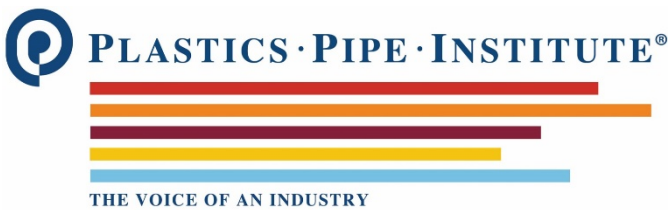
CHEMICAL RESISTANCE OF PLASTIC PIPING MATERIALS

TR-19

2020



105 Decker Court • Suite 825 • Irving, Texas 75062 • 469.499.1044 • www.plasticpipe.org

Foreword

This technical report was developed and published with the technical help and financial support of the members of the Plastics Pipe Institute (PPI). These members have shown their commitment to developing and improving quality products by assisting standards development organizations in the development of standards, and also by developing design aids and reports to help engineers, code officials, specifying groups, contractors and users.

The purpose of this technical report is to provide information on the transport of various chemicals using plastic piping materials.

PPI has prepared this technical report as a service to the industry. The information in this report is offered in good faith and believed to be accurate at the time of its preparation, but is offered “as is” without any express or implied warranty, including WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Additional information may be needed in some areas, especially with regard to unusual or special applications. Consult the manufacturer or material supplier for more detailed information. A list of member manufacturers is available on the PPI website. PPI does not endorse the proprietary products or processes of any manufacturer and assumes no responsibility for compliance with applicable laws and regulations.

PPI intends to revise this technical report within five years, or sooner if required, from the date of its publication, in response to comments and suggestions from users of the document. Please send suggestions of improvements to the address below. Information on other publications can be obtained by contacting PPI directly or visiting our website.

The Plastics Pipe Institute, Inc.

https://www.plasticpipe.org/

This Technical Report, TR-19, was first issued in 1973 and was updated in 1983, 1991, 1999, 2000, 2007, and December 2020.

Table of Contents

1.0 Introduction 1
2.0 Chemical Resistance in General 2
2.1. Pipe and Fitting Materials 2
2.2. Product Design and Joining Systems 3
2.3. Operating Conditions - Internal and External 3
3.0 Types of Chemical Attack On Plastics 3
3.1. Permeation, Swelling, Plasticization, Solvation, and Extraction 3
3.2. Direct Chemical Attack 4
3.3. Environmental Stress Cracking 5
4.0 Other Considerations 5
4.1. Chemical Families 5
4.2. Accelerating Factors (Concentration, Temperature, Stress) 6
4.3. Combinations of Chemicals 6
4.4. Multi-Layered (Composite) Piping 7
4.5. Rate of Chemical Attack 7
5.0 Chemical Resistance Data for Plastic Piping in Non-Pressure Applications and Data Table 7

List of Tables

Table 1: Plastic Materials Identification 2
Table 2: Resistance Codes 8
Table 3: List of Chemical Resistances (°F) 10

CHEMICAL RESISTANCE OF PLASTIC PIPING MATERIALS

1.0 INTRODUCTION

This technical report has been developed as an informative guide on the resistance of plastic piping and fitting materials to chemical attack.

It is divided into several sections:

- Section 2.0: Chemical resistance in general, and considerations for end use applications
- Section 3.0: Types of chemical attack on plastics
- Section 4.0: Other considerations
- Section 5.0: Chemical Resistance Data for Plastic Piping in Non-Pressure Applications and Data Table

Listings of chemical resistance data are presented in **Table 3** for common plastic piping materials applicable to **non-pressure applications**.

Determination of suitability for specific applications under stress (e.g. pressurized service) is beyond the scope of this report. Users should contact the specific pipe or fitting manufacturer for recommendations on pressurized applications.

Note 1: Drinking water, also known as potable water, is water that is safe to drink or to use for food preparation. Across North America, the majority of the drinking water that is provided in public water systems is treated with a disinfectant to control the growth of harmful microorganisms. Potable water disinfectants include chlorine, chloramines, and rarely, chlorine dioxide. Piping materials intended for treated water must be resistant to such disinfectants at various levels, as described in product standards.

For specific information about the resistance of crosslinked polyethylene (PEX) to disinfectants, please see **PPI Technical Note-53** ***Guide to Chlorine Resistance Ratings of PEX Pipes and Tubing for Potable Water Applications*** and **PPI Statement A** ***Relative Oxidative Aggressiveness of Chloramines and Free Chlorine Disinfectants on Crosslinked Polyethylene (PEX) Pipes used in Treated Potable Water***.

For specific information about the resistance of high-density polyethylene (HDPE) to disinfectants, please see **PPI Technical Note-44** ***Long Term Resistance of AWWA C906 Polyethylene (PE) Pipe to Potable Water Disinfectants*** and **PPI Technical Note-49** ***Recommendations for AWWA C901 Service Tubes in Potable Water Applications***.

For specific information about the resistance of chlorinated polyvinyl chloride (CPVC) to disinfectants, please see *Section 4: Effects of Potable Water Disinfectants on CPVC* of **PPI Technical Note-62 *Suitability and Fitness of CPVC Piping Systems for Commercial Building Applications***.

2.0 CHEMICAL RESISTANCE IN GENERAL

Plastic pipe and fitting materials are generally resistant to attack from many chemicals. This inherent property makes them suitable for use in numerous fluid and gas transport applications.

However, there are certain chemicals that may damage plastic pipes, either through exposure on the outside of the pipe to chemicals, on the internal surface of the pipe during the transport of such chemicals, or with exposure to inert fluids containing chemicals in various concentrations.

Each material has unique resistance to chemicals in various situations. The suitability of a pipe or fitting system for use in a particular fluid or gas application is a function of several factors, described below:

2.1. Pipe and Fitting Materials

The specific plastic material used in pipe and fittings impacts its chemical resistance. This report includes the materials listed in **Table 1 *Plastic Materials Identification***.

Table 1: Plastic Materials Identification

ABS	acrylonitrile-butadiene-styrene
CPVC	chlorinated polyvinyl chloride
PP	polypropylene
PP-R [1]	polypropylene random copolymer
PP-RCT [1]	polypropylene random copolymer with modified crystallinity and temperature resistance
PVC	polyvinyl chloride
PE	polyethylene (representative of medium density polyethylene [MDPE] and high density polyethylene [HDPE]; not representative of low density polyethylene [LDPE])
PE-RT [2]	polyethylene of raised temperature resistance
PB	Polybutylene
PVDF	polyvinylidene fluoride
PEX	crosslinked polyethylene
PA11/ PA12	polyamide 11 / polyamide 12
PSU	Polysulfone
PPSU	Polyphenylsulfone

[1] PP-R and PP-RCT are chemically similar to PP and are grouped together in Table 3; they may be assumed to have similar chemical resistance

[2] PE-RT is chemically similar to MDPE and HDPE and are grouped together in Table 3; they may be assumed to have similar chemical resistance

2.2. Product Design and Joining Systems

Piping dimensions, including wall thickness, construction, and composition (layers, fillers, etc.), can affect chemical resistance.

The type of joining system can also affect the performance of the system in chemical handling applications. Heat fusion and solvent cementing do not introduce different materials into the system. The resistance of solvent cement to certain chemicals can vary from grade to grade.

Other components and appurtenances in the piping system can have different chemical resistances. Certain types of mechanical joints include gaskets using elastomers with their own unique resistances. Some piping systems include other plastic or non-plastic materials used as mechanical fitting components which can have different chemical resistance.

2.3. Operating Conditions - Internal and External

- Chemicals or mixtures of chemicals, and their concentrations.
- Operating temperature — maximum, minimum, and cyclical variations.
- Operating pressure or applied stress — maximum, minimum and cyclical variations.

3.0 TYPES OF CHEMICAL ATTACK ON PLASTICS

In general, chemicals that affect plastics do so in several ways, including solvation, chemical attack, and environmental stress cracking.

3.1. Permeation, Swelling, Plasticization, Solvation, and Extraction

Permeation is the transport of chemicals through the pipe wall via diffusion through the free volume of the polymer matrix without significant change in the material properties. Permeability may be of interest in situations where the pipe is to function as a liner pipe for a less resistant material (e.g., fiberglass or steel), where the pipe is transporting particularly hazardous substances, or where the pipe is installed in contaminated soil.

Permeability of specific plastic piping materials is not addressed in this document. **PPI Statement N *Barrier Properties of Plastic Pipe Used for Potable Water Service,*** states “In areas of known or suspected contamination, the design of the distribution system should be based on a careful analysis of the situation.

Appropriate technical data and individual manufacturers' recommendations should be consulted on the overall design of a pipe system for these systems."

Note 2: See also ***PPI Comments on Permeation of Water Pipes and on the AWWA-RF Report on Hydrocarbons*** at https://plasticpipe.org/pdf/ppi-comment-permeation-hydrocarbons.pdf

Absorption occurs when a chemical diffuses into the free volume of the polymer matrix and accumulates there. This may result in one or more of the following effects: swelling, plasticization, or solvation. In the case of absorption, physical properties may be affected, but the polymer molecule itself is not chemically changed, degraded or destroyed.

Swelling is an increase in the bulk volume of a material caused by the absorption of liquids or vapors from the environment. It may or may not be accompanied by plasticization, which results in softening and loss of strength in the material.

In extreme cases, the solvating compound can fully dissolve the plastic material.

Sometimes the polymer itself may not be soluble, but it may contain a soluble formulary ingredient that may be extracted from the polymer compound. This is more common in plasticized materials where loss of plasticizer may result in embrittlement. It is not common in plastic materials used for pipes and fittings and is not addressed in this document.

In gas or vapor transmission service, there may be a very slight loss of contents through the pipe wall.

