A	A	B	A	A	A
Cadmium Cyanide	$Cd(CN)_2$	-	-	100	100	200	70	250	100	140	-	140	250	140	180	-	70	70	70	180	-	-	-	-	-	-
Cadmium Salts	-	-	-	-	-	200	70	140	100	140	-	140	70	180	210	-	-	-	-	-	-	-	-	-	-	-
Caffeine Citrate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calamine	-	-	3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	70	-	-	-	-	-	-	-	-	-
Calcium Acetate	-	-	-	140	140	200	180	210	100	140	-	-	210	-	-	-	X	180	100	140	A	A	A	A	-	-
Calcium Bisulfide	$Ca(HS)_2$	-	-	140	140	200	100	250	100	140	-	250	350	-	70	-	140	70	140	70	A	A	B	A	A	-
Calcium Bisulfite	$Ca(HSO_3)_2$	-	-	100	140	200	180	210	100	-	70	250	210	180	210	180	180	X	70	100	A	A	A	A	A	-
Calcium Carbonate	$CaCO_3$	-	2.7	140	140	200	180	250	100	140	180	250	350	180	210	-	250	140	140	100	A	A	A	A	A	B

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

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics														Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Calcium Chlorate	$Ca(ClO_3)_2$	-	2.7	140	-	200	180	250	-	-	-	250	350	-	-	-	140	104	70	X	A	A	A	B	A	A
Calcium Chloride	$CaCl_2$	-	2.1	140	140	200	180	250	100	140	180	250	350	300	140	180	140	180	140	100	A	NR	B	A	A	A
Calcium Cyanide	$CaCN_2$	-	-	100	-	200	-	-	-	-	-	-	-	-	-	-	70	70	70	70	A	A	-	-	-	-
Calcium Hydroxide	$Ca(OH)_2$	-	2.3	140	140	200	180	250	100	140	180	250	350	140	210	70	210	180	140	140	A	A	A	A	A	A
Calcium Hypochlorite	$Ca(ClO)_2$	-	2.3	100	140	200	100	210	100	70	70	250	350	140	210	180	180	100	-	X	A	A	X	A	A	A
Calcium Nitrate	$Ca(NO_3)_2$	-	1.82	140	140	200	180	250	100	140	180	250	350	210	210	180	210	180	140	180	A	A	A	A	A	A
Calcium Oxide	CaO	-	-	73	-	200	180	250	100	140	-	250	350	180	140	-	140	140	140	140	A	A	A	A	A	A
Calcium Phosphate	$CaH_4(PO_4)_2$	-	2.3	73	73	200	70	250	100	140	-	250	180	-	-	-	70	70	100	180	A	A	A	A	A	A
Calcium Sulfate	$CaSO_4$	-	2.9	140	140	200	180	250	100	140	180	250	350	210	70	180	140	180	X	140	A	A	A	A	A	A
Calcium Sulfide	CaS	-	-	140	140	200	180	180	100	140	-	250	350	-	-	-	210	180	70	140	A	A	A	A	-	-
Calcium Thiosulfate	CaS_2O_3	-	1.87	-	-	200	-	-	-	-	-	-	-	-	-	-	70	70	70	-	-	-	-	-	-	-
Calgon (Sodium Hexametaphosphate)	-	-	-	140	-	-	70	140	100	140	-	140	350	-	140	250	70	70	140	180	A	NR	A	A	-	-
Cane Sugar Liquors	-	-	-	140	140	200	140	210	70	-	-	210	350	-	140	-	210	180	100	140	A	A	A	A	-	-
Caprylic Acid (Octanic Acid)	$CH_3(CH_2)_6COOH$	-	-	73	-	C	-	140	-	-	-	210	350	X	210	-	-	-	-	-	A	A	-	-	-	-
Carbinol (Alcohol, Methyl)	-	-	-	140	140	C	140	250	100	140	X	250	350	180	-	-	70	180	140	70	A	A	A	A	A	A
Carbolic Acid (Phenol)	-	-	-	x	X	180	100	100	X	70	X	180	350	X	X	X	70	X	X	X	A	A	A	A	A	A
Carbon Dioxide (wet or dry)	CO_2	-	-	140	140	*	180	250	100	140	180	250	350	180	70	-	210	180	140	140	A	A	A	A	A	A
Carbon Disulfide	CS_2	-	-	X	X	X	X	70	X	X	X	100	350	X	X	X	100	X	X	X	A	A	A	B	A	A
Carbon Monoxide	CO	-	-	140	X	*	180	250	100	140	180	140	350	-	70	-	210	180	180	140	A	A	A	A	-	A
Carbon Tetrachloride	CCl_4	-	1.6	X	X	X	X	140	X	X	X	250	350	180	70	70	70	X	X	X	A	A	A	A	A	A
Carbonic Acid	H_2CO_2	-	-	140	140	200	140	250	100	140	-	250	350	140	210	180	180	180	180	180	A	A	A	A	A	A
Casein	-	-	-	140	-	180	140	250	100	X	-	100	350	-	-	-	180	180	180	180	A	A	-	-	-	-
Castor Oil	-	-	0.95	140	140	X	140	250	100	70	-	250	350	210	210	-	180	140	140	180	-	A	A	A	A	A
Ketchup/Catsup	-	-	-	100	100	200	70	210	70	-	70	-	350	140	210	70	140	-	X	140	A	A	A	A	-	A
Caustic Lime (Calcium Hydroxide)	$Ca(OH)_2$	-	-	140	140	200	180	250	100	140	180	250	350	140	210	-	210	180	140	140	A	A	-	-	A	-
Caustic Potash (Potassium Hydroxide)	-	-	-	140	140	C	180	100	100	70	180	-	210	-	140	-	70	180	140	140	A	NR	-	-	X	-
Caustic Soda (Sodium Hydroxide)	NaOH	50	2.13	140	140	C	180	100	100	140	180	250	350	-	210	210	X	180	140	70	NR	NR	-	-	C	-
Cellosolve (Butyl Cellosolve)	-	-	-	X	X	X	70	100	X	-	-	180	180	140	210	70	X	140	X	X	A	A	A	A	A	A
Cetyl Alcohol	$C_{16}H_{33}OH$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	A	-	-	-	-
Chloral Hydrate (knockout drops)	$CCl_3CH(OH)_2$	-	1.9	140	-	-	X	70	-	-	-	140	180	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroacetic Acid	$ClCH_2COOH$	-	-	100	100	73	100	180	X	X	X	140	250	-	100	X	70	-	X	X	A	A	B	B	A	A
Chloric Acid	$HClO_3$	20	-	140	140	180	X	180	100	-	-	-	180	-	100	X	70	100	X	X	A	A	X	X	-	A
Chlorinated Glue	-	-	-	X	X	-	-	-	X	-	X	-	70	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorine Dioxide	ClO_2	15	-	100	100	*	X	140	X	-	-	250	350	140	180	-	X	X	X	X	A	A	X	X	A	A
Chlorine Gas Dry	Cl_2	-	-	X	X	X	X	X	70	X	X	180	250	X	70	X	100	X	X	X	A	A	A	A	X	A
Chlorine Gas Wet	-	-	-	X	X	X	X	210	-	X	X	180	250	X	210	X	X	X	X	X	A	-	X	X	A	A

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

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics														Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Chlorine Liquid	-	-	-	X	X	X	X	140	X	X	X	210	250	-	X	X	140	X	-	X	-	A	X	-	-	-
Chlorine Water	-	-	-	140	73	200	100	250	-	70	-	210	350	100	210	X	X	70	X	X	-	-	X	X	A	A
Chlorosulfonic Acid	$ClSO_2OH$	50	1.77	X	X	X	X	X	X	X	-	70	180	X	X	X	X	X	X	X	-	-	X	B	A	A
Chlorox Bleach	$NaOCl:H_2O$	5.5	-	100	-	140	-	210	-	140	-	210	350	140	180	-	210	100	70	70	-	-	-	-	-	-
Chocolate Syrup	-	-	-	100	100	-	100	210	70	-	70	-	350	-	-	-	70	-	140	140	-	-	A	A	-	A
Chrome Alum (Chr. Potass. Sulf.)	$CrK(SO_4)_2$	-	-	140	140	200	180	210	100	140	-	250	350	250	210	-	210	140	70	140	-	A	B	-	B	A
Chromic Acid	H_2CrO_4	5	2.8	140	140	180	-	210	100	70	X	250	350	140	180	-	70	140	X	X	A	A	A	A	A	B
Chromic Acid	H_2CrO_4	10	-	140	140	180	-	210	100	70	X	250	350	140	180	X	140	140	X	X	A	A	B	B	A	A
Chromic Acid	H_2CrO_4	20	-	100	100	180	-	210	100	70	X	250	350	70	140	X	140	140	X	X	A	A	B	B	A	A
Chromic Acid	H_2CrO_4	30	-	73	73	180	-	140	100	70	X	250	350	X	X	X	140	140	X	X	A	A	B	B	A	A
Chromic Acid	H_2CrO_4	50	-	X	X	-	-	140	100	70	X	250	350	X	X	X	140	140	X	X	A	A	B	B	A	B
Chromium Alum.	-	-	-	-	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Citric Acid	-	-	1.54	140	140	200	180	210	100	140	X	250	350	210	210	70	210	180	180	180	A	A	A	B	A	A
Citric Oils	-	-	-	-	-	X	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	A	-	A
Cobalt Chloride	$CoCl_2$	-	3.35	-	-	200	-	-	-	-	-	-	-	-	-	-	70	70	70	70	-	-	-	-	-	-
Coconut Oil	-	-	-	140	-	X	180	250	-	140	-	140	350	-	280	-	140	100	100	100	-	A	A	A	-	A
Cod Liver Oil	-	-	-	-	-	X	X	-	-	-	-	70	305	-	-	X	70	70	-	70	A	A	A	A	-	A
Coffee	-	-	-	-	73	73	70	-	100	140	70	-	140	-	-	70	140	70	140	140	-	-	A	A	A	A
Coke Oven Gas	-	-	-	140	140	*	70	250	-	-	-	250	350	-	-	-	210	X	X	X	-	-	A	A	A	-
Cola Concentrates	-	-	-	-	-	73	-	-	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper Acetate	$Cu(C_2H_3O_2)_2$	-	-	73	140	200	70	250	-	-	-	-	350	210	180	-	X	140	70	70	A	A	A	A	-	A
Copper Carbonate	$Cu_2(OH)_2CO_3$	-	-	100	140	200	70	250	-	-	-	140	350	-	-	-	70	70	70	X	A	A	A	A	A	A
Copper Chloride	$CuCl_3$	-	3.4	140	140	200	180	250	100	140	180	250	350	250	210	180	210	180	180	180	A	A	X	X	A	A
Copper Cyanide	$Cu(CN)_2$	-	-	73	140	200	180	180	100	140	-	250	350	250	210	180	70	70	70	70	A	A	A	B	A	A
Copper Fluoride	CuF_2	-	2.9	140	140	200	100	250	100	140	180	250	350	250	-	-	100	100	100	100	-	A	X	A	-	-
Copper Nitrate	$Cu(NO_3)_2$	-	2.3	140	140	200	180	250	100	140	180	250	350	210	210	180	210	180	140	140	A	A	A	A	A	A
Copper Salts	-	-	-	140	140	200	180	250	100	140	-	140	210	70	180	-	70	70	70	70	-	A	-	-	-	-
Copper Sulfate	$CuSO_4$	-	2.3	140	140	200	180	250	100	140	180	250	350	250	210	180	210	180	140	140	A	A	A	A	A	A
Corn Oil	-	-	-	140	73	X	140	250	100	140	70	70	350	210	180	70	140	X	100	140	A	A	A	A	-	A
Corn Syrup	-	-	-	140	140	200	180	250	100	-	70	150	350	140	180	70	210	180	100	140	-	-	A	A	-	-
Cottonseed Oil	-	-	-	140	140	X	140	250	100	140	-	140	350	100	180	180	250	70	140	180	A	A	A	A	A	A
Cream	-	-	-	73	73	X	70	-	70	-	-	-	70	-	-	-	-	70	-	-	-	-	A	A	-	-
Creosol	$CH_3C_6H_4OH$	-	1.05	X	X	X	X	140	X	70	X	180	350	-	X	X	70	X	X	X	-	A	A	A	-	-
Creosote	-	-	-	X	X	X	X	X	X	-	X	70	350	-	-	X	70	X	X	70	A	A	A	A	A	A
Cresols	-	-	-	X	X	X	X	140	X	-	X	250	350	X	140	X	100	X	X	X	A	A	A	A	A	A
Cresylic Acid	-	-	-	X	X	X	X	140	X	-	X	140	350	X	X	X	-	X	X	X	-	A	A	A	A	A
Croton Aldehyde	$CH_3CH=CHCHO$	-	-	X	X	X	X	140	X	-	-	70	210	-	-	-	X	70	X	70	A	A	-	-	-	-
Crude Oil	-	-	-	73	73	X	70	250	-	70	X	180	350	210	70	140	250	X	X	70	A	A	A	A	A	A

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

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics													Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Cryolite	Na_3AlF_6	-	-	73	-	200	180	250	-	-	-	-	250	-	-	-	70	X	100	70	-	-	-	-	-	-
Cupric Cyanide (Copper Cyanide)	$Cu(CN)_2$	-	-	73	73	200	180	180	100	140	-	250	350	250	210	180	70	70	70	70	-	A	A	B	-	A
Cupric Fluoride	CuF_2	-	-	140	140	200	100	250	70	-	-	-	250	-	210	-	140	140	70	70	-	-	-	-	-	-
Cupric Nitrate	$Cu(NO_3)_2$	-	-	100	100	200	140	250	70	-	-	-	70	-	-	-	70	180	70	70	-	A	A	-	-	-
Cupric Salts	-	-	-	100	100	200	180	250	-	-	-	-	-	-	-	-	-	-	-	-	-	A	-	-	-	-
Cupric Sulfate (Copper Sulfate)	$CuSO_4$	-	-	140	140	200	180	250	100	140	180	250	350	250	210	180	210	180	140	140	A	A	A	A	A	A
Cutting Oil	-	-	-	-	-	C	-	-	70	-	-	-	350	-	-	-	70	X	-	210	A	-	A	A	-	-
Cyanic Acid (Isocyanic Acid)	HN=C=0	-	-	-	-	X	-	-	-	-	-	-	180	-	-	-	X	70	X	70	A	-	A	A	-	-
Cyclohexane	-	-	-	X	X	X	X	210	-	140	X	250	350	210	180	180	100	X	X	70	A	A	A	A	A	A
Cyclohexanol	C_6H_{12}	-	0.94	X	X	X	70	70	70	-	X	140	350	-	100	180	100	X	70	X	A	A	A	A	-	A
Cyclohexanone	$C_6H_{11}OH$	-	0.95	X	X	X	X	70	X	-	X	100	350	100	70	X	X	X	X	X	A	A	A	A	-	A
Decalin	C_6H_100	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	70	X	-	X	-	-	-	-	-	-
Decanal	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	X	X	-	X	-	-	-	-	-	-
Decane	$CH_3(CH_2)_8CH_3$	-	-	-	-	-	-	180	-	-	-	-	250	-	-	-	70	X	X	X	-	-	-	-	-	-
Detergents	-	-	-	140	140	C	180	250	100	140	-	250	350	210	140	140	210	180	180	180	-	-	A	A	A	A
Detergents, Heavy Duty	-	-	-	-	-	C	-	-	-	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Developers (Photo)	-	-	-	140	140	180	180	250	100	140	-	250	350	140	180	180	140	100	140	70	-	-	A	A	A	A
Dextrin, Starch Gum	-	-	-	140	140	200	180	250	100	140	180	250	350	-	-	-	210	180	70	140	A	A	A	A	-	-
Dextrose (Glucose)	-	-	-	140	140	200	180	250	100	140	180	250	350	210	210	70	210	180	140	180	A	A	A	A	A	A
Diacetone Alcohol	-	-	-	X	X	X	70	70	100	-	-	-	350	210	-	-	X	140	X	X	A	A	A	A	A	A
Diallyl Phthalate	-	-	-	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	A	-	-	-	-
Diazo Salts	-	-	-	140	140	200	180	250	100	140	-	-	350	-	X	-	-	-	-	-	-	-	-	-	-	-
Dibenzyl Ether	-	-	-	X	X	X	X	70	-	-	-	-	250	-	-	-	X	X	X	X	-	A	A	A	-	-
Dibutylamine	$(C_4H_9)_2NH$	-	-	-	x	X	-	70	-	-	-	180	350	-	-	-	X	X	X	X	-	A	-	-	-	-
Dibutyl Ether	-	-	-	X	X	X	X	100	70	-	X	180	350	-	X	180	X	X	X	X	-	-	A	A	-	-
Dibutyl Phthalate	$C_6H_4(COOC_4H_9)_2$	-	-	X	X	X	70	70	70	70	X	210	350	210	210	180	70	70	X	X	A	A	A	A	A	A
Dibutyl Sebacate	-	-	-	-	X	X	-	100	-	-	-	-	350	-	180	-	70	70	X	X	A	A	-	-	-	-
Dicalcium Phosphate	CaHPO	-	-	73	73	200	-	-	-	-	-	-	-	-	-	-	70	-	-	70	-	-	-	-	-	-
Dichloroethane (ethylene dichloride)	$ClCH_2CH_2Cl$	-	-	X	X	X	X	140	X	X	X	100	350	X	X	X	180	X	X	X	A	A	A	A	A	A
Dichlorobenzene	$C_6H_4Cl_2$	-	-	X	X	X	X	140	-	X	X	70	350	100	X	X	180	X	X	X	A	A	A	A	-	A
Dichloroethylene	ClHC:CHCl	-	1.25	X	X	X	-	140	-	-	X	100	350	70	X	-	140	X	X	X	A	A	X	B	-	A
Dichloroisopropyl (Ether)	-	-	-	X	X	X	X	70	-	-	-	-	70	-	-	-	-	-	X	X	-	-	-	A	A	-
Dichloromethane	CH_2Cl_2	-	-	X	X	X	X	100	X	X	X	70	-	70	X	X	-	-	X	X	-	-	-	-	-	-
Diesel Fuel	-	-	-	73	140	*	70	180	70	70	-	250	350	250	140	180	-	-	-	-	A	A	A	A	A	A
Diethanolamine	-	-	1.1	X	X	X	-	-	70	-	180	-	350	-	100	70	X	140	X	X	A	A	A	A	A	A
Diethyl Cellosolve	-	-	-	-	-	X	-	210	-	-	-	250	350	-	70	-	-	-	-	-	-	-	-	-	-	-
Diethylether (Ether)	$(C_2H_5)_2O$	-	-	X	X	X	X	70	X	-	X	70	350	X	X	X	X	X	X	X	A	A	A	A	A	A
Diethyl Ketone	$C_2H_5COC_2H_5$	-	-	X	X	X	-	X	70	-	X	-	100	X	X	X	X	-	X	X	-	-	-	-	-	-

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

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics													Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Diethyl Oxide (Ether)	$(C_2H_5)_2O$	-	-	-	X	X	-	-	-	-	-	-	350	-	-	-	X	X	X	X	-	-	-	-	A	-
Diethylamine	$(C_2H_5)_2NH$	-	-	X	X	X	70	70	-	-	X	70	350	X	X	-	X	70	100	X	A	-	A	A	X	-
Diethylbenzene	$C_6H_4(C_2H_5)_2$	-	-	X	X	X	X	-	-	-	-	70	100	X	70	X	180	X	X	X	A	A	-	-	-	-
Diethylene Glycol	-	-	-	-	X	C	180	140	100	140	X	100	350	-	180	70	140	100	140	180	A	A	A	A	A	B
Diethylenetriamine	-	-	-	X	X	X	70	100	70	-	-	-	350	X	X	-	X	180	X	X	A	A	-	-	-	-
Diglycolic Acid	$O(CH_2COOH)_2$	-	-	100	100	180	140	70	100	-	-	70	350	-	-	-	70	70	-	70	A	A	-	-	-	-
Diisobutyl Ketone	-	-	-	X	X	X	70	140	-	-	X	100	350	-	-	-	X	100	X	X	A	A	-	-	-	-
Diisobutylene	C_8H_{16}	-	-	X	X	-	-	140	-	-	-	250	350	-	70	-	140	X	X	70	-	-	A	A	-	-
Diisooctyl Phthalate	-	-	-	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
Diisopropyl Ketone	-	-	-	X	X	X	-	X	-	-	-	70	70	-	-	X	X	70	X	X	-	-	A	A	-	-
Dimethylbenzene	$C_6H_4(CH_3)_2$	-	-	X	X	X	X	180	X	X	X	140	350	140	70	X	140	X	X	X	-	-	-	-	-	-
Dimethyl Ether	CH_3OCH_3	-	0.66	X	X	X	-	70	70	-	-	-	250	-	-	-	X	X	-	70	A	A	C	C	A	C
Dimethylformamide	$HCON(CH_3)_2$	10	0.95	X	X	X	100	X	100	-	X	100	250	X	X	X	X	70	X	X	A	A	-	A	-	-
Dimethyl Ketone (Acetone)	CH_3COCH_3	-	-	X	X	X	100	X	-	-	X	100	350	70	X	X	X	100	X	X	-	-	A	A	-	-
Dimethyl Phthalate	$C_6H_4(COOCH_3)_2$	-	-	X	X	X	X	X	-	-	-	210	350	210	140	-	70	70	X	X	A	A	A	A	-	A
Dimethylamine	$(CH_3)_2NH$	-	-	X	X	X	100	X	X	X	-	100	350	X	-	-	X	X	X	X	A	A	-	-	-	-
Dioctyl Phthalate	-	-	-	X	X	X	X	70	X	X	X	180	350	-	210	70	70	70	X	X	A	A	A	A	-	A
Dioxane	-	-	-	X	X	X	70	X	100	-	X	140	350	140	X	-	X	X	X	X	A	A	X	A	-	X
Dioxolane	-	-	1.07	X	X	X	-	X	-	-	-	-	70	-	-	-	X	X	X	X	-	-	-	-	-	-
Diphenyl (Dowtherm)	-	-	-	X	X	-	-	-	X	-	-	180	350	-	140	X	70	X	X	X	A	A	A	B	A	B
Diphenyl Ether (Diphenyl Oxide)	-	-	-	X	X	X	-	70	X	-	-	-	350	-	100	-	70	-	-	X	A	A	A	A	-	A
Diphenyl Oxide	$(C_6H_5)_2O$	-	-	X	X	X	-	70	X	-	-	-	350	-	100	-	70	X	X	X	A	A	A	A	A	B
Dipropylene Glycol	-	-	1.25	-	-	C	70	250	100	-	-	100	180	-	180	70	70	-	-	70	-	-	-	-	A	-
Disodium Methylarsonate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Disodium Phosphate	-	-	-	140	140	200	180	250	100	-	-	250	350	-	-	-	70	70	-	70	-	-	A	A	-	A
Distilled Water	HOH	-	-	140	140	200	180	250	100	140	180	250	350	250	210	-	140	140	140	140	NR	-	-	-	-	-
Divinylbenzene	-	-	-	X	X	X	X	X	-	-	-	70	350	140	100	-	250	X	X	X	-	-	-	-	-	-
Dolomite	$CaMg(CO_3)_2$	-	-	-	140	200	-	-	-	-	-	-	-	-	-	-	70	-	70	70	-	-	-	-	-	-
Dowtherm (Diphenyl)	-	-	-	X	X	-	X	70	X	-	-	180	350	-	140	X	70	X	X	X	A	NR	A	A	A	A
Dry Cleaning Solvents	-	-	-	X	X	X	X	140	X	X	X	180	350	100	100	X	70	X	-	70	-	-	A	A	-	-
Epichlorohydrin	-	-	-	X	X	X	X	X	-	-	-	180	350	-	X	X	X	70	X	X	A	A	A	A	-	A
Epsom Salts	$MgSO_4$	-	-	140	73	200	180	250	100	140	180	-	350	70	210	180	180	180	140	180	A	A	A	A	A	A
Esters (General)	-	-	-	X	X	X	X	100	X	-	X	70	350	180	140	X	-	-	-	-	-	-	-	-	-	-
Ethane	C_2H_6	-	-	X	X	*	X	210	X	-	X	-	350	-	-	X	140	X	-	140	A	A	A	A	-	-
Ethanol (Alcohol, Ethyl)	C_2H_5OH	-	-	140	X	C	100	180	100	140	X	250	350	180	70	-	180	180	140	140	A	A	A	A	A	A
Ethanolamine	-	-	1.02	X	X	X	-	X	70	-	-	X	350	-	70	180	X	180	-	70	A	A	A	A	A	A
Ethers	-	-	-	X	X	X	X	100	X	-	X	70	350	-	X	X	X	-	X	X	A	A	A	A	A	A
Ethyl Acetate	$CH_3COOC_2H_5$	-	-	X	X	X	X	-	-	-	X	100	350	140	X	X	X	-	X	X	A	-	A	A	-	-

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

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics														Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Ethyl Acetoacetate	-	-	-	X	X	X	X	100	70	-	X	140	350	-	-	-	X	100	X	X	A	A	-	-	-	-
Ethyl Acrylate	-	-	-	X	X	X	X	100	-	-	X	100	350	140	X	-	X	70	X	X	A	A	A	A	B	A
Ethyl Alcohol	C_2H_5OH	-	0.8	140	X	C	100	180	100	100	X	250	350	180	70	-	180	180	140	140	A	A	A	A	A	A
Ethylbenzene	$C_6H_5C_2H_5$	-	-	X	X	X	X	140	70	X	-	-	350	70	100	X	70	X	X	X	A	A	A	A	-	A
Ethyl Bromide	C_2H_5BR	-	-	X	X	X	X	180	X	X	-	-	350	X	X	-	70	X	X	-	A	A	A	A	-	-
Ethyl Butyrate	$C_3H_7CO_2C_2H_5$	-	-	X	X	X	X	-	X	X	-	-	350	-	-	X	-	X	X	X	A	A	A	-	-	-
Ethyl Cellosolve	-	-	-	-	-	X	70	100	70	-	-	180	350	100	210	70	X	70	X	70	-	-	-	-	-	-
Ethyl Chloride (Chloroethane)	C_2H_5CL	-	0.92	X	X	X	X	250	X	X	X	180	350	250	X	X	140	100	X	70	A	A	A	A	A	B
Ethyl Ether	$(C_2H_5)_2O$	-	-	X	X	X	X	100	X	X	X	180	350	140	X	X	X	X	X	X	A	A	A	A	A	A
Ethyl Formate	$HCOOC_2H_5$	-	-	X	X	X	X	X	-	-	-	100	350	-	-	-	X	70	-	X	A	A	-	A	-	-
Ethyl Sulfate	$(C_2H_5)_2SO_4$	-	-	X	X	X	X	-	-	-	-	-	350	100	70	-	X	180	70	X	A	A	X	X	-	A
Ethylcellulose	-	-	-	X	X	-	-	-	-	-	X	70	350	-	-	-	X	-	-	-	A	A	-	A	-	-
Ethylene Bromide	$(CH_2)_2Br_2$	-	-	X	X	X	X	210	X	-	X	140	350	-	-	-	X	-	X	X	A	A	A	A	B	A
Ethylene Chlorohydrin	$(CH_2)_2ClOH$	-	-	X	X	X	-	70	X	-	X	70	350	X	100	-	X	70	70	X	A	C	B	A	B	B
Ethylene Diamine	$(CH_2)_2(NH_2)_2$	-	-	X	X	X	70	X	70	-	X	70	350	X	X	X	X	70	70	70	A	A	A	A	A	A
Ethylene Dichloride (Dichloroethane)	$ClCH_2CH_2Cl$	-	1.25	X	X	X	X	140	X	X	X	100	350	X	X	X	70	X	X	X	-	-	A	A	A	A
Ethylene Glycol	CH_2OHCH_2OH	-	1.12	140	140	C	180	250	100	100	70	180	350	210	70	180	210	180	140	210	A	A	A	A	-	A
Ethylene Oxide	$(CH_2)_2O$	-	0.9	X	X	X	-	70	70	70	X	180	350	X	X	250	X	X	X	X	A	A	A	A	-	A
Fatty Acids	-	-	-	140	140	C	140	250	-	140	-	180	350	210	210	70	70	X	X	70	A	A	A	A	A	A
Ferric Acetate (Iron Acetate, Basic)	$Fe(C_2H_3O_2)_2OH$	-	-	-	-	200	-	-	100	140	-	-	70	-	180	-	X	-	-	X	-	-	-	-	-	-
Ferric Chloride	$FeCl_3$	-	2.9	140	140	200	180	250	100	70	180	250	350	210	210	210	180	180	140	140	A	A	X	-	A	A
Ferric Hydroxide	$Fe(OH)_3$	-	-	140	73	200	180	250	100	-	-	-	350	-	-	-	180	180	100	140	A	A	A	A	A	A
Ferric Nitrate	$FeNO_3$	50	1.7	140	73	200	140	250	100	140	180	250	350	210	210	180	210	180	100	104	A	A	B	A	A	B
Ferric Sulfate	$Fe(SO_4)_3$	-	3.1	140	140	200	180	250	100	140	70	250	350	210	210	180	180	180	140	140	A	A	A	A	A	A
Ferrous Chloride	$FeCl_2$	-	3.2	140	-	200	180	250	100	140	140	250	350	210	210	180	180	180	140	140	A	A	X	X	A	A
Ferrous Nitrate	-	-	-	140	140	200	180	250	100	140	-	250	350	210	180	-	210	180	140	140	A	-	A	-	-	-
Ferrous Sulfate	$FeSO_4$	-	1.9	140	140	200	180	250	100	140	180	250	350	250	70	250	180	180	140	140	A	A	A	A	A	A
Fish Solubles	-	-	-	140	140	180	180	250	100	140	-	-	350	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluoboric Acid	HBF_4	-	1.8	140	73	180	140	250	100	140	70	70	350	210	140	180	180	140	140	140	A	A	X	A	X	A
Fluorine Gas, wet	F_2	-	-	73	x	X	X	140	X	X	X	70	350	70	X	X	100	100	X	X	-	-	X	X	X	A
Fluorine, Liquid	F_2	-	-	X	X	X	X	-	X	X	X	-	-	-	X	X	-	X	X	X	-	-	-	-	-	-
Fluosilicic Acid (Hydro Fluosilic Acid)	H_2SiF_6	25	1.11	140	140	180	140	250	100	140	X	-	350	210	-	180	140	140	140	70	A	NR	X	X	X	B
Formaldehyde	HCHO	37	0.82	100	x	X	140	100	70	70	-	180	350	140	140	70	180	180	140	140	A	A	A	A	A	B
Formaldehyde	HCHO	50	-	100	x	X	140	100	70	70	-	180	350	-	140	70	70	70	140	100	A	A	A	B	B	B
Formic Acid	HCOOH	25	-	100	73	180	70	210	100	140	X	250	350	100	140	70	70	180	140	X	A	-	A	A	X	B
Freon 11 (MF)	CCl_3F	-	1.22	73	x	X	-	210	X	-	X	140	350	140	100	X	140	X	X	180	A	A	A	A	B	A
Freon 113 (TF)	Cl_3CCF_3	-	-	-	73	X	X	100	X	-	X	140	350	-	-	70	140	X	100	210	A	A	A	A	B	A