Lastly, a solvating or permeating chemical entrained in the material may be released when heat fusion or solvent cement joining is performed. Thus, heat fusion (e.g. welding) or solvent cement joining may be unreliable if performed on permeated pipes. Caution should be used in performing these processes if solvation or permeation are suspected.

3.2. Direct Chemical Attack

Direct chemical attack occurs when exposure to a chemical causes a chemical alteration of the polymer molecules by chain scission, crosslinking, oxidation, or substitution reactions.

Direct chemical attack frequently causes a severe reduction of mechanical physical properties such as tensile strength, ductility, burst pressure, and impact resistance.

Chemical resistance may vary greatly from one plastic material to another (i.e., PVC, ABS, PE, etc.), and also among different cell classifications of the same plastic type (e.g. PVC 1120 to PVC 2110, PE 3608 to PE 4710, etc.). There may also be slight variations among commercial products having the same cell classification, based on compound ingredients known as stabilizers or “additive packages”.

The chemical resistance of plastic piping and fittings is basically a function of the chemical resistance of the plastic material, including additives and other ingredients in the final compound. In general, the fewer filler ingredients used, the better the chemical resistance. Plastic pipes with significant filler percentages may be susceptible to chemical attack whereas an unfilled material may be affected to a lesser degree or not at all.

3.3. Environmental Stress Cracking

Environmental stress cracking (ESC) is defined as the “development of cracks in a material that is subjected to stress or strain in the presence of specific chemicals”, as per **ASTM F412 S*tandard Terminology for Plastic Piping Systems***.

Environmental stress cracking is a fundamentally different phenomenon than chemical attack, even though they may present similarly (e.g. crazing or whitening of parts, sloughing of material, minor crack formation). ESC does not result in chemical alteration of the polymer molecule. ESC is caused by a chemical agent in combination with inherent and applied stresses. It can often be minimized with proper installation. Direct chemical attack does not require any stress or strain on the material in order to occur, although it may be accelerated in conditions of high stress or strain.

4.0 OTHER CONSIDERATIONS

4.1. Chemical Families

While the effect of each individual chemical is specific, some chemicals can be grouped into general categories based on similarities in chemical characteristics (acids, bases, alcohols, etc.). For example, water-based (aqueous) solutions of neutral inorganic salts generally have the same effect on plastic piping materials as water alone; thus, sodium chloride, potassium alum, calcium

chloride, copper sulfate, potassium sulfate and zinc chloride solutions have the same effect as water.

However, at elevated temperatures or high concentrations, some salt solutions may attack some plastic materials through either oxidation or chemical substitution when they would be benign at lower temperatures and concentrations.

4.2. Accelerating factors (concentration, temperature, stress)

Generally, the resistance of a particular plastic to a specific chemical will decrease with an increase in concentration. For example, for some materials, dilute sulfuric acid may be acceptable, whereas 95% sulfuric acid may not.

The resistance of a particular plastic to a specific chemical generally decreases as temperature increases because the rate of chemical phenomenon (i.e. reactivity, permeation rate, solvation) tends to increase. This rate increase is logarithmic with respect to temperature over most plastic functional temperatures and generally follows to the Arrhenius equation.

The chemical resistance of a particular plastic generally decreases with increasing applied stress. This is commonly seen when the presence of certain chemicals causes environmental stress cracking where unstressed parts exhibit good chemical resistance.

The chemical resistance of a particular plastic generally decreases where temperature or applied stress are varied or cycled. These effects can be greater overall in combination. Testing should be conducted if the system is expected to perform across a wide range of temperatures and stresses to determine the overall combined effect.

4.3. Combinations of Chemicals

In some cases, combinations of chemicals may have a synergistic effect on damaging a plastic material, and a mixture may cause damage where the individual chemicals do not. It cannot be assumed that an individual chemical's lack of effect would apply for combinations that include several chemicals. When the possible combined effect of several chemicals is unknown, the material should be tested in the complete chemical mixture(s) in question.

4.4. Multi-Layered (Composite) Piping

Some piping products utilize a multi-layered (composite) construction, in which the pipe wall is constructed of layers of different materials. The layers may consist of both plastic and non-plastic.

For example, PE/AL/PE and PEX/AL/PEX pipes contain mid-wall aluminum layers. Examples of all-plastic composite pipes include PVC/ABS/PVC and fiber-core PP-R or PP-RCT pipes. Layered composite material pipes may have chemical resistance that differs from the chemical resistance of the individual materials.

4.5. Rate of Chemical Attack

Chemicals that attack plastics do so at a certain rate, some slowly and some more quickly. But usually, any chemical attack is increased when temperature or stress are increased, or when temperature or stress are varied. The particular rate of chemical attack must be taken into consideration in the life-cycle evaluation for a particular application. Each combination of material cost, installation cost and service life must be evaluated and judged on its own merits.

In certain cases involving a slow rate of chemical attack, particularly when the application will be pressurized, simple immersion data, like that represented in **Table 3**, may not adequately characterize performance throughout the intended design life. Longer-term testing to replicate service conditions is advisable to fully measure the effects of these chemicals.

5.0 CHEMICAL RESISTANCE DATA FOR PLASTIC PIPING IN NON-PRESSURE APPLICATIONS and DATA TABLE

When plastic pipes come into contact with chemical agents it is important to know how the pipe may be affected. For non-pressure applications, where the pipe is not subject to continuous internal pressure or stress, chemical immersion test data may provide suitable information. The pipe manufacturer may have additional data from similar tests, or information on previous installations under similar field conditions.

The following cautions apply to Table 3 *List of Chemical Resistances*:

- *Data Sources.* The information in **Table 3** has been obtained from numerous sources. The data are based primarily on plastic material test specimens that have been immersed in the chemical and evaluated, and to a lesser degree, on field-experience. In most cases, detailed information on the test conditions (e.g. exposure time), and on test results (e.g. change in weight, change in volume, and change in strength) was not available. Therefore, this information is best used only for comparison of different plastic materials.
- *Combinations of Chemicals.* Chemicals that individually do not have an effect may affect the pipe if combined with certain other chemicals. The list of possible combinations of chemicals is endless. **Table 3** does not address chemical combinations.
- *Composite Piping.* Layered composite piping may have chemical resistance that differs from that of the individual materials in the layers. **Table 3** is not applicable to layered composite piping products.
- *Applicability to fiberglass* and *filled materials.* **Table 3** is not applicable to reinforced epoxy resin (fiberglass) pipes, and to plastic pipes containing significant percentages of filler materials.
- *Concentrations.* Where no concentrations are given (indicated as '**P**'), the commercially pure material is indicated, except in the case of solids where saturated aqueous solutions are indicated.

See **Table 2** for the **Resistance Codes** which are used throughout **Table 3.**

Table 2: Resistance Codes

Code	Meaning	Typical Result
R to xx°F	Plastic material is generally **Resistant** up to the temperature (°F) indicated by code and may have limited resistance at higher temperatures	Swelling < 3% or weight loss < 0.5% and elongation at break not significantly changed Typical performance properties not significantly affected
L to xx°F	Plastic material has **Limited** resistance at the temperature (°F) indicated by code. Compatibility at lower temperatures should not be assumed	Material may experience swelling in the range of 3 - 8% or weight loss of 0.5 - 5% and/or reduction in elongation at break by < 50% Some effect on performance properties
N	Plastic material is **Not** resistant.	Material may experience swelling > 8% or weight loss > 5% and/or reduction in elongation at break by > 50%
P	**Pure** Concentration	
—	Data not available Check with piping manufacturer	

Chemicals that do not normally affect the properties of an unstressed plastic may cause completely different behavior (such as stress cracking) when under mechanical stress, such as constant internal pressure or mechanical stress cycles.

Unstressed immersion test chemical resistance information is applicable only when the plastic pipe will not be subject to mechanical load or stress that is constant, or cycles frequently.

When the pipe will be subject to a continuous applied mechanical stress or to combinations of chemicals, testing that duplicates the expected field conditions, as closely as possible, should be performed on representative samples of the pipe product to properly evaluate that plastic pipe for use in this application.

******May not be fully applicable to pressurized applications******

Table 3*:* List of Chemical Resistances (°F)

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Acetaldehyde	40%	---	N	---	L to 73	R to 73	---	N	R to 73	---	---	---
CAS# 75-07-0	Pure	---	N	R to 140	N	L to 73	L to 73	---	L to 140	L to 176	R to 73	---
CH_3 CHO												
Acetamide												
CAS# 60-35-5	5%	R to 120	---	R to 140	---	R to 140	---	---	R to 140	---	---	---
CH_3 $CONH_2$												
Acetic Acid	vapor	R to 120	R to 180	R to 180	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 64-19-7	10%	---	R to 180	---	---	---	---	R to 248	R to 180	R to 176	---	---
CH_3 COOH	25%	N	N	R to 180	R to 140	R to 140	R to 140	---	R to 140	---	---	---
	40%	---	---	---	---	---	---	R to 140	---	---	---	---
	50%	---	---	---	---	---	---	R to 140	---	L to 68	---	---
	60%	N	N	R to 180	R to 73	R to 73	R to 73	R to 104	---	---	---	---
	85%	N	N	R to 120	R to 73	R to 73	R to 73	---	---	---	R to167	R to 167
	glacial	N	N	R to 120	R to 73	R to 73	R to 73	R to 104	R to 68	---	R to 167	R to 167
Acetic Anhydride												
CAS# 108-24-7	---	N	N	R to 73	N	R to 73	R to 140	N	R to 73	L to 68	---	---
$(CH_3 CO)_2$ O												
Acetone	5%	N	R to 180	R to 73	N	L to 73	R to 140	R to 212	L to 73	L to 140	N	---
CAS# 67-64-1	10%	---	L to 180	---	---	---	---	R to 122	---	---	---	---
CH_3 $COCH_3$	100%	---	N	---	---	---	---	---	---	---	---	---
Acetophenone												
CAS# 98-86-2	---	N	N	R to 120	--	R to 73	---	R to 68	R to 73	---	---	---
C_6 H_5 $COCH_3$												
Acetyl Chloride												
CAS# 75-36-5	---	N	N	---	N	---	---	N	---	---	---	---
CH_3 COCl												