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

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics													Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Freon 114	$C_2Cl_2F_4$	-	-	-	73	X	-	180	-	-	X	140	350	-	-	-	100	X	180	210	A	A	A	A	-	-
Freon 12	Cl_2CF_2	-	-	-	140	X	-	210	70	70	70	140	350	140	-	X	100	-	180	210	A	A	A	A	A	A
Freon 12 (Wet)	Cl_2CF_2	-	-	-	x	X	-	-	-	-	-	140	350	-	-	X	100	70	-	-	A	A	-	A	-	-
Freon 22	$HCClF_2$	-	-	X	x	X	70	210	70	-	X	140	350	-	-	-	X	140	180	X	A	A	A	A	A	A
Freon TF	-	-	-	-	-	X	X	100	X	-	X	140	350	-	-	70	140	X	100	210	-	-	A	-	B	A
Fructose	-	-	-	140	140	200	180	250	100	-	180	250	350	140	180	70	210	180	70	140	-	-	A	A	A	A
Fruit Juice	-	-	-	140	140	200	180	250	100	140	100	140	350	-	-	-	140	180	140	140	A	A	A	A	A	A
Fruit Pulp	-	-	-	140	140	200	180	250	-	140	-	140	350	-	-	-	-	-	-	-	-	-	-	-	-	-
Fuel Oil	-	-	-	140	140	*	70	180	X	70	X	250	350	210	180	180	180	X	X	210	A	-	A	A	A	A
Fumaric Acid (Boletic Acid)	-	-	-	-	-	-	-	100	-	-	-	-	350	-	-	-	70	-	-	70	A	-	-	B	-	-
Furan	-	-	-	-	-	X	X	X	-	-	-	70	350	-	-	-	X	X	X	X	-	-	A	A	-	B
Furfural (Ant Oil) Bran Oil	-	-	0.94	X	X	X	X	70	X	X	X	100	350	X	X	X	X	180	100	X	A	A	B	A	A	A
Furfuryl Alcohol	-	-	1.2	X	X	X	X	70	-	-	X	-	350	100	70	-	X	X	-	X	A	A	-	A	-	-
Gallic Acid	-	-	-	140	140	180	140	70	100	-	-	140	350	-	-	-	70	70	-	70	A	-	A	B	B	B
Gas, Natural	CH_4	-	-	140	140	*	100	210	-	-	X	250	350	210	180	70	70	X	70	70	A	A	A	A	-	A
Gasoline, Leaded	-	-	-	73	X	X	X	210	X	70	X	250	350	250	210	-	140	X	70	140	-	-	A	A	A	A
Gas, Sour	-	-	-	100	X	-	X	210	X	70	X	250	350	250	180	-	70	X	X	70	-	-	A	A	-	A
Gasoline, Unleaded	-	-	-	73	X	X	X	210	X	70	X	250	350	250	140	X	140	X	X	140	-	-	A	A	A	A
Gelatin	-	-	-	140	140	180	180	250	14-	140	180	250	350	250	180	180	210	180	70	140	-	-	A	A	A	A
Gin	-	-	-	100	100	100	100	210	X	70	-	250	350	-	-	-	210	180	140	180	-	-	-	-	-	-
Gluconic Acid	-	50	-	-	-	180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	-	X	X	-	-
Glucose	$C_6H_{12}O_6$	-	-	140	140	200	180	250	100	140	180	250	350	210	210	70	210	180	140	180	A	A	A	A	A	A
Glue	-	-	-	140	140		100	250	70	-	70	-	350	-	-	-	210	180	70	140	A	A	A	A	A	A
Glycerine (Glycerol)	$C_3H_5(OH)_3$	-	-	140	140	200	180	250	100	140	180	250	350	100	210	180	180	180	140	100	A	A	A	A	A	A
Glycerol (Glycyl Alcohol)	$C_3H_5(OH)_3$	-	1.3	140	140	200	180	250	100	140	70	250	350	100	-	-	180	180	140	100	A	A	-	A	-	A
Glycolic Acid (Hydroxyacetic Acid)	-	-	-	140	140	-	140	100	100	140	70	140	350	-	70	-	X	70	X	X	A	A	A	A	A	A
Glycols	-	-	-	140	140	C	180	250	100	140	70	250	350	180	70	180	70	70	70	70	-	A	A	A	-	-
Glyoxal	OHCCHO	30	1.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	-	-
Gold (Auric Cyanide)	$Au(CN)_4$	-	-	-	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grape Juice	-	-	-	140	140	200	180	250	100	140	-	140	350	140	210	70	140	210	140	140	A	A	-	-	-	-
Grape Sugar	-	-	-	140	140	200	140	250	100	140	-	140	250	-	-	-	210	280	70	140	-	-	-	-	-	-
Grease	-	-	-	73	-	C	-	140	-	140	70	140	350	-	-	70	140	X	X	100	A	A	A	A	-	A
Green Liquor (Alkaline pulp)	-	-	-	140	-	200	180	250	100	-	-	-	350	210	210	250	70	70	70	70	NR	NR	-	A	-	-
Helium	He	-	-	140	140	*	140	250	70	-	-	70	350	-	-	70	70	70	70	180	A	A	A	A	-	-
Heptane	$CH_3(CH_2)_5CH_3$	-	-	100	80	C	X	250	X	-	X	250	350	140	70	70	140	X	X	70	A	A	A	A	A	A
Hexane	$CH_3(CH_2)_4CH_3$	-	0.66	73	X	C	70	250	X	70	X	250	350	180	70	180	70	X	70	70	A	-	A	A	A	A
Hexene	-	-	0.67	X	X	X	-	-	-	-	-	-	-	-	-	-	70	X	-	-	-	-	-	-	-	-
Hexyl Alcohol (Hexanol)	$C_6H_{11}OH$	-	-	140	73	X	70	180	100	140	-	70	250	-	-	-	250	100	70	100	-	-	A	A	-	A

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

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics														Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Honey	-	-	-	140	140	140	70	250	100	140	-	140	350	-	-	-	140	140	140	140	-	-	A	A	-	A
Hydraulic Oil	-	-	-	73	-	X	X	-	X	70	70	100	350	210	180	70	70	X	X	210	-	-	A	A	-	A
Hydraulic Oil (synthetic)	-	-	-	-	-	X	-	-	X	-	-	-	-	-	-	-	-	-	X	X	-	-	A	A	-	A
Hydrazine	H_2NNH_2	-	1	X	X	X	X	X	70	140	X	100	350	-	X	X	X	70	-	70	A	A	A	A	-	-
Hydrobromic Acid	HBr	48	1.5	140	-	x	140	250	100	140	-	250	350	210	140	-	140	100	100	X	A	A	X	X	A	A
Hydrobromic Acid	HBr	20	-	140	140	180	180	250	100	140	X	250	350	210	180	250	140	180	X	X	A	A	X	X	A	A
Hydrobromic Acid	HBr	10	-	140	140	180	180	250	100	140	-	250	350	210	180	250	140	180	X	-	A	A	X	X	A	A
Hydrochloric Acid (Dry Gas)	HCl	-	-	-	-	*	-	-	-	-	-	-	250	-	300	70	100	70	-	-	NR	-	X	-	X	-
Hydrochloric Acid	HCl	10	-	140	140	180	180	250	100	140	180	250	250	70	210	180	210	140	140	140	NR	-	B	X	B	B
Hydrochloric Acid	HCl	20	-	140	140	180	180	250	100	140	180	250	250	210	180	180	210	140	140	70	NR	-	X	X	C	B
Hydrochloric Acid	HCl	25	-	140	140	180	180	250	100	140	70	250	250	210	140	180	140	140	140	X	NR	-	X	X	C	B
Hydrochloric Acid	HCl	37	1.19	140	73	180	140	210	100	140	70	250	250	210	140	180	100	70	X	X	NR	-	X	X	C	B
Hydrocyanic Acid (Prussic Acid)	HCN	-	-	140	140	180	140	250	100	140	70	250	350	180	180	70	70	70	-	70	A	A	A	A	A	A
Hydrofluoric Acid	HF	5	-	100	73	180	140	210	100	140	70	250	350	70	140	180	180	100	100	-	NR	-	-	A	X	A
Hydrofluoric Acid	HF	10	-	73	73	180	140	210	100	140	70	250	350	70	140	180	210	100	100	X	NR	-	A	A	X	A
Hydrofluoric Acid	HF	20	-	73	73	x	140	210	100	140	70	250	350	70	140	-	180	100	100	-	NR	-	X	A	X	A
Hydrofluoric Acid	HF	30	-	73	73	x	140	210	100	70	70	250	350	X	140	70	180	100	100	X	NR	-	X	X	X	A
Hydrofluoric Acid	HF	40	-	73	73	x	140	210	100	140	70	250	350	X	140	X	180	100	100	X	NR	-	X	X	X	A
Hydrofluoric Acid	HF	50	-	73	X	x	140	250	100	100	X	250	350	X	X	X	180	100	100	X	NR	-	X	X	X	A
Hydrofluosilicic Acid	H_2SiF_6	25	-	140	140	180	140	250	100	X	X	-	350	210	-	180	140	140	-	140	NR	-	X	X	X	B
Hydrogen	H	-	-	140	140	180	180	180	100	140	180	250	350	70	210	180	180	180	140	140	A	A	A	A	A	A
Hydrogen Chloride, Gas, Dry	HCl	-	1.27	-	-	-	-	210	X	-	X	250	350	210	180	70	70	100	70	X	A	A	A	A	X	A
Hydrogen Cyanide	HCN	-	-	140	140	180	140	250	100	-	-	250	350	180	180	70	140	100	100	70	A	A	A	A	A	A
Hydrogen Peroxide	H_2O_2	5	-	140	140	180	140	210	100	100	70	250	350	140	140	100	180	100	-	-	A	A	B	A	A	A
Hydrogen Peroxide	H_2O_2	10	-	140	140	180	70	210	100	100	70	250	350	140	140	100	180	100	X	X	A	A	B	B	A	A
Hydrogen Peroxide	H_2O_2	30	-	100	140	180	70	210	100	100	-	250	350	140	140	100	100	70	X	X	A	A	B	B	A	A
Hydrogen Peroxide	H_2O_2	50	-	73	73	73	X	180	100	X	-	140	350	X	70	100	70	X	X	X	A	A	B	C	A	A
Hydrogen Peroxide	H_2O_2	90	-	X	X	x	X	-	100	-	X	140	350	X	-	100	100	-	X	X	A	A	A	A	A	A
Hydrogen Phosphide (Phosphine)	PH_3	-	-	100	X	140	70	140	100	140	-	140	350	-	-	70	-	-	-	X	-	-	-	-	-	-
Hydrogen Sulfide	H_2S	-	-	140	140	*	140	140	100	140	-	-	350	250	-	-	-	-	-	-	A	A	-	-	-	-
Hydrogen Sulfide (Aq Sol)	H_2S	-	1.19	140	140	180	180	250	100	140	-	140	350	250	180	-	140	180	140	180	A	A	A	A	A	A
Hydrogen Sulfide (dry)	H_2S	-	-	140	140	*	180	250	100	140	70	250	350	250	210	-	X	180	140	140	A	A	C	A	A	A
Hydroquinone	$C_6H_4(OH)_2$	-	-	140	140	180	180	210	100	140	-	250	350	-	-	-	100	X	X	X	A	A	A	A	B	B
Hydroxyacetic Acid (Glycolic Acid)	-	-	1.27	140	140	180	140	100	100	140	70	140	350	-	70	-	X	70	X	X	A	A	A	A	-	-
Hydroxylamine Sulfate	-	-	-	140	140	180	-	140	100	-	-	-	250	-	-	-	-	-	-	-	-	-	-	-	-	-
Hypochlorous Acid	HClO	-	-	140	140	C	70	250	100	140	-	250	350	210	140	-	180	140	X	X	A	-	X	X	A	A
Iodine Solution	I_2	0	-	X	X	-	-	140	X	X	X	250	350	X	100	X	140	X	X	70	A	A	-	B	A	A