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Acetylene **CAS# 74-86-2** HC≡CH	gas 100%	R to 73	N	R to 73	N	R to 73	L to 73	---	R to 73	R to 140	---	---
Acetylnitrile	---	---	N	---	N	---	---	---	---	---	---	---
Acrylic Acid **CAS# 79-10-7** H_2 C=CHCOOH	97%	---	N	---	N	R to 140	---	---	R to 140	---	---	---
Acrylonitrile **CAS# 107-13-1** H_2 C=CHC≡N	---	---	N	---	N	R to 140	---	---	R to 140	---	---	---
Adipic Acid **CAS#124-04-9** COOH(CH_2)$_4$ COOH	Saturated	---	R to 180	R to 140	R to 140	R to 140	R to 73	R to 176	R to 140	---	---	---
Allyl Alcohol **CAS# 107-18-6** CH_2 = $CHCH_2$ OH	96%	---	L to 73	R to 140	R to 73	N	R to 140	---	L to 100	---	---	---
Allyl Chloride	--	---	N	---	N	L to 73	---	R to 140	L to 73	---	---	---
CAS# 107-05-1 CH_2=$CHCH_2$ Cl	Liquid	---	---	---	---	---	---	R to 68	---	---	---	---
Aluminum Ammonium Sulfate (Alum) **CAS# 7784-25-0** $AlNH_4$ (SO_4)$_2$ •12H $_2$O	Saturated	---	R to 180	R to 140	R to 140	R to 140	---	---	R to 140	---	---	---
Aluminum Chloride **CAS# 7446-70-0** $AlCl_3$	Saturated	R to 160	R to 180	R to 180	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
Aluminum Fluoride Anhydrous **CAS# 7764-18-1** AlF_3	Saturated	R to 160	R to 180	R to 180	R to 73	R to 140	R to 140	R to 212	R to 140	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Aluminum Hydroxide **CAS# 21645-51-2** $Al(OH)_3$	Saturated	R to 160	R to 180	R to 180	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
Aluminum Nitrate **CAS# 13473-90-0** $Al(NO_3)_3 \cdot 9H_2O$	Saturated	---	R to 180	R to 180	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
Aluminum Oxychloride **CAS# 1327-41-9**	--	---	R to 180	R to 180	R to 140	---	R to 140	---	---	---	---	---
Aluminum Potassium Sulfate (Alum) **CAS# 10043-67-1** $AlK(SO_4)_2 \cdot 12H_2O$	Saturated	R to 160	R to 180	R to 140	R to 140	R to 140	---	R to 212	R to 140	---	---	---
Aluminum Sulfate **CAS# 10043-01-3** $Al_2(SO_4)_3$	Saturated	R to 160	R to 180	R to 140	R to 140	R to 140	C to 73	R to 212	R to 140	R to 194	---	---
Ammonia Gas **CAS# 7664-41-7** NH_3	100%	N	N	R to 140	R to 140	R to 140	R to 140	---	R to 140	R to 140	---	---
Ammonium Acetate **CAS# 631-61-8** CH_3COONH_4	Saturated	R to 120	R to 180	R to 73	R to 140	R to 140	---	R to 212	R to 140	---	---	---
Ammonium Bifluoride **CAS# 1341-49-7** NH_4HF_2	Saturated	---	R to 180	R to 180	R to 140	---	R to 140	---	R to 140	---	---	---
Ammonium Bisulfide **CAS# 12124-99-1** $(NH_4)HS$	---	---	---	---	R to 140	---	---	---	---	---	---	---
Ammonium Carbonate **CAS# 506-87-6** $(NH_4)_2CO_3$	Saturated	---	R to 180	R to 212	R to 140	R to 140	R to 140	R to 248	R to 140	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Ammonium Chloride												
CAS# 12125-02-9	Saturated	R to 120	R to 180	R to 212	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
NH_4Cl												
Ammonium Dichromate												
CAS# 7789-09-5	--	---	R to 73	---	R to 73	---	---	---	---	---	---	---
$(NH_4)_2Cr_2O_7$												
Ammonium Fluoride	10%	R to 120	R to 180	R to 212	R to 140	R to 140	---	R to 212	R to 140	---	---	---
CAS# 12125-01-8	25%	R to 120	R to 180	R to 212	L to 140	R to 140	R to 73	---	R to 140	---	---	---
NH_4F												
Ammonium Hydroxide	10%	R to 120	N	R to 212	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 1336-21-6	30%	---	---	---	---	R to 140	---	---	R to 140	---	---	---
NH_4OH	Saturated	---	---	---	---	---	---	---	R to 194	---	---	---
Ammonium Metaphosphate												
CAS# 13446-46-3	Saturated	--	--	R to 212	R to 140	R to 140	R to 140	R to 248	R to 140	---	---	---
NH_3HPO_3												
Ammonium Nitrate												
CAS# 6484-52-2	Saturated	R to 120	R to 180	R to 212	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
NH_4NO_3												
Ammonium Persulfate												
CAS# 7727-54-0	---	---	R to 180	R to 140	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
$(NH_4)_2S_2O_8$												
Ammonium Phosphate (Monobasic)												
CAS# 7722-76-1	**---**	R to 120	L to 73	R to 212	R to 140	R to 140	R to 140	R to 248	R to 140	---	R to 199	R to 199
$NH_4H_2PO_4$												
Ammonium Sulfate												
CAS# 7783-20-2	Saturated	R to 120	R to 180	R to 212	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
$(NH_4)_2SO_4$												
Ammonium Sulfide	dilute	R to 120	R to 180	R to 212	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 12135-76-1	Saturated	---	---	---	---	R to 140	---	---	---	---	---	---
$(NH_4)_2S$												