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

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics													Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Isobutyl Alcohol (Alcohol, Isobutyl)	-	-	–	100	73	C	140	210	100	-	-	250	350	140	100	70	70	70	70	70	A	A	A	A	A	A
Isooctane	-	-	0.7	73	73	-	70	250	-	-	X	100	250	70	100	70	70	X	70	210	A	A	A	A	-	A
Isophorone	-	-	0.92	X	X	X	-	70	-	-	-	-	350	100	70	-	X	X	X	X	A	A	-	C	-	-
Isopropanol (Alcohol, Isopropyl)	-	-	-	140	-	C	140	140	100	140	-	250	350	140	100	100	180	140	70	70	A	A	A	A	A	A
Isopropyl Acetate	$(CH_3)_2CHOH$	-	0.92	X	X	X	-	210	70	-	X	-	350	-	140	X	X	140	X	X	A	A	A	A	-	B
Isopropyl Alcohol (Alcohol, Isopropyl)	$CH_3COOCH-(CH_3)_2$	-	0.78	140	-	C	140	140	100	140	-	250	350	140	100	100	180	140	70	70	A	A	A	A	A	A
Isopropyl Chloride (Chlorpropene)	$(CH_3)_2CHOH$	-	-	-	-	X	-	-	-	-	-	-	210	-	-	-	70	X	X	X	-	-	A	A	-	-
Isopropyl Ether	$CH_2CHClCH_3$	-	0.72	X	X	X	X	100	X	-	-	70	35	100	70	X	X	X	X	70	A	A	A	A	A	A
Jet Fuel JP-3	-	-	-	140	X	*	X	210	X	-	-	250	350	210	180	140	140	X	X	70	A	A	A	A	A	A
Jet Fuel JP-4	-	-	-	140	X	*	70	210	X	-	-	250	350	210	180	140	250	X	X	70	A	A	A	A	A	A
Jet Fuel JP-5	-	-	-	140	X	*	70	210	X	-	-	250	350	210	100	140	250	X	X	70	A	A	A	A	A	A
Kerosene	-	-	0.81	100	140	C	70	250	X	-	70	250	350	250	180	180	140	X	X	70	A	A	A	A	A	A
Ketones	-	-	-	X	X	X	70	210	-	X	X	180	350	-	X	X	X	X	X	X	-	-	A	A	A	A
Kraft Liquor	-	-	-	140	140	200	100	70	100	-	100	-	350	-	-	-	-	-	-	-	A	NR	A	A	-	-
Lacquer	-	-	-	X	X	X	X	X	70	-	-	100	350	-	140	-	X	X	X	X	A	A	A	A	-	A
Lacquer Thinner	-	-	-	X	X	X	X	100	100	-	X	100	350	70	-	X	-	-	X	X	-	-	A	A	A	A
Lactic Acid (Milk Acid)	-	-	1.2	140	140	73	180	140	70	100	X	250	350	X	180	180	140	70	70	70	A	A	B	A	A	A
Lard	-	-	-	140	140	X	100	250	70	70	-	-	350	70	180	70	140	140	70	140	A	A	A	A	A	A
Lard Oil	-	-	-	140	140	X	70	250	70	X	-	250	350	70	180	70	140	140	70	140	A	A	A	A	A	A
Latex	-	-	-	73	73	-	-	-	70	-	-	-	350	-	100	-	X	70	70	180	A	A	A	A	-	A
Lauric Acid	$CH_3(CH_2)_{10}COOH$	-	0.83	140	140	C	140	250	100	-	-	250	350	-	180	X	70	-	70	X	A	-	-	-	-	-
Lauryl Chloride	$C_{12}H_{25}Cl$	-	-	140	73	X	100	250	70	-	-	250	350	-	180	-	-	-	-	-	-	-	-	-	-	-
Lead Acetate (Sugar of Lead)	$Pb(C_2H_3O_2)_2$	-	-	140	140	200	180	250	100	140	180	250	350	-	210	180	140	180	70	140	A	A	A	A	A	A
Lead Chloride	$PbCl_2$	-	5.88	140	140	200	140	250	70	-	-	250	250	-	210	-	210	180	70	140	A	A	-	-	-	-
Lead Nitrate	$Pb(NO_2)_2$	-	4.53	140	140	200	180	210	100	-	-	250	250	-	210	-	210	180	140	140	A	A	A	A	-	B
Lead Sulfate	$PbSO_4$	-	6.39	140	140	200	180	250	100	-	-	250	250	70	-	-	210	180	180	140	-	-	-	A	-	-
Lemon Oil	-	-	-	73	73	X	X	250	-	-	-	250	350	-	-	X	70	X	70	70	-	-	A	A	-	-
Levulinic Acid	-	-	-	73	73	-	-	210	-	-	-	-	350	-	210	-	-	-	-	-	-	-	-	-	-	-
Ligroin (Benzine)	-	-	-	X	X	-	X	100	-	X	X	-	350	-	X	X	140	X	X	X	A	-	A	A	A	A
Lime (Calcium Oxide)	CaO	-	-	73	73	200	180	250	100	140	-	250	350	180	140	-	140	140	140	140	-	A	A	A	A	A
Lime-Sulfur Solution	-	-	-	140	140	180	100	140	100	140	-	250	350	70	-	-	70	-	70	140	-	-	A	A	-	-
Linolic Acid	-	-	0.91	140	140	C	70	250	X	70	-	250	350	-	-	-	70	X	X	70	-	-	A	A	A	A
Linseed Oil (Flaxseed Oil)	-	-	-	140	140	X	140	250	X	-	-	250	350	250	210	70	250	70	70	70	A	A	A	A	A	A
Lithium Bromide	LiBr	-	3.46	140	140	200	140	250	100	-	-	140	350	180	250	-	210	70	X	140	A	A	A	A	A	A
Lithium Chloride	LiCl	-	-	140	140	200	140	250	100	-	-	-	350	-	250	-	180	100	70	140	A	A	A	A	A	A
LPG	-	-	-	-	-	X	-	250	70	X	70	250	250	70	-	X	180	X	-	210	A	A	A	A	A	A

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

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics													Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Lubricants	-	-	-	-	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	A	-	A	A
Lubricating Oil	-	-	-	140	73	C	X	250	-	X	-	250	350	70	180	180	180	X	70	210	A	A	A	A	-	A
Lye Solution (Sodium Hydroxide & Potassium Hydroxide)	-	-	-	140	140	C	100	100	100	140	70	250	350	210	140	70	X	180	70	100	NR	NR	A	A	X	A
Machine Oil	-	-	-	140	140	C	100	210	X	-	-	-	350	-	-	-	140	X	X	100	-	-	-	-	-	-
Magnesium Acetate	$(MgOOCCH_3)_2$	-	1.42	-	-	200	-	-	-	-	-	-	-	-	-	-	X	100	X	X	-	-	-	-	-	-
Magnesium Carbonate	$MgCO_3$	-	3	140	140	200	180	250	100	140	180	250	350	210	180	-	210	180	140	140	-	-	A	A	A	A
Magnesium Chloride	$MgCL_2$	-	2.3	140	140	200	180	250	100	140	180	250	350	250	210	180	180	180	140	180	A	A	X	A	A	A
Magnesium Citrate	$MgHC_6H_5O_7$	-	-	140	140	200	180	250	100	140	-	-	250	-	-	-	210	180	140	140	-	-	-	-	-	-
Magnesium Hydroxide (Milk of Magnesia)	$Mg(OH)_2$	-	2.36	140	140	200	180	250	100	140	180	250	350	250	210	180	210	180	140	140	A	A	A	A	A	A
Magnesium Nitrate	$Mg(NO_3)_2$	-	2.03	140	140	200	180	250	100	140	180	250	350	250	180	180	210	180	140	140	-	-	A	A	A	A
Magnesium Oxide	MgO	-	3.6	140	140	200	-	210	70	-	-	-	70	-	-	-	70	70	140	140	-	-	A	A	A	A
Magnesium Sulfate (Epsom Salts)	$MgSO_4$	-	2.6	140	140	200	180	250	100	140	180	-	350	70	210	180	180	180	180	180	A	A	A	A	A	A
Maleic Acid	-	-	1.59	140	140	180	180	250	100	70	-	250	350	-	210	-	180	140	X	X	A	A	A	A	A	A
Maleic Anhydride	-	-	0.93	X	X	-	X	100	X	70	-	-	350	-	210	-	140	X	X	X	A	A	A	A	-	A
Malic Acid (Apple Acid)	-	-	1.6	140	140	180	180	250	100	-	-	250	350	-	100	-	140	X	140	140	A	A	A	A	A	B
Manganese Sulfate	$MnSO_4$	-	2.11	140	140	200	180	250	70	-	70	70	350	-	210	-	210	180	140	140	A	A	B	A	A	A
Mash	-	-	-	-	-	-	-	-	70	-	-	-	-	-	-	-	-	-	140	140	A	A	A	A	-	A
Mayonnaise	-	-	-	140	140	X	-	70	70	-	-	70	350	-	-	70	140	X	70	180	A	A	A	A	-	A
Melamine (Trizane)	-	-	-	X	X	-	-	-	-	-	-	-	350	-	-	-	140	100	X	100	A	A	X	X	-	-
Mercuric Chloride	$HgCl_2$	-	5.4	140	140	200	180	250	100	140	70	250	350	70	210	-	140	140	140	140	A	A	X	X	A	A
Mercuric Cyanide	$Hg(CN)_2$	-	4	140	140	200	180	250	100	140	-	250	350	-	140	-	140	70	70	70	A	A	A	A	A	A
Mercuric Nitrate	$Hg(NO_2)_2$	-	4.3	140	140	200	140	250	100	-	-	250	70	-	-	-	180	140	70	70	A	A	B	A	-	A
Mercuric Sulfate	$HgSO_4$	-	6.47	140	140	200	180	250	-	-	-	250	250	-	-	-	210	180	70	180	A	A	-	-	-	-
Mercurous Chloride	Hg_2Cl_2	-	6.99	140	140	200	-	-	-	-	-	-	70	-	210	-	-	-	-	-	-	-	-	-	-	-
Mercurous Nitrate	$HgNO_3$	-	4.79	140	140	200	70	250	100	140	180	250	350	-	140	-	70	70	70	70	-	-	A	A	A	-
Mercury (Quicksilver)	Hg	-	13.6	140	140	180	180	250	100	140	70	250	350	70	210	100	140	140	140	140	A	A	A	A	A	A
Methacrylic Acid Glacial	-	-	1.02	X	X	X	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	A	A	A	-	A
Methane (Methyl Hydride)	CH_4	-	-	140	X	*	100	250	-	-	X	250	350	210	210	70	180	X	70	140	A	A	A	A	-	A
Methanesulfonic Acid	CH_3SO_3H	-	1.48	73	73	180	100	180	X	70	-	140	350	-	-	-	-	-	-	-	-	-	-	-	-	-
Methanol (Alcohol, Methyl)	-	-	-	140	140	C	140	250	100	140	X	250	350	180	-	-	70	180	140	100	A	A	A	A	A	A
Methoxyethyl Oleate	-	-	0.9	X	X	-	-	-	-	-	-	-	100	-	-	X	-	-	-	-	-	-	-	-	-	-
Methyl "Cellosolve"	-	-	-	X	X	X	70	140	100	-	X	250	350	100	70	X	X	70	-	-	A	A	A	A	-	-
Methyl Acetate	$CH_3CO_2CH_3$	-	0.92	X	X	X	70	100	-	-	X	70	350	-	-	X	X	70	X	X	A	A	A	A	-	A
Methyl Acetone	-	-	-	X	X	X	-	-	X	-	-	-	350	-	-	-	X	-	X	X	-	-	A	A	-	-
Methyl Acrylate	-	-	-	-	-	X	X	100	-	-	-	-	350	-	-	-	X	70	X	X	A	A	A	A	-	-
Methyl Alcohol	CH_3OH	-	-	140	140	C	140	250	100	140	X	250	350	180	X	70	70	140	140	100	A	A	A	A	A	A
Methyl Benzene (Toluene)	-	-	-	X	X	X	X	140	X	X	X	180	350	140	100	X	70	X	X	X	-	-	A	A	A	A