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Ammonium Thiocyanate **CAS# 1762-95-4** NH_4 SCN	50-60%	R to 120	R to 180	R to 212	R to 140	R to 140	R to 140	R to 212	R to 73	---	---	---
Amyl Acetate **CAS# 628-63-7** CH_3 $COOC_5$ H_{11}	--	N	N	N	N	R to 73	---	R to 122	R to 73	C to 194	---	---
Amyl Alcohol	--	---	N	---	N	R to 140	R to 140	R to 212	R to 140	---	---	---
CAS# 75-41-0 C_5 H_{11} OH	100%	---	---	---	---	---	L to 140	---	---	---	---	---
n-Amyl Chloride **CAS# 543-59-9** CH_3 $(CH_2)_3CH_2Cl$	--	N	N	N	N	L to 73	---	---	L to 73	---	---	---
Aniline **CAS# 62-53-3** C_6 H_5 NH_2	--	N	N	---	N	R to 73	L to 140	R to 68	L to 140	---	---	---
Aniline Chlorohydrate	--	---	N	---	N	L to 73	N	---	L to 73	---	---	---
Aniline Hydrochloride **CAS# 142-04-1** C_6 H_5 NH_2 •HCl	Saturated	---	N	---	N	R to 140	N	---	R to 140	---	---	---
Anthraquinone **CAS# 84-65-2** $C_{14}H_8O_2$	--	---	R to 180	---	R to 140	L to 73	L to 73	---	L to 73	---	---	---
Anthraquinone Sulfonic Acid **CAS# 82-49-5** C_{14} H_7 O_2 • SO_3 • H_2O	--	---	R to 180	R to 73	R to 140	R to 140	L to 73	---	L to 73	---	---	---
Antimony Trichloride **CAS# 10025-91-9** $SbCl_3$	Saturated	---	R to 180	R to 140	R to 140	R to 140	R to 140	R to 140	R to 140	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Aqua Regia **CAS# 8007-56-5** (Nitrohydrochloric Acid) $HCl+HNO_3$	--	N	R to 73	N	L to 73	N	N	L to 194	N	---	N	---
Arsenic Acid **CAS# 7778-39-4** $H_3\ AsO_4$	80%	---	R to 180	R to 140	R to 140	R to 140	R to 140	R to 248	R to 140	---	---	---
Asphalt **CAS# 8052-42-4**	--	---	N	R to 73	N	R to 73	R to 140	---	R to 73	---	---	---
Barium Carbonate **CAS# 513-77-9** $BaCO_3$	Saturated	R to 120	R to 180	R to 140	R to 140	R to 140	R to 140	R to 248	R to 140	---	---	---
Barium Chloride **CAS# 10361-37-2** BaCl2 •2H2O	Saturated	R to 120	R to 180	R to 140	R to 140	R to 140	R to 140	R to 212	R to 140	R to 194	---	---
Barium Hydroxide	30%	---	---	---	---	R to 140	---	---	R to 140	---	---	---
CAS# 17194-00-2 $Ba(OH)_2$	Saturated	R to 73	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 212	---	---	---
Barium Nitrate **CAS# 10022-31-8** $Ba(NO_3)_2$	Saturated	R to 73	R to 180	R to 140	R to 73	R to 140	---	---	R to 140	---	---	---
Barium Sulfate **CAS# 7727-43-7** $BaSO_4$	Saturated	R to 73	R to 180	R to 140	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
Barium Sulfide **CAS# 21109-95-5** BaS	Saturated	R to 73	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 248	---	---	---
Beer	--	R to 120	R to 180	R to 180	R to 140	R to 140	R to 140	R to 248	R to 140	R to 68	---	---
Beet Sugar Liquors	--	---	R to 180	R to 180	R to 140	R to 73	R to 140	---	R to 73	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Benzaldehyde **CAS# 100-52-7** $C_6 H_5 CHO$	10%	N	N	R to 73	R to 73	R to 73	L to 73	---	R to 73	R to 104	---	---
Benzene **CAS# 71-43-2** $C_6 H_6$	--	N	N	N	N	N	N	N	N	---	N	---
Benzene Sulfonic Acid	10%	---	R to 180	R to 180	R to 140	R to 73	---	---	R to 73	---	---	---
CAS# 98-11-3 $C_6 H_5 SO_3 H$	10%+	---	N	---	N	---	---	---	---	---	---	---
Benzoic Acid **CAS# 65-85-0** $C_6 H_5 COOH$	100%	R to 160	R to 180	R to 73	R to 140	R to 140	R to 140	---	R to 140	---	---	---
Benzoyl Chloride **CAS# 99-88-4** C_6H_5COCl	Sat. Sol.	---	---	---	---	---	---	L to 68	---	---	---	---
Benzyl Alcohol **CAS# 100-51-6** $C_6 H_5 CH_2 OH$	--	---	N	R to 120	N	R to 140	---	R to 122	R to 140	R to 68	---	---
Benzyl Chloride **CAS# 100-44-7** C_7H_7Cl	--	---	N	---	---	---	---	---	R to 140	---	---	---
Bismuth Carbonate **CAS#5892-10-4** $(BiO)_2 CO_3$	Saturated	---	R to 180	R to 180	R to 140	R to 140	R to 140	---	R to 140	---	---	---
Black Liquor	Saturated	---	R to 180	R to 140	R to 140	R to 120	R to 140	---	R to 120	---	---	---
Bleach-See Sodium Hypochlorite												
Borax **CAS# 1303-96-4** $Na_2 B_4 O_7 \bullet 10H_2O$	Saturated	R to 160	R to 180	R to 212	R to 140	R to 140	R to 140	---	R to 140	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Boric Acid												
CAS# 10043-35-3	Saturated	R to 160	R to 180	R to 212	R to 140	R to 140	R to 140	R to 212	R to 140	---	R to 113	---
$H_3 BO_3$												
Bromic Acid	Saturated	---	R to 180	N	R to 140	N	R to 140	R to 212	N	---	---	---
CAS# 15541-45-4	10%	---	---	---	---	R to 140	---	---	---	---	---	---
$HBrO_3$												
Bromine	Liquid	R to 73	N	N	N	N	N	R to 248	N	N	---	---
CAS# 7726-95-6	vapor 25%	---	R to 180	N	R to 140	N	---	---	N	---	---	---
Br_2												
Bromine Water	Saturated	---	R to 180	N	R to 140	N	L to 73	R to 176	N	---	---	---
Bromobenzene												
CAS# 108-86-1	--	---	N	---	N	---	---	---	---	---	---	---
$C_6 H_5 Br$												
Bromotoluene												
(Benzyl bromide)	--	---	N	L	N	---	---	---	---	---	---	---
CAS# 95-46-5												
$C_6 H_5 CH_2 Br$												
Butadiene	50%	---	---	N	R to 140	R to 73	---	---	R to 73	---	---	---
CAS# 106-99-0	Gas	---	---	---	---	---	---	R to 212	---	---	---	---
$H_2 C=CHCH=CH_2$												
Butane	50%	---	R to 180	R to 140	R to 140	R to 140	N	---	R to 140	---	---	---
CAS# 106-97-8	Gas	---	---	---	---	---	---	R to 68	---	---	---	---
$C_4 H_{10}$												
n-Butanol												
CAS# 71-36-3	Liquid	---	L to 73	---	---	---	---	R to 140	---	---	N	---
$C_4 H_9OH$												
Butyl Acetate												
CAS# 123-86-4	100%	N	N	L to 73	N	L to 73	L to 73	L to 104	L to 73	R to 194	---	---
$CH_3COOCH_2CH_2CH_2CH_3$												

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Butyl Alcohol												
CAS# 71-36-3	--	---	L to 73	R to 180	R to 140	R to 140	R to 140	---	R to 140	L to 104	R to 73	---
$CH_3 (CH_2)_2 CH_2OH$												
Butyl Cellosolve												
CAS# 111-76-2	--	---	N	---	R to 73	---	---	---	---	---	---	---
$HOCH_2 CH_2 O(CH_2)_3CH_3$												
n-Butyl Chloride												
CAS# 109-69-3	--	N	N	---	---	---	---	---	---	---	---	---
$C_4 H_9 Cl$												
Butyl Glycol												
CAS# 111-76-2	Liquid	---	N	---	---	---	---	R to 212	---	---	---	---
$HOCH_2 CH_2 O(CH_2)_3CH_3$												
Butylene												
CAS# 107-01-7 (isomer not specified)	Liquid	---	---	N	R to 140	N	---	---	N	---	---	---
$CH_3 CH=CHCH_3$												
Butyl Phenol												
CAS# 98-54-4	--	---	---	N	L to 73	R to 73	R to 73	---	R to 73	---	---	---
(CH3)3C6H4OH												
Butyl Phthalate												
CAS# 84-74-2	--	---	N	R to 180	---	---	---	R to 140	---	---	---	---
$C_{16}H_{22}O_4$												
Butyl Stearate												
CAS# 123-95-5	--	---	---	---	R to 73	---	---	---	---	---	---	---
$CH_3(CH2)_{16}COO(CH_2)_3CH_3$												
Butynediol												
CAS# 110-65-6	--	---	---	---	R to 73	---	---	----	---	---	---	---
$HOCH_2 C\equiv CCH_2OH$												
Butyric Acid	--	N	N	R to 180	R to 73	R to 73	R to 73	---	R to 73	---	---	---
CAS# 107-92-6	20%	---	---	---	---	---	---	R to 212	---	---	---	---
$CH_3 CH_2 CH_2 COOH$	Liquid	---	---	---	---	---	---	R to 176	R to 73	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Cadmium Cyanide												
CAS# 542-83-6	--	---	R to 180	---	R to 140	---	---	---	---	---	---	---
$Cd(CN)_2$												
Calcium Bisulfide	--	---	R to 180	---	N	R to 140	---	---	R to 140	---	---	---
$Ca(HS)_2$ o6H $_2O$												
Calcium Bisulfite	--	---	R to 180	R to 180	R to 140	N	R to 140	---	N	---	---	---
CAS# 13780-03-5	Saturated	---	---	---	---	---	---	R to 248	---	---	---	---
$Ca(HSO_3)_2$												
Calcium Carbonate	Saturated	---	R to 180	R to 180	R to 140	R to 140	R to 140	R to 248	R to 140	---	---	---
$CaCO_3$												
Calcium Chlorate												
CAS# 10137-74-3	--	---	R to 180	R to 180	R to 140	R to 140	R to 140	R to 248	R to 140	---	---	---
$Ca(ClO_3)_2 \cdot 2H_2O$												
Calcium Chloride												
CAS# 10043-52-4	Saturated	R to 120	R to 180	R to 180	R to 140	R to 140	R to 140	R to 248	R to 176	R to 194	---	---
$CaCl_2$												
Calcium Hydrogen Sulfide												
CAS# 9046-53-1	>10%	---	---	---	---	---	---	R to 248	---	---	---	---
$Ca(HS)_2$												
Calcium Hydroxide	--	R to 160	R to 180	R to 180	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 1305-62-0	30%	---	---	---	---	R to 140	---	---	R to 140	---	---	---
$Ca(OH)_2$												
Calcium Hypochlorite	30%	R to 160	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 7778-54-3	Saturated	---	---	---	---	---	---	L to 212	---	---	---	---
$Ca(OCl)_2$												
Calcium Nitrate	--	---	R to 180	R to 180	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 10124-37-5	50%	---	---	---	---	R to 140	---	R to 212	R to 140	---	---	---
$Ca(NO_3)_2$	Saturated	---	---	---	---	---	---	R to 176	---	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Calcium Oxide **CAS# 1305-78-8** CaO	--	---	R to 180	---	R to 140	R to 140	---	---	R to 140	---	---	---
Calcium Sulfate **CAS# 7778-18-9** $CaSO_4$	--	R to 100	R to 180	R to 180	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
Camphor **CAS# 76-22-2** $C_{10}\ H_{16}\ O$	--	N	---	R to 73	R to 73	R to 73	---	---	R to 73	---	---	---
Cane Sugar Liquors (Sucrose) **CAS# 57-50-1** $C_{12}\ H_{22}\ O_{11}$	--	---	R to 180	R to 180	R to 140	R to 140	R to 150	---	R to 140	---	---	---
Carbitol **CAS# 111-90-0** $CH_3CH_2O(CH_2)_2O(CH_2)_2OH$	--	---	N	---	R to 73	---	---	---	---	---	---	---
Carbon Dioxide	Dry 100%	R to 160	R to 180	R to 140	R to 140	R to 140	---	R to 212	R to 140	---	---	---
CAS# 124-38-9	Wet	R to 160	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CO_2												
Carbon Disulfide **CAS# 75-15-0** CS_2	--	N	N	N	N	L to 140	---	---	L to 73	R to 104	N	---
Carbon Monoxide **CAS# 630-08-0** CO	Gas	---	R to 180	R to 180	R to 140	R to 140	R to 140	R to 140	R to 140	---	---	---
Carbon Tetrachloride **CAS# 56-23-5** CCl_4	--	N	N	N	R to 73	L to 73	N	L to 212	L to 68	N	N	---
Carbonic Acid **CAS# 463-79-6** $H_2\ CO_3$	Saturated	R to 185	R to 180	R to 140	R to 140	R to 140	---	---	R to 140	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Castor Oil **CAS# 8001-79**	--	---	L to 180	R to 140	R to 140	R to 73	R to 140	---	R to 73	---	---	---
Caustic Potash **CAS# 1310-58-3** KOH	50%	R to 160	R to 180	R to 180	R to 140	R to 140	R to 73	---	R to 140	---	---	---
Cellosolve **CAS# 110-80-2**	--	---	N	R to 73	R to 73	L to 120	R to 140	---	L to 120	---	N	---
Cellosolve Acetate **CAS# 111-15-9** $CH_3\ COOCH_2\ CH_2\ OC_2\ H_5$	--	---	N	R to 73	R to 73	---	---	---	---	---	---	---
Chloral Hydrate **CAS# 302-17-0** $CCl_3\ CH\ (OH)_2$	All	---	---	L to 73	R to 140	R to 120	R to 140	---	R to 120	---	---	---
Chloramine **CAS# 10599-90-3** $NH_2\ Cl$	Dilute	---	R to 180	R to 73	R to 73	R to 73	---	---	R to 73	---	---	---
Chloric acid	10%	---	R to 180	R to 73	R to 140	R to 73	---	---	R to 73	---	---	---
CAS# 7790-93-4	20%	---	R to 185	R to 73	R to 140	R to 73	---	---	R to 73	---	---	---
$HClO_3$												
Chlorine Gas	0-20 PPM moisture content	N	L to 73	N	L to 73	L to 73	---	R to 212	L to 73	---	---	---
CAS# 7782-50-5 Cl_2	20-50 PPM moisture content	N	L to 73	N	N	L to 73	---	---	L to 73	---	---	---
	50+ PPM moisture content	N	L to 73	N	N	L to 73	---	N	L to 73	---	---	---
Chloroacetic Acid	50%	N	N	L to 73	R to 140	R to 120	N	---	R to 120	---	---	---
CAS# 79-11-8	>10%	---	---	---	---	---	---	R to 140	---	---	---	---
$CH_2\ ClCOOH$												

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Chloroacetyl Chloride												
CAS# 79-04-9	--	---	N	---	R to 73	---	---	---	---	---	---	---
$ClCH_2COCl$												
Chlorobenzene	Dry	N	N	R to 73	N	L to 73	N	---	L to 73	---	---	---
CAS# 108-90-7	Liquid	---	---	---	---	---	---	R to 140	R to 68	L to 176	---	---
C_6H_5Cl												
Chlorobenzyl Chloride												
CAS# 104-83-6	--	---	N	---	N	L to 120	---	---	L to 120	---	---	---
$ClC_6H_4CH_2Cl$												
Chloroethanol												
CAS# 107-07-3	Liquid	---	N	---	---	---	N	R to 122	---	---	---	---
$ClCH_2CH_2OH$												
Chloroform	Dry	N	N	N	N	L to 73	L to 73	---	N	---	N	---
CAS# 67-66-3	Liquid	---	---	---	---	---	---	R to 212	N	---	---	---
$CHCl_3$												
Chloromethane												
CAS# 74-87-3	Gas	---	N	---	---	---	---	R to 212	---	---	---	---
CH_3Cl												
Chloropicrin												
CAS# 76-06-2	--	---	N	---	N	R to 73	---	---	R to 73	---	---	---
CCl_3NO_2												
Chlorosulfonic Acid	--	---	R to 73	N	R to 73	L to 120	N	---	N	---	---	---
CAS# 7790-94-5	50%	---	---	---	---	---	---	R to 68	---	---	---	---
$ClSO_2OH$	100%	---	---	---	---	N	---	---	N	---	---	---
Chromic Acid	Saturated	---	---	---	---	---	---	R to 212	---	---	---	---
CAS# 7738-94-5	10%	R to 73	R to 180	R to 140	R to 140	R to 73	R to 140	R to 212	R to 73	N	N	N
H_2CrO_4	30%	N	R to 180	R to 73	R to 140	R to 73	R to 140	R to 212	R to 73	---	N	N
	40%	N	R to 180	R to 73	R to 140	R to 73	R to 73	R to 212	R to 73	---	N	N
	50%	N	L to 140	R to 73	N	R to 73	N	R to 212	R to 73	---	N	N

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Chromium Potassium Sulfate (dodecahydrate)	>10%	---	---	---	---	---	---	R to 212	---	---	---	---
CAS# 7788-99-0	--	---	---	R to 73	---	R to 73	---	---	R to 73	---	---	---
$CrK(SO_4)_2 \cdot 12H_2O$	Saturated	---	---	---	---	---	R to 212	---	---	---	---	---
Citric Acid CAS# 77-92-9 $C_6H_8O_7$	Saturated	R to 160	R to 180	R to 140	R to 140	R to 140	R to 140	R to 248	R to 140	L to 140	---	L
Coconut Oil CAS# 8001-31-8	--	---	L to 180	R to 73	R to 140	R to 73	R to 140	R to 248	R to 73	---	---	---
Cod Liver Oil	Work Sol.	---	L to 180	---	---	---	---	R to 248	---	---	---	---
Coffee	--	---	R to 180	R to 140	R to 140	R to 140	---	---	R to 140	---	R to 203	R to 203
Coke Oven Gas	--	---	---	R to 73	R to 140	R to 140	---	---	R to 140	---	---	---
Copper Acetate CAS# 142-71-2 $Cu(C_2H_3O_2)_2 \cdot H_2O$	Saturated	---	R to 73	R to 73	R to 73	---	---	---	---	---	---	---
Copper Carbonate CAS # 12069-69-1 $CuCO_3$	Saturated	---	R to 180	---	R to 140	R to 140	---	---	R to 140	---	---	---
Copper Chloride CAS# 7447-39-4 $CuCl_2$	Saturated	R to 73	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
Copper Cyanide CAS# 544-92-3 CuCN	Saturated	---	R to 180	---	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
Copper Fluoride Dihydrate CAS# 13454-88-1 $CuF_2 \cdot 2H_2O$	2%	---	R to 180	R to 73	R to 140	R to 140	R to 140	---	R to 140	---	---	---
Copper Nitrate	30%	---	R to 180	R to 140	R to 140	R to 140	R to 140	---	---	---	---	---
CAS# 3251-23-8 $Cu(NO_3)_2 \cdot 3H_2O$	50%	---	---	---	---	---	---	R to 212	---	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Copper Sulfate **CAS#7758-99-8** $CuSO_4 \cdot 5H_2O$	Saturated	R to 120	R to 180	R to 120	R to 140	R to 140	R to 140	R to 212	R to 140	R to 194	---	---
Corn Oil **CAS# 8001-30-7**	--	---	L to 180	R to 73	R to 140	R to 120	---	---	R to 120	---	R to 200	---
Corn Syrup **CAS# 8029-43-4** C6H12O6	--	---	R to 185	R to 140	R to 140	R to 140	---	---	R to 140	---	---	---
Cottonseed Oil **CAS# 8001-29-4**	--	R to 120	L to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
Creosote	--	---	N	R to 73	N	R to 140	---	---	R to 140	---	---	---
Cresol **CAS# 95-48-7** $CH_3 C_6 H_4 OH$	90%	N	N	R to 73	N	R to 73	N	R to 68	R to 73	---	---	---
Cresylic Acid **CAS# 106-44-5**	50%	---	N	---	R to 140	L to 73	N	---	L to 73	---	---	---
Crotonaldehyde	--	---	N	L to 73	N	---	---	---	---	---	---	---
CAS# 123-73-9 $CH_3 CH{=}CHCHO$	Liquid	---	---	---	---	---	---	R to 104	--	---	---	---
Crude Oil **CAS# 8002-05-9**	--	---	L to 180	R to 140	R to 140	L to 120	L to 73	R to 212	L to 120	R to 140	---	---
Cupric Fluoride See Copper Fluoride Dihydrate												
Cupric Sulfate **CAS# 7758-99-8** $CuSO_4 \cdot 5H_2O$	Saturated	R to 100	R to 180	R to 73	R to 140	R to 140	---	---	---	---	---	---
Cuprous Chloride **CAS# 7758-89-6** CuCl	Saturated	R to 70	R to 180	---	R to 140	R to 140	---	---	R to 140	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Cyclohexane **CAS# 110-82-7** $C_6 H_{12}$	--	R to 73	R to 73	N	N	N	---	R to 248	N	L to 140	N	---
Cyclohexanol **CAS# 108-93-0** $C_6 H_{11} OH$	--	L to 120	L to 73	R to 140	N	R to 73	L to 73	R to 104	R to 73	---	---	---
Cyclohexanone **CAS# 108-94-1** $C_6 H_{10} O$	Liquid	N	N	R to 73	N	R to 120	N	N	R to 73	L to 140	---	---
Detergents (Heavy Duty)	--	---	L to 180	R to 180	R to 140	R to 140	---	---	R to 140	---	---	---
Dextrin (Starch Gum) **CAS# 9004-53-9**	Saturated	---	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
Dextrose **CAS# 50-99-7** $C_6H_{12}O_6$	Saturated	---	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
Diacetone Alcohol **CAS# 123-42-2** $CH_3 COCH_2 C(CH_3)_2 OH$	--	---	N	R to 120	N	---	---	---	---	L to 140	N	N
Dibutoxyethyl Phthalate **CAS# 117-83-9** $C_{20}H_{30}O_6$	--	---	N	---	N	---	---	---	---	---	---	---
n-Dibutyl Ether **CAS# 142-96-1** $C_4 H_9 OC_4 H_9$	--	---	N	---	---	R to 73	---	---	R to 73	---	---	---
Dibutyl Phthalate **CAS# 84-74-2** $C_6 H_4 (COOC_4 H_9)_2$	--	N	N	R to 73	N	R to 73	---	---	R to 73	---	N	---
Dibutyl Sebacate **CAS# 109-43-3** $C_4 H_9 OCO(CH_2)_8 OCOC_4 H_9$	--	---	N	R to 73	R to 73	R to 73	---	---	R to 73	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Dichloroacetic Acid												
CAS# 79-43-6	50%	---	N	---	---	---	---	R to 176	---	---	---	---
$CHCl_2COOH$												
Dichlorobenzene	--	N	N	L to 73	N	L to 120	---	---	L to 120	---	N	---
CAS# 25321-22-6	Liquid	---	---	---	---	---	---	R to 140	---	---	---	---
$C_6 H_4 Cl_2$												
Dichloroethylene	--	---	N	L to 73	N	L to 120	---	---	L to 120	---	---	---
CAS# 75-35-4	Liquid	---	---	---	---	---	---	R to 248	---	---	---	---
$C_2 H_2Cl_2$												
Diesel Fuels	--	---	L to 180	R to 140	R to 140	R to 73	L to 73	R to 212	R to 73	---	R to 122	R to 122
Diethanolamine	Solid	---	---	---	---	---	---	N	---	---	---	---
CAS# 111-42-2	20%	---	---	---	---	---	---	---	---	---	---	---
$(CH_2CH_2OH)_2NH$												
Diethylamine												
CAS# 109-89-7	--	N	N	---	N	L to 120	N	N	L to 120	---	---	---
$C_4 H_{10} NH$												
Diethyl Ether												
CAS# 60-29-7	--	N	N	R to 73	R to 73	L to 140	---	---	L to 140	R to 140	N	---
$C_4 H_{10} O$												
Diglycolic Acid	Saturated	---	R to 73	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 110-99-6	10%	---	---	---	---	---	---	R to 140	---	---	---	---
$O(CH_2 COOH)_2$												
Dimethylamine												
CAS# 124-40-3	--	---	N	R to 73	R to 140	R to 73	N	N	R to 73	---	---	---
$(CH_3)_2 NH$												
Dimethylformamide	--	N	N	R to 180	N	R to 120	---	---	R to 120	---	---	---
CAS# 68-12-2	Liquid	---	---	---	---	---	---	---	N	---	---	---
$HCON(CH_3)_2$												