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

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics													Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Methyl Bromide	CH_3Br	-	1.73	X	X	X	X	250	70	X	X	250	350	-	-	180	140	X	X	X	A	A	A	A	A	A
Methyl Butanol (Alcohol, Amyl)	-	-	-	100	X	C	180	250	70	140	X	250	350	70	210	180	180	180	140	140	-	-	A	A	A	A
Methyl Butyl Ketone	$CH_3COC_4H_9$	-	0.83	X	X	X	X	100	-	-	-	140	350	-	-	X	X	70	X	X	-	-	A	A	-	-
Methyl Chloride (Chloromethane)	CH_3Cl	-	-	X	X	X	X	250	X	X	X	250	350	-	-	X	X	0	X	X	A	A	A	A	A	A
Methyl Chloroform (Trichloroethane)	CH_3CCl_3	-	-	X	X	X	X	100	X	-	X	140	350	100	100	X	70	X	X	X	-	-	A	A	A	A
Methyl Ether (Dimethyl Ether)	-	-	-	X	X	X	-	70	70	-	-	-	250	-	X	-	X	X	-	70	A	A	C	C	-	C
Methyl Ethyl Ketone (MEK)	$CH_3COC_2H_5$	-	0.82	X	X	X	70	X	X	X	X	100	350	140	X	X	X	70	X	X	A	A	A	A	A	A
Methyl Formate	$HCOOCH_3$	-	0.98	-	-	X	-	70	-	-	-	100	350	-	-	-	X	70	70	X	A	A	A	A	-	A
Methyl Isobutyl Alcohol	-	-	-	-	X	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	-	-
Methyl Isobutyl Ketone	-	-	0.8	X	X	X	X	X	70	-	X	-	350	210	-	X	X	70	X	X	A	A	A	A	A	A
Methyl Isopropyl Ketone	$CH_3COCH(CH_3)_2$	-	0.82	X	X	X	X	X	-	-	-	-	350	-	-	X	X	X	X	X	-	-	A	A	-	-
Methyl Methacrylate	-	-	0.94	X	X	X	-	100	70	-	X	70	350	X	X	-	X	X	X	X	A	A	A	A	-	-
Methyl Propanol	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	70	-	70	70	-	-	-	-	-	-
Methyl Salicylate (Wintergreen Oil)			1.18	140	73	X	70	70	70	-	-	-	350	-	-	-	70	X	X	X	A	A	A	A	-	-
Methyl Sulfate	-	-	-	-	73	73	X	250	100	-	-	250	350	-	-	-	-	-	X	-	-	-	-	-	-	-
Methylamine	CH_3NH_2	-	-	X	X	X	X	X	70	-	X	70	350	-	X	-	70	70	X	X	-	A	A	A	C	B
Methylene Bromide	CH_2Br_2	-	2.47	X	X	X	X	140	-	-	-	70	350	-	-	-	70	X	X	X	A	A	-	-	-	-
Methylene Chloride	CH_2Cl_2	-	1.34	X	X	X	X	70	X	X	X	70	350	70	X	X	X	X	X	X	A	A	A	A	A	A
Methylene Iodine	CH_2I_2	-	3.33	X	X	X	X	100	-	-	-	-	350	-	-	-	60	-	-	-	A	-	-	-	-	-
Methylhexane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	X	70	70	-	-	-	-	-	-
Methylisobutyl Carbinol	-	-	-	73	-	-	100	140	70	-	-	-	350	100	X	-	X	-	70	70	A	A	-	-	-	-
N-Methyl Pyrrolidone	-	-	-	-	-	X	-	X	-	-	-	-	70	-	-	X	-	-	-	-	-	-	-	-	-	-
Methylsulfuric Acid	CH_3HSO_4	-	1.35	100	100	-	100	100	100	70	-	140	350	-	-	-	-	-	-	-	-	-	-	-	-	-
Milk	-	-	-	140	140	140	180	250	100	140	-	250	350	140	210	250	210	180	140	140	A	A	A	A	A	A
Mineral Oil	-	-	-	140	73	73	100	250	-	70	-	250	350	210	210	180	70	X	140	210	A	A	A	A	A	A
Molasses	-	-	-	140	140	180	180	250	100	140	X	140	350	140	210	-	140	70	140	180	A	A	A	A	A	A
Monochloroacetic Acid (Chloracetic Acid)	-	-	-	100	X	73	100	180	X	X	X	140	250	-	100	X	70	X	X	X	-	-	A	A	A	A
Monochlorobenzene (Chlorobenzene)	C_6H_5CL	-	-	X	X	X	X	100	-	X	X	100	350	X	100	X	70	X	X	X	A	-	A	A	A	A
Monoethanolamine	$HOCH_2CH_2NH_2$	-	-	X	X	X	70	X	70	-	X	X	350	-	70	180	X	X	-	-	-	-	A	A	A	A
Morpholine	$C_{17}H_{19}NO_3$	-	1	-	-	-	-	70	-	-	-	180	350	-	X	X	70	X	X	X	A	A	A	A	-	A
Motor Oil	-	-	-	140	140	73	70	250	100	100	-	250	350	180	210	180	70	X	70	70	-	-	A	A	A	A
Mustard	-	-	-	73	73	X	140	250	70	-	-	70	350	180	180	70	140	70	70	140	A	A	A	A	A	A
Naphtha	-	-	-	140	73	C	70	250	-	70	X	250	350	140	180	140	140	X	X	140	A	A	A	A	A	A
Naphthalene (Tar Camphor)	$C_{10}H_8$	-	1.15	X	X	X	-	210	X	X	X	250	350	140	180	-	180	X	X	X	A	A	A	A	A	A
Natural Gas	-	-	-	140	C	*	-	180	-	-	X	250	350	210	180	70	70	X	70	70	A	A	A	A	-	A

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

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics													Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Neon	Ne	-	-	140	-	*	-	210	70	-	-	-	350	-	-	-	70	70	70	70	A	A	A	A	-	-
Nickel	Ni	-	-	-	-	200	-	-	-	-	70	-	-	-	-	-	70	70	70	70	-	-	-	-	-	-
Nickel Acetate	-	-	1.74	140	73	200	180	250	100	140	-	70	350	-	-	-	X	70	-	70	A	A	A	A	-	-
Nickel Chloride	$NiCl_2$	-	3.5	140	140	200	180	250	100	140	180	250	350	210	70	180	210	180	180	180	A	A	B	B	A	A
Nickel Cyanide	$Ni(CN)_2$	-	-	-	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NR	NR	-	-	-	-
Nickel Nitrate	$Ni(NO_3)_2$	-	2.1	140	140	200	180	250	100	140	180	250	350	180	180	-	250	180	140	140	NR	NR	A	B	A	B
Nickel Sulfate	$NiSO_4$	-	3.7	140	140	200	180	250	100	140	180	250	350	210	180	X	180	180	140	180	A	A	A	A	A	A
Nicotine Acid	-	-	1.47	-	140	180	-	250	100	-	-	250	-	-	-	-	-	-	70	-	-	A	X	-	-	-
Nitric Acid	HNO_3	10	-	140	73	180	140	250	100	140	70	250	350	X	180	70	180	100	X	X	A	A	B	A	A	A
Nitric Acid	HNO_3	20	-	140	73	180	100	250	100	140	-	250	350	X	140	70	140	-	X	X	A	A	-	A	A	A
Nitric Acid	HNO_3	30	-	100	73	140	100	210	100	140	-	250	350	X	100	70	140	-	X	X	A	A	C	A	A	A
Nitric Acid	HNO_3	40	-	100	73	130	100	140	70	70	-	250	350	X	-	70	140	X	X	X	A	A	X	A	A	A
Nitric Acid	HNO_3	50	-	100	73	120	70	140	-	70	X	140	350	X	X	-	140	X	X	X	A	A	B	X	A	A
Nitric Acid	HNO_3	70	-	X	X	100	X	100	-	X	X	140	350	X	X	X	X	X	X	X	A	A	B	C	A	A
Nitric Acid Concentrate	HNO_3	85	1.5	X	X	NR	X	70	X	X	X	140	350	X	X	X	X	X	X	X	-	A	-	C	A	A
Nitric Acid Fuming (Red)	HNO_3	-	-	X	X	X	X	X	X	X	X	180	350	X	X	X	-	X	X	X	A	A	A	X	X	B
Nitrobenzene (Oil of Mirbane)	$C_6H_5NO_2$	-	1.2	X	X	X	70	100	X	X	X	140	350	X	X	X	70	70	X	X	A	-	A	A	A	B
Nitroethane	$CH_3CH_2NO_2$	-	1.13	X	X	-	-	70	70	-	-	-	350	-	-	-	X	70	-	X	NR	NR	A	A	-	-
Nitrogen	N	-	-	140	-	*	70	210	70	70	-	250	350	70	-	70	70	70	70	70	A	A	A	A	A	A
Nitrogen Dioxide	NO_2	-	-	73	-	*	70	180	-	-	-	-	350	-	-	-	70	70	70	-	-	-	-	-	-	-
Nitrogen Solutions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	-	-	-	-	-	-	-	-
Nitroglycerine	-	-	1.6	X	X	X	X	100	-	-	-	-	350	-	-	-	-	-	-	-	-	A	A	A	-	A
Nitromethane	CH_3NO_2	-	-	X	X	-	70	100	70	-	X	180	350	-	X	X	X	70	X	X	NR	NR	A	A	-	A
Nitrous Oxide	N_2O	-	-	73	73	*	180	210	70	-	-	100	350	-	-	-	180	140	70	70	A	A	A	A	-	A
Ocenol (Oleyl Alcohol)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Octane	C_8H_{18}	-	-	X	X	-	70	250	-	-	-	-	350	-	-	-	70	X	X	70	-	-	A	A	-	A
Octanoic (Caprylic Acid)	$CH_3(CH_2)_6COOH$	-	0.91	73	-	100	-	140	-	-	-	210	350	X	210	-	-	-	-	-	-	A	-	-	-	-
Octylamine	$CH_3(CH_2)_7NH_2$	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-
Oils, Aniline	-	-	-	-	-	C	-	-	-	-	-	-	-	-	-	-	140	-	X	X	-	-	A	A	-	-
Oils, Anise	-	-	-	-	-	X	-	-	-	-	-	250	-	-	-	-	-	-	-	-	-	-	A	A	-	-
Oils, Bay	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	70	-	-	-	-	-	A	A	-	-
Oils, Bone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	-	-	70	A	A	A	A	-	-
Oils, Castor	-	-	-	140	140	X	180	250	100	70	-	250	350	210	180	-	20	100	140	210	A	A	A	A	-	A
Oils, Cinnamon	-	-	-	-	-	X	70	70	70	-	-	70	100	-	-	-	-	-	-	-	-	-	A	A	-	-
Oils, Citric	-	-	-	-	-	X	70	-	-	140	-	-	-	-	-	-	-	-	-	-	-	-	A	A	-	A
Oils, Clove	-	-	-	-	-	X	70	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	A	A	-	A
Oils, Coconut	-	-	-	140	-	X	140	250	100	140	-	140	350	-	180	-	140	100	100	100	A	A	A	A	-	A
Oils, Cod Liver	-	-	-	-	-	X	-	-	-	-	-	70	300	-	-	X	70	70	70	70	A	-	A	A	-	A
Oils, Corn	-	-	-	140	73	X	140	250	100	140	70	70	350	210	180	70	140	X	100	140	A	A	A	A	-	A

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

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics													Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Oils, Cotton Seed	-	-	-	140	140	X	180	250	100	140	-	140	350	100	180	180	210	70	140	180	A	A	A	A	A	A
Oils, Creosote	-	-	-	X	X	X	-	210	70	70	X	70	-	-	-	X	70	X	-	70	A	A	A	A	A	A
Oils, Crude Sour	-	-	-	140	140	X	100	250	100	70	X	250	250	250	180	-	210	-	X	-	A	A	A	A	A	A
Oils, Diesel Fuel	-	-	-	73	73	X	70	180	-	70	X	250	300	250	140	180	180	X	X	210	A	A	A	A	-	-
Oils, Fuel	-	-	-	140	140	X	70	180	70	70	X	250	300	250	180	180	180	X	-	70	A	A	A	A	-	A
Oils, Linseed	-	-	-	140	140	X	140	250	X	-	-	250	300	250	210	70	100	70	70	70	A	A	A	A	-	A
Oils, Mineral	-	-	-	140	73	73	100	250	-	70	-	250	300	210	210	180	70	X	70	180	A	A	A	A	A	A
Oils, Olive	-	-	-	140	140	X	180	250	70	70	70	-	300	210	210	70	180	70	70	180	A	A	A	A	A	A
Oils, Pine	-	-	-	-	-	X	70	100	70	-	-	70	300	-	140	-	70	X	X	180	-	-	A	A	-	-
Oils, Silicone	-	-	-	100	-	73	140	250	100	70	70	100	350	-	-	-	210	140	140	140	-	-	A	A	-	-
Oils, Vegetable	-	-	-	140	140	X	140	250	70	70	-	250	350	-	180	180	180	100	X	180	A	A	A	A	A	A
Oleic Acid (Red Oil)	-	-	0.9	140	140	C	140	250	-	70	X	250	250	180	80	70	210	70	70	210	A	A	A	A	B	A
Oleum (Fuming Sulfuric Acid)	H_2SO_4	100+	-	X	X	X	X	X	X	X	X	70	200	X	X	X	X	X	X	X	-	-	X	A	-	-
Orange Extract	-	-	-	-	-	X	-	-	-	-	-	-	-	-	140	-	-	-	-	-	-	-	A	-	-	-
Oxalic Acid	-	-	1.7	140	140	170	140	240	100	140	180	140	350	250	180	70	70	140	100	70	-	-	X	A	X	A
Oxygen Gas	O_2	-	-	140	140	*	70	180	70	-	180	250	250	-	70	210	180	180	180	70	-	-	A	A	A	A
Ozonized Water	O_3	-	-	-	140	200	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	C	-	-	-
Palmitic Acid	-	10	0.84	140	140	140	140	250	70	70	-	250	3350	210	210	-	70	70	-	140	-	A	-	A	-	-
Palmitic Acid	-	70	-	73	73	73	100	250	70	70	-	250	350	210	210	-	70	70	70	70	-	A	A	A	-	B
Paraffin	-	-	-	140	-	180	140	250	X	-	70	140	350	-	70	-	140	X	70	140	A	-	A	A	A	A
Pentane (Amyl Hydride)	$CH_3(CH_2)_3CH_3$	-	-	73	-	-	-	250	X	-	X	140	350	70	-	70	140	X	X	180	A	-	A	C	-	A
Peracetic Acid	CH_3COOOH	40	-	X	X	X	-	70	X	-	-	-	350	-	-	-	-	-	-	-	-	-	-	-	-	-
Perchloric Acid	$HClO_4$	10	1.8	100	140	73	100	210	70	140	-	180	350	210	140	X	140	70	140	X	A	A	X	X	A	-
Perchloric Acid	$HClO_4$	70	-	73	X	-	X	280	70	140	-	180	350	210	70	X	140	70	70	X	A	A	B	B	X	B
Perchloroethylene	Cl_2CCCl_2	-	1.6	X	X	X	X	180	X	70	X	180	350	100	100	X	140	X	X	X	-	A	A	A	A	A
Petrolatum (Petroleum Jelly)	-	-	-	X	X	X	100	250	70	-	70	140	350	-	-	-	70	X	70	70	A	A	A	A	-	A
Petroleum (Sour)	-	-	-	140	73	X	100	250	70	70	-	250	350	70	180	-	-	X	-	-	-	-	-	-	-	-
Petroleum Oils	-	-	-	140	73	X	70	250	-	X	X	250	350	210	180	180	70	X	X	70	-	-	-	-	-	-
Phenols	C_6H_5OH	90	1.1	X	X	-	100	100	X	-	X	180	350	X	X	X	140	X	X	X	A	A	A	A	A	A
Phenyl Acetate	$C_6H_5OOCCH_3$	-	1.07	-	-	X	-	-	-	-	-	-	-	-	-	-	X	-	X	X	A	A	-	-	-	-
Phenylhydrazine	$C_6H_5NHNH_2$	-	1.1	X	X	X	X	140	X	-	-	-	350	70	-	-	X	X	X	X	-	-	-	-	-	-
Phosgene Gas	$COCl_2$	-	-	X	X	X	X	X	X	-	-	-	350	-	-	-	X	-	-	X	-	-	-	-	-	-
Phosgene Liquid	-	-	1.39	X	X	X	X	X	X	-	-	-	350	-	-	-	X	70	-	-	-	-	-	-	-	-
Phosphoric Acid	H_3PO_4	10	1.8	140	140	180	180	250	100	140	70	250	350	180	210	210	210	180	140	100	A	A	A	A	B	A
Phosphoric Acid	H_3PO_4	20	-	140	140	180	180	250	100	140	70	250	350	180	210	210	210	180	140	100	A	A	A	A	A	A
Phosphoric Acid	H_3PO_4	40	-	140	140	180	180	250	100	140	-	250	350	180	210	210	210	180	140	100	A	A	A	A	B	A
Phosphoric Acid	H_3PO_4	50	-	140	140	180	140	250	100	X	-	250	350	180	210	210	210	180	140	100	A	A	B	A	B	A
Phosphoric Acid	H_3PO_4	80	-	140	140	180	140	250	100	X	-	250	350	100	210	210	180	180	100	X	A	A	A	A	B	A
Phosphoric Acid (Ortho)	H_3PO_4	85	-	140	140	180	140	250	100	140	-	250	350	100	210	210	180	180	100	X	A	A	A	X	B	A

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

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics														Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Phosphoric Acid (Crude)	H_3PO_4	-	1.83 -	-	-	-	70	250	100	-	-	180	250	-	-	-	140	70	-	X	-	-	X	-	C	A
Phosphorus Oxychloride	$POCl_3$	-	1.68	73	-	100	X	70	-	-	-	-	250	X	X	-	-	-	X	X	-	-	B	X	-	-
Phosphorus Trichloride, dry	PCl_3	-	1.57	X	X	X	X	210	100	-	X	-	350	100	X	-	70	X	X	X	-	-	A	A	A	A
Phosphorus Yellow	-	-	-	73	73	73	70	250	100	-	-	70	350	-	-	-	-	-	-	-	-	-	-	-	-	-
Photographic Solutions	-	-	-	140	140	180	180	250	100	140	-	250	350	140	100	180	140	100	70	70	-	-	X	A	A	A
Phthalic Acid (Terephthalic Acid)	$C_6H_4(COOH)_2$	-	1.57	X	X	X	70	180	100	-	-	250	350	-	180	-	70	70	70	70	A	A	A	A	A	A
Phthalic Anhydride	$C_6H_4(CO)_2O$	-	1.53	X	X	X	X	-	X	-	-	-	350	-	180	-	70	70	70	-	-	-	A	A	-	A
Pickle Brine	-	-	-	140	-	180	180	250	-	-	-	-	250	-	-	-	70	-	70	-	A	-	-	-	-	-
Pickling Solutions	-	-	-	100	-	140	180	250	180	140	70	-	250	180	180	-	-	-	X	X	-	-	A	X	-	B
Picric Acid	$C_6H_2(NO_2)_3OH$	10	1.77	X	X	X	140	210	70	140	X	70	350	70	210	X	140	180	70	X	A	A	A	B	A	A
Pine Oil	-	-	1.48	-	-	X	70	100	70	-	-	70	350	-	140	-	70	X	X	70	-	-	A	A	A	-
Plating Solutions, Antimony	-	-	-	140	140	180	140	240	100	140	-	-	250	-	-	-	140	-	140	140	-	-	A	A	A	A
Plating Solutions, Arsenic	-	-	-	140	140	180	140	240	-	140	-	-	250	-	-	-	140	-	140	140	-	-	A	A	A	A
Plating Solutions, Brass	-	-	-	140	140	180	180	240	180	140	-	140	350	-	180	-	140	70	100	140	-	-	A	A	A	A
Plating Soltuions, Bronze	-	-	-	100	100	180	140	200	100	140	-	-	250	-	140	-	70	70	70	140	-	-	A	A	A	A
Plating Solutions, Cadmium	-	-	-	140	140	180	180	200	180	140	-	140	350	-	210	-	140	70	140	140	-	-	A	A	A	A
Plating Solutions, Chrome	-	-	-	73	70	180	-	140	180	140	X	140	350	X	140	-	140	70	X	X	-	-	A	X	A	A
Plating Solutions, Copper	-	-	-	140	140	180	180	200	180	140	-	140	350	-	140	-	140	70	140	140	-	-	A	A	A	A
Plating Solutions, Gold	-	-	-	140	140	180	180	200	100	140	-	140	350	-	180	-	140	70	70	140	-	-	A	A	A	A
Plating Solutions, Indium	-	-	-	140	140	180	100	200	180	140	-	-	250	-	0	-	140	-	70	140	-	-	-	-	-	-
Plating Solutions, Iron	-	-	-	140	140	180	140	200	100	140	-	-	350	180	-	-	140	-	140	140	-	-	X	A	A	A
Plating Solutions, Lead	-	-	-	140	140	180	180	250	180	140	-	140	350	-	180	-	140	70	140	140	-	-	A	A	X	A
Plating Solutions, Nickel	-	-	-	140	140	180	180	250	180	140	-	140	350	140	180	-	140	70	140	140	-	-	A	A	A	A
Plating Solutions, Rhodium	-	-	-	140	140	180	180	250	180	140	-	140	350	-	-	-	70	100	70	70	-	-	-	-	-	-
Plating Solutions, Silver	-	-	-	140	140	180	180	200	100	140	-	140	350	140	180	-	140	100	140	140	-	-	A	A	A	A
Plating Solutions, Tin	-	-	-	140	140	180	180	210	180	140	-	140	350	-	180	-	140	100	140	140	-	-	A	A	X	A
Plating Solutions, Zinc	-	-	-	140	140	180	180	250	100	140	-	140	350	-	180	-	140	70	140	140	-	-	A	A	A	A
Polyethylene Glycol	-	-	-	140	-	X	140	250	70	-	-	-	350	-	140	-	210	180	100	70	-	-	-	-	-	-
Polyvinyl Acetate Emulsion	-	-	1.19	73	-	-	70	250	70	70	-	250	350	-	180	-	X	180	70	70	A	A	-	A	-	-
Polyvinyl Alcohol	$(CH_2CHOH)_2$	-	-	140	-	-	100	250	-	-	-	-	350	-	-	-	140	140	70	100	-	-	-	-	-	-
Potash (Potassium Carbonate)	K_2CO_3	-	-	140	-	200	180	250	100	140	180	250	350	210	100	180	210	180	140	140	A	A	A	A	A	A
Potassium Acetate	$KC_2H_3O_2$	-	1.6	140	140	200	70	250	70	70	-	70	350	140	210	-	X	70	70	70	A	A	A	A	-	-
Potassium Alum (Aluminum Potassium Sulfate)				140	140	200	180	250	100	140	-	250	350	180	250	70	210	180	140	140	A	A	B	A	A	A
Potassium Bicarbonate	$KHCO_3$	-	2.2	140	140	200	180	250	100	140	180	70	350	210	180	70	210	180	140	180	A	A	A	A	A	A
Potassium Bichromate (Potassium Dichromate)	$K_2Cr_2O_7$	-	-	140	140	200	180	250	100	140	-	250	350	210	210	180	210	180	100	180	A	A	A	A	A	A
Potassium Bisulfate	$KHSO_4$	-	-	140	140	200	180	250	100	70	180	250	350	-	-	70	210	180	140	140	A	A	-	A	-	-
Potassium Bromate	$KBrO_3$	-	3.3	140	140	200	180	250	100	70	180	-	350	-	-	70	140	140	140	140	-	A	-	A	-	-

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

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics													Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Potassium Bromide	KBr	30	2.7	140	140	200	180	250	100	70	180	250	350	210	210	180	210	180	140	180	A	A	A	B	A	A
Potassium Carbonate (Potash)	K_2CO_3	-	2.4	140	140	200	180	250	100	140	180	250	350	210	100	180	210	180	140	180	A	A	A	A	A	A
Potassium Chlorate Aqueous	$KClO_3$	30	2.3	140	140	200	140	250	100	70	180	250	350	140	-	180	140	100	140	X	A	A	A	A	A	B
Potassium Chloride	KCl	-	2	140	140	200	180	250	100	140	180	250	350	210	180	180	210	180	140	180	A	A	C	A	A	A
Potassium Chromate	K_2CrO_4	-	2.7	140	-	200	140	210	100	140	-	250	350	-	100	70	210	180	140	140	A	A	B	B	-	A
Potassium Copper Cyanide	KCuCN	-	-	-	-	200	-	200	-	-	-	-	-	-	-	-	210	-	-	140	A	A	-	-	-	-
Potassium Cyanide	KCN	-	1.5	140	140	200	180	250	100	70	180	250	350	140	180	180	180	140	140	180	A	A	A	A	A	A
Potassium Dichromate	$K_2Cr_2O_7$	10	2.7	-	-	200	-	-	-	-	180	-	-	-	-	-	210	140	100	140	A	A	-	-	-	-
Potassium Ferricyanide	$K_3Fe(CN)_6$	-	-	140	140	200	180	250	100	70	180	250	350	210	180	70	140	140	140	X	A	A	A	B	A	B
Potassium Ferrocyanide	$K_4Fe(CN)_6$	-	1.9	140	140	200	180	250	100	70	180	250	350	210	180	70	140	140	140	70	A	A	A	B	A	B
Potassium Fluoride	KF	-	2.5	140	140	200	180	250	100	70	180	-	350	100	140	-	210	180	180	140	A	A	-	A	-	-
Potassium Hydroxide	KOH	10	-	140	140	C	180	180	100	70	180	250	350	210	140	180	140	180	140	140	-	NR	A	A	B	C
Potassium Hydroxide	KOH	25	2	140	140	C	180	100	100	70	180	-	210	-	140	-	70	180	140	140	-	NR	A	A	B	A
Potassium Hypochlorite	KClO	-	-	140	140	200	140	140	-	140	-	-	350	210	-	70	X	140	140	70	A	A	X	B	A	B
Potassium Iodide	KI	-	3.1	140	140	200	180	250	70	-	180	250	350	-	180	-	210	180	140	140	A	A	A	A	A	A
Potassium Nitrate (Salt Peter)	KNO_3	-	2.1	140	140	200	180	250	100	140	180	250	350	250	180	250	180	180	140	140	A	A	A	A	-	A
Potassium Perborate	-	-	-	140	140	180	180	250	100	70	-	-	350	-	-	70	70	-	70	70	-	-	-	-	-	-
Potassium Perchlorate	$KClO_4$	-	2.5	140	140	180	140	250	70	70	-	70	350	-	-	70	70	-	-	70	A	-	-	-	-	-
Potassium Permanganate	$KMNO_4$	20	2.7	140	73	180	180	250	180	140	-	250	350	X	180	180	140	140	70	X	A	A	B	A	A	B
Potassium Persulfate	$K_2S_2O_8$	-	2.5	140	140	73	140	250	100	140	180	140	350	210	180	70	140	140	140	X	A	A	A	A	-	A
Potassium Phosphate	K_2HPO_4	-	-	73	140	200	140	210	100	140	-	-	350	-	70	70	180	180	70	70	A	A	A	A	-	-
Potassium Salts	-	-	-	140	140	200	140	250	100	140	70	250	350	180	180	180	70	70	70	70	A	-	-	-	-	-
Potassium Sulfate	K_2SO_4	-	2.7	140	140	200	180	250	100	140	180	250	350	250	180	180	210	180	140	140	A	A	A	A	A	A
Potassium Sulfide	K_2S	-	1.8	140	140	200	180	250	100	140	-	250	350	-	100	70	180	180	70	70	A	A	A	A	A	A
Potassium Thiosulfate	$K_2S_2O_3$	-	-	140	-	-	70	250	100	140	180	-	350	-	-	70	70	-	70	70	-	-	-	-	-	-
Propane	C_3H_8	-	-	73	73	*	100	250	-	-	180	250	350	140	70	-	70	X	70	70	A	NR	A	A	-	A
Propanol (Alcohol, Propyl)	-	-	-	140	73	C	140	140	100	140	-	140	350	-	70	180	210	180	140	100	A	A	A	A	A	A
Propargyl Alcohol	$HC{:}CCH_2OH$	7	-	73	73	-	100	140	100	140	-	-	-	-	-	-	210	-	-	-	-	-	A	-	-	-
Propyl Acetate	$C_3H_7OOCCH_3$	-	0.89	-	-	X	-	100	70	-	-	100	180	-	-	X	X	70	X	X	A	A	A	A	-	-
Propyl Alcohol	$CH_3CH_2CH_2OH$	-	0.8	140	-	C	140	140	-	140	-	140	350	-	70	180	210	180	140	100	A	A	A	A	A	A
Propylene	$CH_3CH{:}CH_2$	-	0.51	X	X	*	-	70	70	-	-	-	350	-	-	-	70	X	X	X	A	A	A	A	-	-
Propylene Dichloride	$CH_3CHClCH_2Cl$	-	1.6	X	X	X	X	100	X	X	-	70	350	X	X	-	70	X	X	X	-	A	-	A	-	-
Propylene Glycol	$CH_2CHOHCH_2OH$	-	1	-	-	X	-	-	-	-	180	-	-	-	-	-	140	70	70	70	A	A	B	A	A	B
Pyridine	$N(CH)_4CH$	-	1	X	X	X	70	X	-	70	X	X	350	X	X	X	X	140	X	X	A	A	A	A	B	A
Pyrogallic Acid (Pyrogallol)	$C_6H_3(OH)_3$	-	1.45	-	-	-	70	100	-	-	-	140	350	-	-	-	140	-	70	X	A	A	A	A	A	A
Quaternary Ammonium Salts	-	-	-	140	-	-	-	-	-	-	-	-	70	-	140	-	70	-	70	70	-	-	-	-	-	-
Rayon Coagulating Bath	-	-	-	140	140	-	180	70	100	140	-	-	180	100	140	-	-	-	-	-	-	-	-	A	-	A
Rhodan Salts (Thiocyanates)	-	-	-	140	-	-	140	250	-	-	-	-	180	-	-	-	180	140	70	-	-	-	-	-	-	-
Rosins	-	-	-	-	-	C	100	-	70	-	-	-	350	-	-	-	-	X	70	180	A	A	A	A	-	A