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Dimethylhydrazine												
CAS# 57-14-7	--	---	N	---	N	---	---	---	---	---	---	---
$(CH_3)_2 NNH_2$												
Dimethyl Phthalate												
CAS# 131-11-3	--	---	N	---	---	L to 73	---	---	L to 73	---	---	---
$C_6 H_4 (COOCH_3)_2$												
Dioctyl Phthalate												
CAS# 117-81-7	--	N	N	L to 73	N	L to 73	L to 73	---	L to 73	R to 140	R to 73	---
$C_6 H_4 (COOC_8 H_{17})_2$												
Dioxane	--	--	N	L to 140	N	R to 140	---	---	R to 140	---	---	---
CAS# 123-91-1	Liquid	---	---	---	---	---	---	L to 68	---	---	---	---
$C_4H_8O_2$												
Diphenyl Oxide												
CAS# 101-84-8	Saturated	---	---	---	---	L to 73	---	---	L to 73	---	---	---
$(C_6 H_5)_2 O$												
Disodium Phosphate												
CAS# 7558-79-4	--	---	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
$Na_2 HPO_4$												
DOWTHERM A ethyl glycol	--	---	---	---	N	---	---	---	R to 180	---	---	---
CAS# 110-80-5												
Ethanol	40%	---	L to 140	---	---	---	---	R to 68	---	---	---	---
CAS# 64-17-5	95%	---	L to 140	---	---	---	---	R to 122	R to 140	---	---	---
$C_2 H_5 OH$	Liquid	---	L to 140	---	---	---	---	R to 122	R to 140	---	R to 122	---
Ether												
CAS# 60-29-7	--	N	N	L to 73	N	R to 73	N	---	R to 73	---	---	---
ROR												
Ethyl Acetate	--	N	N	L to 140	N	R to 73	L to 73	---	R to 73	R to 140	N	---
CAS# 141-78-6	Liquid	---	---	---	---	---	---	L to 68	---	---	---	---
$CH_3 COOCH_2CH_3$												

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Ethyl Acetoacetate												
CAS# 141-97-9	--	N	N	---	N	---	---	---	---	---	---	---
$CH_3\ COCH_2\ COOC_2\ H_5$												
Ethyl Acrylate												
CAS# 140-88-5	--	---	N	---	N	---	---	---	---	---	---	---
CH_2=$CHCOOC_2\ H_5$												
Ethyl Alcohol-See Ethanol												
Ethyl Benzene												
CAS# 100-41-4	--	---	N	L to 73	N	L to 73	---	---	---	---	---	---
$C_6\ H_5\ C_2\ H_5$												
Ethyl Chloride	Dry	---	N	L to 73	N	L to 73	---	---	L to 73	---	---	---
CAS# 75-00-3	Gas	---	---	---	---	---	---	R to 212	---	---	---	---
$C_2\ H_5\ Cl$												
Ethyl Chloroacetate												
CAS# 105-39-5	--	---	N	---	N	---	---	---	---	---	---	---
$ClCH_2COOC_2H_5$												
Ethyl Ether												
CAS# 60-29-7	Liquid	---	N	N	N	N	N	R to 122	N	---	---	---
$(C_2\ H_5\ )_2\ O$												
Ethylene Bromide												
CAS# 106-93-4	Dry	---	N	---	N	---	N	---	---	---	---	---
$BrCH_2\ CH_2\ Br$												
Ethylene Chloride												
CAS# 75-01-4	Dry	N	N	L to 73	N	L to 140	---	---	L to 140	---	N	---
(Vinyl Chloride)												
$CH_2\ CH\ Cl$												
Ethylene Chlorohydrin	--	---	N	R to 73	N	---	N	---	---	---	---	---
CAS# 107-07-3	Liquid	---	---	---	---	---	---	L to 68	---	---	---	---
$ClCH_2\ CH_2\ OH$												

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Ethylene Diamine **CAS# 107-15-3** $NH_2\ CH_2\ CH_2\ NH_2$	--	N	N	R to 73	N	R to 140	---	---	R to 140	---	---	---
Ethylene Dichloride **CAS# 107-06-2** $C_2\ H_4\ Cl_2$	Dry	N	N	L to 140	N	L to 73	R to 140	---	L to 73	---	---	---
Ethylene Glycol **CAS# 107-21-1** $OHCH_2CH_2\ OH$	Liquid 50% Solution	R to 73 ---	L to 180 R to 180	R to 212 ---	R to 140 ---	R to 140 ---	R to 140 ---	R to 212 ---	R to 212 ---	--- ---	R to 73 R to 248	--- ---
Ethylene Oxide **CAS# 75-21-8** $CH_2\ CH_2\ O$	--	---	N	L to 73	N	R to 73	---	---	R to 73	L to 140	---	---
2-Ethylhexanol **CAS# 104-76-7** $CH_3\ (CH_2\ )_3\ CHC_2\ H_5\ CH_2OH$	--	---	---	---	---	R to 73	---	---	R to 73	---	---	---
Fatty Acids R-COOH	--	R to 160	R to 73	R to 120	R to 140	R to 120	R to 150	---	R to 120	R to 194	---	---
Ferric Chloride (Aqueous) **CAS# 10025-77-1** $FeCl_3$	Saturated	R to 120	R to 180	R to 140	R to 140	R to 140	R to 150	R to 212	R to 140	---	---	---
Ferric Hydroxide **CAS# 1309-33-7** $Fe(OH)_3$	Saturated	R to 160	R to 180	R to 140	R to 140	R to 140	---	---	R to 140	---	---	---
Ferric Nitrate **CAS# 10421-48-4** $Fe(NO_3\ )_3$	Saturated	R to 160	R to 180	R to 140	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
Ferric Sulfate **CAS# 10028-22-5** $Fe_2\ (SO_4\ )_3$	-- Saturated	R to 160 ---	R to 180 ---	R to 140 ---	R to 140 ---	R to 140 ---	R to 140 ---	--- R to 212	R to 140 ---	--- ---	--- ---	--- ---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Ferrous Chloride												
CAS# 7758-94-3	Saturated	R to 160	R to 180	R to 140	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
$FeCl_2$												
Ferrous Hydroxide												
CAS# 18624-44-7	Saturated	R to 160	R to 180	R to 140	R to 140	R to 140	---	---	R to 140	---	---	---
$Fe(OH)_2$												
Ferrous Nitrate	--	R to 160	R to 180	R to 140	R to 140	R to 140	---	---	R to 140	---	---	---
$Fe(NO_3)_2$												
Ferrous Sulfate	--	R to 160	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 7720-78-7	Saturated	---	---	---	---	---	---	R to 212	---	---	---	---
$FeSO_4$												
Fish Oil	---	---	L to 180	R to 180	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 8016-13-5												
Fluoroboric Acid	---	R to 73	R to 73	R to 140	R to 140	R to 140	---	---	R to 140	---	---	---
CAS# 16872-11-0	Solid	---	---	---	---	---	---	R to 104	---	---	---	---
HBF_4												
Fluorine Gas (Dry)												
CAS# 7782-41-4	100%	---	L to 73	N	R to 73	L to 73	L to 73	---	L to 73	N	---	---
F_2												
Fluorine Gas (Wet)												
CAS# 7782-41-4	--	N	L to 73	N	R to 73	N	N	---	N	N	---	---
F_2												
Fluorosilicic Acid	30%	---	R to 180	R to 140	R to 140	R to 140	---	R to 212	R to 140	---	---	---
CAS# 16961-83-4	40%	---	R to 180	---	---	---	---	R to 140	---	---	---	---
H_2SiF_6	50%	---	R to 180	R to 73	R to 140	R to 140	R to 140	R to 212	--	---	---	---
	Saturated	---	R to 180	---	---	---	---	R to 212	---	---	---	---
Formaldehyde	Dilute	R to 160	R to 73	R to 140	R to 140	R to 140	R to 140	R to 176	---	L to 104	---	---
CAS# 50-00-0	35%	R to 160	N	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	R to 100	---
HCHO	37%	R to 160	N	R to 140	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
	50%	---	N	---	R to 140	R to 140	R to 140	---	R to 140	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Formic Acid	10%	---	R to 180	---	---	---	---	R to 212	R to 140	N	---	---
CAS# 64-18-6	40%	---	---	---	---	---	---	R to 212	R to 140	---	---	---
HCOOH	50%	---	---	---	---	---	---	R to 176	R to 140	---	---	---
	85%	---	---	---	---	---	---	R to 212	---	---	R to 122	---
	100%	N	L to 73	R to 140	R to 73	R to 140	R to 150	---	R to 140	---	---	---
Freon 11												
CAS# 75-69-4	100%	N	N	N	R to 140	R to 73	---	---	R to 73	---	---	---
CCl_3F												
Freon 12	100%	---	N	R to 73	R to 140	R to 73	---	---	R to 73	R to 68	R to 73	---
CAS# 75-71-8	Work. Sol.	---	N	---	---	---	---	R to 212	R to 68	---	---	---
CCl_2F_2												
Freon 21												
CAS# 75-43-4	100%	---	N	N	N	L to 120	---	---	L to 120	---	---	---
$CHCl_2F$												
Freon 22												
CAS# 75-45-6	100%	---	N	R to 73	N	L to 120	---	---	L to 120	R to 68	N	---
$CHClF_2$												
Freon 113												
CAS# 76-13-1	100%	---	N	N	R to 140	R to 73	---	---	R to 73	---	---	---
$C_2Cl_2F_3$												
Freon 114												
CAS# 76-14-2	100%	---	N	N	R to 140	R to 73	---	---	R to 73	---	---	---
$C_2Cl_2F_4$												
Fructose												
CAS# 57-48-7	Saturated	R to 73	R to 180	R to 180	R to 140	R to 140	R to 140	---	R to 140	---	---	---
$C_6 H_{12} O_6$												
Fruit Juice	Work. Sol.	---	---	---	---	---	---	R to 212	---	R to 104	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Furfural												
CAS# 98-01-1	100%	N	N	N	N	L to 140	---	---	L to 140	L to 140	---	---
$C_4 H_3 OCHO$												
Gallic Acid												
CAS# 149-91-7	--	---	R to 180	---	R to 140	R to 73	---	---	R to 73	---	---	---
$C_6 H_2 (OH)_3 CO_2 H \bullet H_2 O$												
Gasoline, Leaded [3]	--	N	N	N	R to 140	R to 73	N	---	R to 73	---	---	---
Gasoline, Unleaded [3]	--	N	N	N	R to 140	R to 73	N	---	R to 73	---	---	R to 122
Gasoline (Fuel) [3]	--	---	---	---	---	---	---	R to 212	---	R to 160	---	R to 122
CAS# 8006-61-9												
Gasohol [3]	--	N	N	N	R to 140	R to 73	N	---	R to 73	---	---	R to 122
Gasoline, Sour [3]	--	N	N	N	R to 140	L to 73	N	---	L to 73	---	---	---
Gelatin	--	---	R to 180	R to 180	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 9000-70-8												
Glucose	--	R to 120	R to 180	R to 212	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 50-99-7	10%	---	---	---	---	---	---	R to 248	---	---	---	---
$C_6 H_{12} O_6 \bullet H_2 O$												
Glycerine	--	R to 140	R to 180	R to 212	R to 140	R to 140	R to 140	---	R to 140	---	R to 73	---
CAS# 56-81-5	Liquid	---	---	---	---	---	---	R to 248	---	---	---	---
$C_3 H_5 (OH)_3$												
Glycolic Acid	Saturated	---	N	R to 73	R to 140	R to 140	---	---	R to 140	---	---	---
CAS# 79-14-1	10%	---	---	---	---	---	---	R to 212	---	---	---	---
$OHCH_2 COOH$	30%	---	---	---	---	---	---	R to 140	---	---	---	---
	65%	---	---	---	---	---	---	R to 212	---	---	---	---
Glyoxal												
CAS# 107-22-2	--	---	---	---	---	R to 140	---	---	R to 140	---	---	---
OCHCHO												
Grape Sugar	--	---	R to 180	---	R to 140	---	---	---	---	---	---	---
CAS# 50-99-7												
Grapefruit Juice	Work. Sol.	---	---	---	---	---	---	R to 122	---	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Grease	--	---	---	---	---	---	---	---	---	R to 194	---	---
Green Liquor	--	R to 160	R to 180	---	R to 140	---	R to 140	---	---	---	---	---
n-Heptane												
CAS# 142-82-5	Liquid	R to 73	R to 73	N	R to 140	R to 73	N	R to 212	R to 73	---	N	---
$C_7 H_{16}$												
n-Hexane												
CAS# 110-54-3	Liquid	L	R to 73	R to 73	R to 73	---	---	R to 176	---	---	R to 73	---
$C_6 H_{14}$												
Hexanol, Tertiary Type I												
CAS# 25917-35-5	--	---	L to 180	---	R to 140	R to 140	R to 140	---	R to 140	---	---	---
$CH_3 (CH_2)_4 CH_2 OH$												
Hydraulic Oil (Petroleum)	--	---	---	---	R to 73	R to 73	---	---	R to 73	---	---	---
Hydrazine												
CAS# 302-01-2	--	---	N	R to 73	N	---	---	---	---	---	---	---
$H_2 NNH_2$												
Hydrobromic Acid	20%	R to 73	R to 73	R to 140	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
CAS# 10035-10-6	50%	N	---	R to 120	---	R to 140	---	---	R to 140	---	---	---
HBr	66%	---	---	---	---	---	---	R to 212	---	---	---	---
Hydrochloric Acid	10%	L to 120	R to 180	R to 140	R to 140	R to 140	R to 140	R to 212	R to 212	L to 104	---	
CAS# 7647-01-0	20%	---	---	---	---	---	---	R to 212	R to 212	---	---	R to 212
HCl	30%	L to 73	R to 180	R to 140	R to 140	R to 140	R to 140	R to 212	R to 140	---	R to 140	R to 122
	Conc.	---	---	---	---	---	---	---	R to 140	---	---	
Hydrocyanic Acid	--	R to 160	R to 73	R to 73	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 74-90-8	Saturated	---	---	---	---	---	---	R to 248	---	---	---	---
HCN	10%	---	---	---	---	---	---	R to 248	---	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Hydrofluoric Acid	Dilute	R to 73	R to 180	R to 180	R to 73	R to 140	R to 140	R to 212	R to 140	---	---	---
CAS# 7664-39-3	30%	N	L to 180	R to 140	R to 73	R to 140	R to 140	---	R to 140	---	---	---
HF	50%	N	N	R to 73	R to 73	R to 120	R to 140	R to 212	R to 120	---	---	---
	60%	---	---	---	---	R to 140	---	R to 140	R to 140	---	---	---
	70%	---	---	---	---	---	---	R to 212	---	---	---	---
	100%	N	N	L to 73	N	R to 120	---	---	R to 120	---	---	---
	Gas	---	---	---	---	---	---	R to 104	---	---	---	---
Hydrogen	Gas	---	R to 73	R to 140	R to 140	R to 140	R to 140	R to 248	R to 140	R to 194	---	---
CAS# 1333-74-0												
H_2												
Hydrogen Cyanide	--	---	---	R to 73	R to 140	---	---	---	---	---	---	---
CAS# 74-90-8												
HCN												
Hydrogen Fluoride, Anhydrous	--	---	L	R to 73	N	---	---	---	---	---	---	---
CAS# 7664-39-3												
HF												
Hydrogen Peroxide	10%	---	R to 180	---	---	---	---	R to 212	---	---	---	---
CAS# 7722-84-1	30%	---	R to 180	---	---	---	---	R to 212	---	L to 104	R to 73	R to 73
$H_2 O_2$	50%	---	R to 120	R to 73	R to 140	R to 140	N	R to 212	R to 140	---	---	---
	90%	---	---	L to 73	R to 140	R to 73	N	---	R to 73	---	R to 73	---
Hydrogen Phosphide (Type I)	--	---	R to 73	---	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS # 7803-51-2												
PH_3												
Hydrogen Sulfide	Dry	---	R to 180	R to 150	R to 140	R to 140	R to 140	R to 248	R to 140	---	---	---
CAS# 7783-06-4	Wet	---	R to 180	---	R to 140	R to 140	---	---	R to 140	---	---	---
$H_2 S$												