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

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics													Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Rum	-	-	-	100	100	140	100	210	-	-	-	-	70	-	-	-	140	70	70	140	-	-	A	A	-	-
Rust Inhibitors	-	-	-	-	-	C	140	-	70	-	-	-	350	-	-	-	140	-	-	140	-	-	A	A	-	-
Salad Dressings	-	-	-	140	140	140	-	250	70	-	-	-	350	-	-	-	-	-	-	-	-	-	A	A	-	-
Salicylaldehyde	C_6H_4OHCHO	-	1.17	X	X	X	70	140	100	-	-	70	210	100	70	-	100	70	70	70	-	-	-	-	-	-
Salicylic Acid	$C_6H_4(OH)(COOH)$	-	1.44	100	-	180	140	210	100	140	70	250	350	140	140	100	180	140	X	70	A	-	B	A	A	A
Saline Solutions (Brine)	-	-	-	140	140	200	180	250	100	140	70	250	350	140	180	180	70	180	140	-	A	A	-	-	A	A
Salt Brine	-	-	-	140	140	200	180	250	100	140	70	250	350	140	180	180	250	140	70	180	A	A	A	A	A	A
Sea Water	-	-	-	140	140	200	180	250	100	140	180	250	350	250	180	180	210	180	140	140	A	A	A	A	A	A
Selenic Acid	H_2SeO_4	-	22.6	140	73	180	70	140	100	70	-	-	350	-	70	-	-	-	-	-	A	A	-	-	-	-
Sewage	-	-	-	140	140	200	180	250	100	140	-	250	350	-	180	-	280	140	140	180	A	A	A	A	A	A
Shellac Bleached	-	-	-	X	X	X	70	-	70	-	-	-	350	-	-	-	70	180	X	70	A	A	A	A	-	-
Shellac Orange	-	-	-	X	X	X	70	-	70	-	-	-	350	-	-	-	70	180	X	70	A	A	A	A	-	-
Silicone Oil	-	-	-	100	-	73	140	250	100	70	-	100	350	-	-	100	180	140	140	140	-	-	A	A	-	A
Silver Bromide	AgBr	-	6.47	-	-	200	-	-	100	-	-	-	180	-	-	140	-	-	-	-	A	A	A	A	A	A
Silver Cyanide	AgCN	-	3.95	140	140	200	180	250	100	140	-	250	350	70	180	-	140	140	140	140	A	A	A	A	A	A
Silver Nitrate	$AgNO_3$	-	4.32	140	140	200	180	250	70	140	70	250	350	210	180	180	180	180	140	140	A	A	A	B	A	A
Silver Chloride	AgCl	-	-	140	140	200	70	250	100	-	-	-	350	-	-	-	-	-	-	-	A	A	X	X	A	A
Silver Sulfate	Ag_2SO_4	-	5.45	140	140	200	140	250	100	140	70	-	250	-	-	-	210	180	140	140	A	A	-	-	-	-
Soap Solutions	-	-	-	140	140	200	180	210	100	140	180	180	350	-	180	180	210	210	140	180	A	A	A	A	A	A
Soda Ash (Sodium Carbonate)	Na_2CO_3	-	-	140	140	200	180	250	100	140	180	250	250	250	140	-	210	180	140	140	A	-	A	-	A	A
Sodium	Na	-	-	140	140	140	140	250	X	-	-	X	70	-	-	-	210	180	-	70	-	-	A	A	-	-
Sodium Acetate	$NaC_2H_3O_2$	-	1.5	140	140	200	180	250	100	140	180	250	350	210	180	180	X	180	140	70	A	A	B	A	A	A
Sodium Alum	-	-	-	140	140	200	180	250	-	140	-	-	350	300	100	-	210	180	140	140	-	-	-	-	-	-
Sodium Aluminate	$Na_2Al_2O_4$	-	-	73	140	200	70	-	70	-	180	-	350	-	140	-	140	140	140	140	A	A	A	A	A	A
Sodium Benzoate	C_6H_5COONa	-	-	140	140	200	180	250	70	140	70	250	350	250	180	70	70	70	70	70	A	A	-	-	A	A
Sodium Bicarbonate	$NaHCO_3$	-	2.2	140	140	200	180	250	100	140	100	250	350	180	210	180	180	180	140	140	A	A	A	A	A	A
Sodium Bichromate (Sodium Dichromate)	$Na_2Cr_2O_7$	-	-	140	140	200	100	250	100	140	18	140	350	180	180	70	210	180	140	140	A	A	A	B	A	A
Sodium Bisulfate	$NaHSO_4$	-	2.4	140	140	200	180	250	100	140	180	250	350	250	70	180	210	180	140	180	A	A	X	A	A	B
Sodium Bisulfite	$NaHSO_3$	-	1.5	140	140	200	180	250	100	140	180	250	350	250	180	70	210	180	140	180	A	A	A	A	A	A
Sodium Borate (Borax)	NaB_4O_7	-	1.7	140	140	200	180	250	100	140	180	250	350	210	210	180	180	140	140	100	A	A	A	A	A	A
Sodium Bromate	$NaBrO_3$	-	3.4	73	140	200	70	200	100	140	180	140	350	100	180	70	140	140	X	X	A	A	-	-	-	-
Sodium Bromide	NaBr	-	3.2	140	140	200	180	250	100	140	180	250	350	250	180	-	140	140	140	140	A	A	A	A	A	A
Sodium Carbonate (Soda Ash)	Na_2CO_3	-	1.55	140	140	200	180	250	100	140	180	250	250	250	140	-	210	180	140	140	A	A	A	A	A	A
Sodium Chlorate	$NaClO_3$	-	2.5	140	73	200	140	250	100	140	X	250	350	250	210	180	140	140	70	X	A	A	A	B	A	A
Sodium Chloride (Salt)	NaCl	-	2.2	140	140	200	180	250	100	140	180	250	350	300	180	180	210	180	140	140	A	A	A	A	A	A
Sodium Chlorite	$NaClO_2$	25	-	X	X	200	70	100	100	140	-	210	350	X	180	70	X	X	X	X	A	A	-	-	-	-
Sodium Chromate	Na_2CrO_4	-	-	140	140	200	100	200	70	140	180	140	350	X	180	180	140	-	140	140	A	A	A	A	-	A
Sodium Cyanide	NaCN	-	-	140	140	200	180	250	100	140	180	250	350	210	70	70	180	180	140	140	A	A	A	A	A	A
Sodium Dichromate	$Na_2Cr_2O_7$	-	2.5	140	140	200	-	250	-	140	180	-	350	-	-	-	210	180	70	70	A	A	-	-	A	-

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

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics													Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Sodium Ferricyanide	$Na_3Fe(CN)_6$	-	1.5	140	140	200	180	250	100	140	-	140	350	250	70	70	140	140	100	70	A	A	A	B	-	A
Sodium Ferrocyanide	$Na_4Fe(CN)_6$	-	1.5	140	140	200	180	250	100	140	180	140	350	300	70	70	140	140	70	70	A	A	-	A	-	A
Sodium Fluoride	NaF	-	2.6	140	140	200	180	250	100	140	180	250	350	250	140	70	140	140	140	70	A	-	X	X	A	A
Sodium Hydrosulfide	NaSH	-	-	140	-	180	140	250	70	140	-	140	70	X	180	70	-	-	-	-	A	A	A	A	-	A
Sodium Hydrosulfite	$Na_2S_2O_6$	-	-	140	-	C	140	250	70	140	-	250	350	-	-	70	70	70	70	X	A	A	A	A	-	A
Sodium Hydroxide	NaOH	15	-	140	140	C	140	140	100	140	180	250	350	210	180	200	X	180	140	180	NR	NR	X	A	A	A
Sodium Hydroxide	NaOH	20	-	140	140	C	140	100	100	140	70	250	350	210	180	200	X	180	140	180	NR	NR	X	A	A	A
Sodium Hydroxide	NaOH	30	-	140	140	C	140	140	100	140	70	250	350	210	180	185	X	180	140	180	NR	NR	X	A	A	A
Sodium Hydroxide	NaOH	50	2.1	140	140	C	180	70	100	140	70	250	350	210	180	120	X	180	140	X	NR	NR	A	A	C	A
Sodium Hydroxide	NaOH	70	-	140		C	100	X	100	140	70	140	350	-	-	-	X	70	70	X	NR	NR	A	A	C	A
Sodium Hypochlorite (Bleach)	NaOCl	5.25	-	140	140	200	X	100	100	X	180	250	350	X	140	259	140	70	X	X	A	-	X	A	-	A
Sodium Hypochlorite Conc	NaOCl	15	-	140	140	200	X	100	100	X	X	250	350	X	140	0	140	X	X	X	A	-	C	X	A	A
Sodium Hyposulfate	$Na_2S_2O_3$	-	-	-	-	-	-	-	-	-	-	-	-	140	-	250	-	-	140	-	A	-	-	-	-	-
Sodium Iodide	NaI	-	-	73	140	200	100	250	-	-	180	140	350	-	-	-	140	140	100	100	A	A	-	-	-	-
Sodium Metaphosphate	$(NaPO_3)n$	-	-	140	140	200	140	250	100	140	-	250	350	-	-	70	140	180	100	140	A	A	A	A	-	-
Sodium Metasilicate	Na_2SiO_3	-	-	140	-	200	180	250	70	140	-	140	250	-	-	70	210	180	140	180	A	A	A	A	-	A
Sodium Nitrate	$NaNO_3$	-	2.3	140	140	200	180	250	150	140	180	250	350	250	180	250	210	180	140	140	A	A	A	A	A	A
Sodium Nitrite	$NaNO_2$	-	2.2	140	140	200	180	250	150	140	180	250	350	250	180	70	210	180	140	140	A	A	A	A	A	-
Sodium Palmitate	-	5	-	140	-	200	70	250	150	140	-	140	350	-	-	70	-	-	-	-	-	-	-	-	-	-
Sodium Perborate	$NaBO_3$	-	-	140	-	180	180	250	150	140	-	140	350	-	-	70	180	140	70	70	A	A	A	A	A	-
Sodium Perchlorate	$NaClO_4$	-	2	100	140	180	140	250	150	140	-	70	350	-	-	70	180	70	70	70	A	A	A	B	-	-
Sodium Peroxide	$Na2O_2$	10	2.8	140	140	180	180	250	150	140	X	250	350	70	70	70	180	140	70	70	A	A	A	A	-	C
Sodium Phosphate Acid	Na_2HPO_4	-	1.7	140	-	200	140	250	150	140	-	250	350	100	180	70	210	180	140	140	-	-	B	A	A	-
Sodium Phosphate Alkaline (Mono Basic)	NaH_2PO_4	-	2	140	-	200	180	250	70	140	-	250	350	X	180	70	210	180	140	140	A	A	A	A	A	-
Sodium Phosphate Neutral (Tri Basic)	Na_3PO_4	-	1.6	140	-	200	180	250	100	140	180	250	350	180	210	70	210	180	140	140	A	A	-	A	A	-
Sodium Polyphosphate	-	-	-	140	-	200	180	250	70	140	-	140	350	-	-	70	70	70	X	70	-	-	-	-	-	-
Sodium Silicate (Water Glass)	Na_2OSiO_2	-	-	140	73	200	180	250	100	140	180	250	350	180	180	180	210	180	140	140	A	A	A	A	A	A
Sodium Sulfate	Na_2SO_4	-	2.7	140	140	200	180	250	100	140	180	250	350	300	180	180	210	180	140	140	A	A	A	A	A	C
Sodium Sulfide	Na_2S	50	1.4	140	140	200	180	250	100	140	70	250	350	250	180	180	180	180	140	140	A	A	B	B	A	C
Sodium Sulfite	Na_2SO_3	-	2.6	140	140	200	180	250	100	140	180	-	250	250	180	70	140	140	140	140	A	A	A	A	A	A
Sodium Tetraborate	$Na_2B_4O_7$	50	-	140	140	200	140	250	100	140	180	250	350	210	180	180	140	70	140	140	-	A	A	A	A	A
Sodium Thiocyanate	NaSCN	-	-	140	140	140	140	250	100	140	70	140	350	-	140	70	180	140	70	100	A	NR	-	-	-	-
Sodium Thiosulfate (HypO)	$Na_2S_2O_3$	40	1.7	140	140	200	180	205	100	140	180	250	350	140	100	180	-	-	-	-	A	A	A	A	A	-
Sorghum	-	-	-	-	-	200	-	-	-	-	-	-	-	-	-	-	140	-	140	140	-	-	A	A	-	-
Soy Sauce	-	-	-	-	140	-	70	-	-	-	-	-	-	-	-	-	140	-	140	140	-	-	A	A	-	-
Soybean Oil	-	-	-	140	140	X	140	250	70	-	-	70	350	-	-	-	180	X	140	140	A	A	A	A	A	B
Stannic Chloride (Tin Chloride)	$SnCl_4$	-	2.3	140	140	200	140	250	100	-	-	250	350	210	180	180	180	140	70	140	A	A	X	X	A	A
Stannic Salts	-	-	-	140	140	200	180	250	100	140	-	250	350	140	180	70	70	70	X	70	-	-	-	-	-	-

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

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics													Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Stannous Chloride (Tin Salts)	$SnCL_2$	-	-	140	140	200	180	250	100	140	-	250	350	140	180	-	70	100	140	70	A	A	C	A	A	B
Starch (Amylum)	-	-	1.51	140	140	200	180	250	100	140	180	140	350	-	100	-	210	180	70	140	A	A	A	A	-	-
Stearic Acid	-	-	0.84	140	140	73	100	250	100	140	180	250	350	180	180	-	140	70	70	100	-	A	A	A	A	A
Stoddard Solvent (Dry Cleaning Solvent)	-	-	-	X	X	C	100	250	X	-	X	250	350	250	180	180	140	X	-	180	A	A	A	A	A	A
Strontium Carbonate	$SrCO_3$	-	3.62	-	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	A	-	-	-	-
Styrene	$C_6H_5CH:CH_2$	-	0.9	X	X	X	X	180	70	-	-	-	350	-	-	-	70	X	X	X	A	A	A	A	A	X
Succinic Acid (Butanedioic Acid)	-	-	1.55	140	140	180	140	180	100	70	-	250	350	140	210	-	180	140	140	140	-	A	A	A	A	A
Sugar Solutions	-	-	-	140	140	200	180	250	100	-	70	250	350	140	210	70	140	210	100	140	A	A	A	A	-	-
Sulfamic Acid	HSO_3NH_2	25	2.1	X	X	180	140	180	100	-	180	-	350	210	180	-	210	X	140	X	-	-	X	A	X	B
Sulfate Liquors (Paper Pulp)	-	-	-	140	140	200	140	140	100	-	-	250	350	180	180	210	180	180	140	140	A	-	B	B	-	A
Sulfonated Detergents	-	-	-	140	-	-	140	200	-	-	-	-	350	-	180	-	-	-	-	-	-	-	-	-	-	-
Sulfite Liquor (Sulfite Paper Process)	-	-	-	140	140	200	180	250	70	-	-	70	350	-	-	-	70	-	70	70	-	-	B	B	-	A
Sulfur Chloride	S_2Cl_2	-	1.69	X	X	180	X	100	X	-	-	70	350	X	X	70	70	X	X	X	A	A	B	B	X	A
Sulfur Dioxide Dry	SO_2	-	-	140	140	*	140	250	-	70	X	250	350	210	140	70	140	140	X	X	-	-	A	A	A	B
Sulfur Dioxide Wet	SO_2	-	-	100	X	*	140	250	70	70	X	100	350	140	140	70	140	140	100	X	A	A	B	A	A	A
Sulfur Slurries	-	-	-	-	-	73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfur Trioxide Dry	SO_3	-	-	X	X	*	X	X	100	-	-	70	350	X	210	-	X	X	X	X	A	A	A	A	X	-
Sulfuric Acid	H_2SO_4	10	-	140	140	180	180	X	100	70	180	210	350	100	210	250	250	180	140	140	-	-	X	X	A	B
Sulfuric Acid	H_2SO_4	30	-	140	140	180	180	250	100	70	180	210	350	210	210	250	250	140	100	140	-	-	X	C	-	A
Sulfuric Acid	H_2SO_4	50	-	140	140	180	140	250	100	70	70	210	350	210	210	180	210	140	140	70	-	-	X	X	C	A
Sulfuric Acid	H_2SO_4	60	-	140	140	180	140	250	100	X	X	210	350	70	70	180	180	140	100	140	-	-	X	X	C	A
Sulfuric Acid	H_2SO_4	70	-	140	140	180	100	210	100	X	X	210	350	X	180	210	180	100	X	140	-	-	X	X	C	B
Sulfuric Acid	H_2SO_4	80	-	73	X	180	100	210	100	X	X	210	350	X	X	180	140	100	X	100	-	-	X	B	X	B
Sulfuric Acid	H_2SO_4	90	-	73	X	160	70	210	100	X	X	210	350	X	X	-	140	100	X	X	-	-	X	A	X	A
Sulfuric Acid	H_2SO_4	95	-	X	X	130	X	210	100	X	X	210	350	X	X	X	100	X	X	X	-	-	X	A	X	A
Sulfuric Acid	H_2SO_4	98	1.84	X	X	120	X	180	100	X	X	210	350	X	X	X	X	X	X	X	-	-	A	A	X	A
Sulfuric Acid	H_2SO_4	100	-	X	X	X	X	X	X	X	X	100	350	X	X	X	X	X	X	X	-	-	A	A	X	A
Sulfurous Acid	H_2SO_3	-	1.03	140	140	X	180	210	100	X	-	210	350	140	180	180	140	140	X	X	A	-	B	B	A	B
Sulfuryl Chloride	SO_2Cl_2	-	1.67	X	X	-	X	100	X	-	-	-	350	-	X	-	70	X	X	X	A	A	-	-	-	-
Syrup (Sucrose in water)	-	-	-	140	140	200	180	250	70	-	70	250	350	140	180	70	70	-	-	70	A	A	A	-	-	-
Tall Oil	-	-	-	140	140	X	-	250	100	70	-	250	350	140	180	-	140	X	X	140	-	-	A	A	-	A
Tallow (Animal Fat)	-	-	0.86	140	-	X	140	250	70	70	-	250	350	-	180	70	180	140	-	180	A	A	A	A	-	-
Tannic Acid	$C_{76}H_{52}O_{46}$	-	-	140	140	73	180	250	100	140	X	250	350	210	180	180	70	70	70	70	A	A	A	A	A	A
Tanning Liquors	-	-	-	140	140	-	100	250	X	-	-	250	350	-	-	-	70	70	140	140	A	A	A	A	A	A
Tar	-	-	-	73	-	X	140	210	-	-	X	250	350	-	-	-	-	X	-	X	A	A	A	A	-	A
Tartaric Acid (Dihydroxy Succinic Acid)	-	-	1.8	140	140	73	140	250	100	140	180	250	350	250	70	180	180	-	140	180	A	A	A	A	A	B

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

Chemical Resistance Guide

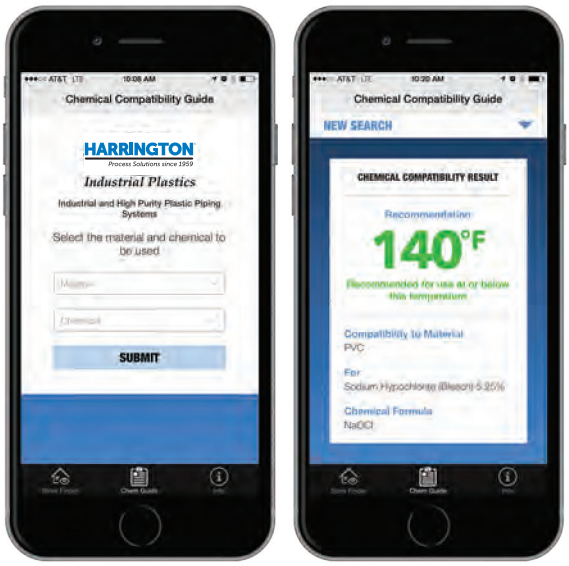
Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics													Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Tertiary Butyl Alcohol	-	-	-	73	X	C	70	180	-	-	-	-	250	-	-	-	70	-	-	X	-	-	-	-	-	-
Tetrachloroethane	$CHCl_2CHCl_2$	-	-	X	X	X	70	200	-	-	X	140	250	100	70	X	180	X	X	X	A	A	A	A	A	A
Tetraethyl Lead	$Pb(C_2H_5)_4$	-	1.65	73	73	73	70	250	-	-	-	250	350	140	-	-	100	X	X	70	A	A	A	A	-	-
Tetrahydrofuran	-	-	-	X	X	X	X	X	X	X	X	X	350	X	X	X	X	X	X	X	A	A	A	A	A	A
Tetralin (Tetrahydro-Naphthalene)	$C_{10}H_{12}$	-	-	X	X	-	X	180	X	X	X	180	350	-	-	X	70	X	X	X	A	A	-	A	-	-
Thionyl Chloride	$SOCl_2$	-	1.64	X	X	X	X	X	X	X	X	140	350	X	X	X	70	X	X	X	A	A	-	X	-	-
Thread Cutting Oils	-	-	-	73	C	C	100	200	-	-	-	250	350	-	-	-	-	-	-	-	A	-	A	A	-	A
Titanium Tetrachloride	$TiCl_4$	-	-	X	X	-	70	140	70	X	-	-	350	100	70	-	140	X	X	X	A	A	A	B	A	A
Toluene	$CH_3C_6H_5$	-	0.9	X	X	X	X	140	X	X	X	180	350	140	180	X	70	X	X	X	A	A	A	A	A	A
Tomato Juice	-	-	-	140	140	140	180	210	70	-	70	250	350	-	180	70	140	70	140	140	A	A	A	A	-	A
Toxaphene-Xylene	-	-	-	X	X	X	X	210	-	-	-	-	350	-	-	-	-	-	70	70	A	A	-	A	A	A
Transformer Oil (Liquid Insulators-Mineral Oil Type)	-	-	-	100	100	C	70	200	X	70	X	250	350	-	-	-	250	X	100	140	-	A	A	A	-	A
Tributyl Phosphate	$(C_4H_9)_3PO_4$	-	-	X	X	X	70	140	X	-	X	100	350	-	140	X	X	70	X	X	A	A	A	A	A	-
Trichloroacetic Acid	CCl_3COOH	-	1.6	X	X	X	140	100	70	-	-	100	350	X	180	-	X	X	X	X	A	A	X	X	X	A
Trichloroethane (Methyl Chloroform)	CH_3CCl_3	-	-	X	X	X	X	100	X	-	X	140	350	100	100	X	70	X	X	X	A	A	A	A	A	A
Trichloroethylene	$CHCl:CCl_2$	-	1.1	X	X	X	X	180	X	X	X	100	350	180	X	X	180	X	X	X	A	A	A	A	A	A
Trichloropropane	-	-	1.39	-	-	X	-	210	-	-	X	-	70	-	-	-	140	-	140	X	A	A	A	A	A	A
Tricresyl Phosphate (TCP)	$(CH_3C_6H_4O)_3PO$	-	1.16	X	X	X	70	X	X	140	X	21	350	100	14	-	70	70	70	X	-	A	X	A	A	A
Triethanolamine	$(HOCH_2CH_2)_3N$	-	1.12	73	73	X	70	70	70	-	70	70	350	140	140	X	X	70	X	70	A	A	A	A	A	A
Triethyl Phosphate	$(C_2H_5)_3PO_4$	-	0.73	X	X	X	70	X	-	-	-	210	350	-	180	-	-	-	-	X	A	-	A	A	-	A
Triethylamine	$(C_2H_5)_3N$	-	-	73	73	X	X	-	70	-	-	100	350	70	140	-	X	70	70	140	A	A	-	A	-	-
Trimethylpropane	$(CH_2OH)_3C_3H_5$	-	-	140	73	-	-	210	-	-	-	-	180	-	-	-	-	-	-	-	-	-	-	-	-	-
Trisodium Phosphate	Na3PO4	-	-	140	140	200	180	250	100	140	70	250	350	180	210	70	70	70	70	70	A	A	A	-	-	A
Turbine Oil	-	-	-	73	-	C	70	-	-	-	-	-	70	-	-	-	140	X	-	70	A	A	A	A	A	-
Turpentine	$C_{10}H_{16}$	-	0.9	140	X	X	X	250	-	X	X	250	350	140	180	X	180	X	X	70	A	A	A	A	B	A
Urea	$CO(NH_2)_2$	-	1.3	140	140	X	180	250	100	140	180	250	350	140	140	-	140	140	140	140	A	A	A	A	A	A
Urine	-	-	-	140	140	200	180	250	100	140	-	140	350	-	100	-	140	140	X	140	A	A	A	A	-	-
Vanilla Extract (Vanillin)	-	-	-	-	-	X	180	-	100	140	-	70	70	-	100	70	-	-	70	70	-	-	-	-	-	-
Varnish	-	-	-	X	X	X	70	250	70	-	-	-	350	-	-	-	70	X	X	70	A	A	A	A	-	A
Vaseline	-	-	-	140	-	X	140	250	70	-	180	140	350	-	-	-	70	X	70	70	-	-	A	A	-	A
Vegetable Oil	-	-	-	140	-	X	140	210	70	70	-	250	350	-	180	180	180	180	X	180	A	A	A	A	A	A
Vinegar (4-8% Acetic Acid)	-	-	-	140	-	200	180	210	100	140	70	250	350	180	180	180	140	140	140	X	A	A	A	A	A	A
Vinyl Acetate	-	-	0.93	X	X	X	X	250	70	-	X	250	350	180	X	-	X	70	X	X	-	-	A	A	-	A
Vinyl Chloride	$CH_2:CHCl$	-	-	X	X	X	X	200	X	-	X	140	350	X	X	X	-	-	-	X	A	A	A	A	A	A
Vinyl Ether	$CH_2:CHOCH:CH_2$	-	0.77	-	-	X	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-
Water Acid Mine	-	-	-	140	140	200	180	250	100	140	-	250	350	-	100	-	180	70	140	140	A	A	A	A	A	A
Water Deionized	H_2O	-	-	140	140	200	180	250	100	140	180	250	350	180	180	180	70	70	70	70	A	A	A	A	A	A

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

Chemical Resistance Guide

Chemical	Formula	% Concentration	Specific Gravity @100%	Plastics													Elastomers				Seals		Metals			
				PVC	Clear PVC	CPVC	PP	PVDF	HD Linear PE	XLPE	Duraplus (ABS)	Halar	PTFE	Epoxy	Vinylester	Polysulfone	Viton	EPDM	Neoprene	Buna-N (Nitrile)	Carbon	Ceramic	304 Stainless Steel	316 Stainless Steel	Titanium	Hastelloy C
Water Demineralized	H_2O	-	-	140	140	200	180	250	100	140	180	250	350	250	180	-	-	-	-	-	A	A	A	A	A	A
Water Distilled	H_2O	-	-	140	140	200	180	250	100	140	18	250	350	250	180	180	140	140	140	140	A	A	A	A	A	A
Water Potable	H_2O	-	-	140	140	200	180	250	100	140	180	250	350	180	180	210	180	180	180	180	A	A	A	A	A	A
Water Salt	H_2O	-	-	140	140	200	180	250	100	140	-	205	350	140	180	180	180	180	140	140	A	A	A	A	A	A
Water Sewage	H_2O	-	-	140	140	200	180	250	100	140	-	250	350	-	180	-	-	-	-	-	A	-	A	-	-	-
Whey	-	-	-	-	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Whiskey	-	-	0.9	140	140	200	180	250	100	140	100	250	350	-	70	-	180	180	140	180	A	A	A	A	A	A
White Acid	NH_4HF_2HF	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
White Liquor	-	-	-	140	140	200	140	-	100	-	-	250	350	140	140	-	140	180	140	140	A	-	A	A	-	A
Wines	-	-	-	140	140	200	180	250	100	70	100	250	350	140	180	70	180	180	140	180	A	A	A	A	A	A
Xenon	Xe	-	-	73	-	*	-	-	70	-	-	-	350	-	-	-	70	70	70	70	A	A	-	A	-	-
Xylene	$C_6H_4(CH_3)_2$	-	0.9	X	X	X	X	180	X	X	X	140	350	140	70	X	70	X	X	X	-	-	A	A	A	A
Yeast	-	-	-	73	-	73	140	140	100	140	70	-	70	-	-	-	70	70	70	70	A	A	A	A	-	-
Zeolite	-	-	-	-	-	200	-	-	-	-	-	-	70	-	180	-	70	70	X	X	A	A	-	-	-	-
Zinc Acetate	$Zn(CH_3COO)_2$	-	-	140	140	200	180	250	100	140	-	-	350	-	-	-	X	180	140	140	A	A	-	A	-	-
Zinc Carbonate	$ZnCO_3$	-	4.45	140	140	200	-	-	100	140	180	-	180	-	-	-	70	70	70	70	A	A	B	B	-	B
Zinc Chloride	$ZnCL_2$	40	2.9	140	140	200	180	250	100	140	70	250	350	250	70	250	210	180	140	70	A	A	B	A	A	A
Zinc Chromate	$ZnCrO_4$	-	3.4	140	-	200	180	-	100	140	-	-	350	-	-	-	-	-	-	-	A	-	-	-	-	-
Zinc Nitrate	$Zn(NO_3)_2$	-	-	140	140	200	180	250	100	140	180	250	350	X	180	-	210	180	-	140	A	A	A	A	-	-
Zinc Phosphate	$Zn_3(PO_4)_2$	-	4	-	-	200	-	-	100	140	180	-	350	-	180	-	-	-	-	-	A	A	-	-	-	-
Zinc Salts	-	-	-	140	-	200	180	250	100	140	-	-	350	70	70	-	70	70	70	70	-	-	-	-	-	-
Zinc Sulfate	$ZnSO_4$	-	2	140	140	200	180	250	100	140	180	250	350	210	70	180	210	180	140	140	A	A	A	A	A	A

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



Harrington Chemical Guide

We are proud to announce the launch of Harrington's NEW Chemical Compatibility Guide App, Available for download in the App Store!

- **Chemical Guide**
- **Store Finder**
- **Company Info**
- **Online Store**

Download on the App Store

ANDROID APP ON Google play

Scan QR Code To Download