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Hydrogen Sulfite **CAS# 15181-46-1** HO_3S	10%	---	---	---	---	R to 140	---	R to 248	R to 140	---	---	---
Hydroquinone **CAS# 123-31-9** $C_6 H_4 (OH)_2$	Saturated	---	R to 73	---	R to 140	R to 140	R to 140	---	---	R to 140	---	---
Hydroxylamine Sulfate **CAS# 10039-54-0** $(NH_2 OH)oH_2 SO_4$	--	---	---	---	R to 140	R to 140	---	---	R to 140	---	---	---
Hypochlorous Acid	10%	R to 73	L to 180	R to 73	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 7790-92-3 HOCl	70%	---	---	---	---	---	---	R to 212	---	---	---	---
Inks	--	---	---	R to 140	---	R to 140	---	---	R to 140	---	---	---
Iodine **CAS# 7553-56-2** I_2	10%	N	R to 73	R to 73	N	L to 120	N	R to 176	L to 120	---	---	---
IRM 901 Oil (ASTM #1)	--	---	180	L to 140	R to 140	R to 73	R to 140	R to 248	R to 73	---	---	---
IRM 902 Oil (ASTM #2)	--	---	180	L to 140	R to 140	R to 73	R to 140	---	R to 73	---	---	---
IRM 903 Oil (ASTM #3)	--	---	180	L to 140	R to 140	R to 73	R to 140	---	R to 73	---	---	---
Isobutyl Alcohol **CAS# 78-83-1** $(CH_3)_2 CHCH_2 OH$	--	L to 73	L to 73	R to 73	---	R to 140	---	---	R to 140	---	---	---
Isooctane **CAS# 540-84-1** $(CH_3)_3 CCH_2 CH(CH_3)_2$	Liquid	---	---	L to 73	---	R to 73	---	R to 212	R to 73	---	---	---
Isopropyl Acetate **CAS# 108-21-4** $CH_3 COOCH(CH_3)_2$	--	N	N	---	---	R to 73	---	---	R to 73	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Isopropyl Alcohol												
CAS# 67-63-0	--	---	L to 180	R to 212	R to 140	R to 140	R to 140	L to 212	R to 140	---	---	---
$(CH_3)_2$ CHOH												
Isopropyl Ether												
CAS# 108-20-3	--	---	N	L to 73	N	R to 73	---	---	R to 73	---	---	---
$(CH_3)_2$ $CHOCH(CH_3)_2$												
JP-4 Fuel [3]	--	---	L to 73	L to 73	R to 140	R to 73	---	---	R to 73	---	R to 73	---
JP-5 Fuel [3]	--	---	L to 73	L to 73	R to 140	R to 73	---	---	R to 73	---	---	---
Kerosene [3]	--	R to 73	N	L to 140	R to 140	L to 140	L to 73	---	L to 140	---	---	---
CAS# 8008-20-6												
Ketchup	--	---	R to 180	---	R to 73	---	---	---	---	---	R to 72	---
Ketones	--	N	N	L to 73	N	R to 73	---	---	R to 73	---	---	---
Kraft Liquors	--	R to 73	R to 180	---	R to 140	R to 120	R to 140	---	R to 120	---	---	---
Lactic Acid	10%	---	---	---	---	---	---	R to 140	---	---	---	---
CAS# 50-21-5	25%	R to 73	R to 180	R to 212	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CH_3 CHOHCOOH	80%	N	L to 180	R to 140	R to 73	R to 140	---	---	R to 140	---	---	---
	Liquid	---	---	---	---	---	---	R to 212	---	R to 194	---	---
Lard Oil	--	---	L to 180	---	R to 140	L to 120	R to 73	---	L to 120	---	---	---
Latex	--	---	---	R to 140	---	R to 140	---	---	R to 140	---	---	---
Lauric Acid												
CAS# 143-07-7	--	---	L to 180	R to 140	R to 140	R to 120	---	---	R to 120	---	---	---
CH_3 $(CH_2)_{10}$ COOH												
Lauryl Chloride (Type I)												
CAS# 112-52-7	--	---	N	---	R to 140	R to 120	R to 73	R to 248	R to 120	---	---	---
$CH_3(CH_2)_{10}CH_2Cl$												
Lead Acetate (trihydrate)												
CAS# 6080-56-4	Saturated	---	R to 180	R to 180	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
$Pb(C\ H_3\ COO)_2\ o3H_2\ O$												

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Lead Chloride **CAS# 7758-95-4** $PbCl_2$	--	---	R to 180	R to 140	R to 140	R to 120	---	---	R to 120	---	---	---
Lead Nitrate **CAS# 10099-74-8** $Pb(NO_3)_2$	Saturated	---	R to 180	R to 140	R to 140	R to 120	---	---	R to 120	---	---	---
Lead Sulfate **CAS# 7446-14-2** $PbSO_4$	--	---	R to 180	R to 140	R to 140	R to 120	---	---	R to 120	---	---	---
Lead Tetraethyl **CAS# 78-00-2** $C_8H_{20}Pb$	--	---	---	---	---	---	---	R to 212	---	---	---	---
Lemon Oil **CAS# 8008-56-8**	--	---	N	L to 73	---	---	---	---	---	---	---	---
Lemon Juice	--	---	---	---	---	L to 140	---	---	L to 140	---	R to 122	---
Ligroin (*Petroleum Ether*) **CAS# 8032-32-4**	--	---	---	R to 140	---	---	---	R to 212	---	---	---	---
Lime Slurry	--	---	---	---	---	R to 140	---	---	R to 140	---	---	---
Lime Sulfur **CAS# 1344-81-6**	--	---	R to 73	R to 73	R to 73	R to 120	R to 140	---	R to 120	---	---	---
Linoleic Acid **CAS# 60-33-3** $CH_3(CH_2)_4(CH{=}CHCH_2)_2(CH_2)_6COOH$	--	---	L to 180	R to 180	R to 140	---	R to 73	---	---	---	---	---
Linoleic Oil (Type I)	--	---	---	---	R to 140	---	R to 73	---	---	---	---	---
Linseed Oil **CAS# 8001-26-1**	--	73	L to 180	R to 140	R to 140	R to 73	R to 73	R to 248	R to 73	R to 194	---	---
Liqueurs	--	---	---	R to 140	R to 140	R to 120	R to 140	---	R to 120	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Lithium Bromide	--	---	---	R to 140	R to 140	R to 140	---	---	R to 140	---	---	---
CAS# 7550-35-8	65%	---	R to 180	---	---	---	---	---	---	---	R to 212	R to 212
LiBr												
Lithium Chloride												
CAS# 7447-41-8	--	---	R to 180	R to 140	R to 140	R to 120	---	---	R to 120	---	---	---
LiCl												
Lithium Hydroxide												
CAS# 1310-65-2	--	---	R to 73	R to 140	---	R to 120	---	---	R to 120	---	---	---
LiOH												
Magnesium Carbonate												
CAS# 546-93-0	--	R to 120	R to 180	R to 212	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
$MgCO_3$												
Magnesium Chloride	Saturated	R to 120	R to 180	R to 140	R to 140	R to 140	R to 140	R to 140	R to 140	---	---	---
CAS# 7786-30-3	50%	---	---	---	---	---	---	R to 212	----	R to 194	---	---
$MgCl_2$												
Magnesium Citrate												
CAS# 6150-80-7	--	---	R to 180	---	R to 140	R to 140	---	---	R to 140	---	---	---
$MgC_6\ H_8\ O_7\ o5H_2\ O$												
Magnesium Hydroxide												
CAS# 1309-42-8	Saturated	R to 160	R to 180	R to 180	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
$Mg(OH)_2$												
Magnesium Nitrate												
CAS# 10377-60-3	--	R to 160	R to 180	R to 212	R to 140	R to 140	R to 140	R to 248	R to 140	---	---	---
$Mg(NO_3)_2\ o2H_2\ O$												
Magnesium Oxide												
CAS# 1309-48-4	--	R to 160	R to 180	---	---	---	---	---	---	---	---	---
MgO												
Magnesium Sulfate												
CAS# 7487-88-9	--	R to 160	R to 180	R to 212	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
$MgSO_4\ o7H_2\ O$												

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Maleic Acid	Saturated	R to 160	R to 180	R to 140	R to 140	R to 140	R to 140	R to 140	R to 140	---	---	---
CAS# 110-16-7	50%	---	---	---	---	---	---	R to 212	---	---	---	---
HOOCCH=CHCOOH												
Malic Acid												
CAS# 6915-15-7	--	---	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
$COOHCH_2$ $CH(OH)COOH$												
Manganese Sulfate												
CAS# 7785-87-7	--	---	R to 180	R to 180	R to 140	R to 140	---	---	R to 140	---	---	---
$MnSO_4 \cdot 4H_2O$												
Margarine	Work Sol.	---	---	---	---	---	---	R to 248	---	---	---	---
Mercuric Chloride	--	---	R to 180	R to 180	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 7487-94-7	Saturated	--	---	---	---	---	---	R to 212	---	---	---	---
$HgCl_2$												
Mercuric Cyanide												
CAS# 592-04-1	Saturated	---	R to 180	R to 140	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
$Hg(CN)_2$												
Mercuric Sulfate												
CAS# 7783-35-9	Saturated	---	R to 180	R to 140	R to 140	R to 140	---	---	R to 140	---	---	---
$HgSO_4$												
Mercurous Nitrate (Dihydrate)	10%	---	---	---	---	---	---	R to 212	---	---	---	---
CAS# 14836-60-3	Saturated	---	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
$HgNO_3 \cdot 2H_2O$												
Mercury												
CAS# 7439-97-6	Liquid	---	R to 180	R to 140	R to 140	R to 140	R to 140	R to 248	R to 140	R to 194	---	---
Hg												
Methane												
CAS# 74-82-8	--	N	R to 73	R to 73	R to 140	R to 140	---	---	R to 140	R to 140	---	---
CH_4												

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Methanol (Methyl Alcohol)	5%	---	R to 180	---	---	---	---	R to 140	---	---	---	---
CAS# 67-56-1	Liquid	---	N	R to 180	R to 140	R to 140	R to 140	L to 176	R to 140	---	R to 73	---
CH_3 OH												
Methoxyethyl Oleate												
CAS# 111-10-4	--	---	N	---	R to 73	---	---	---	---	---	---	---
CH_3 OCH_2 CH_2 $OOCC_{17}H_{33}$												
Methyl Acetate												
CAS# 79-20-9	--	N	N	R to 140	N	L to 120	---	---	L to 120	---	---	---
CH_3 CO_2 CH_3												
Methyl Acrylate												
CAS# 96-33-3	Tech Pure	---	N	---	---	R to 140	---	---	R to 140	---	---	---
CH_2 =CHCOOCH$_3$												
Methylamine												
CAS# 74-89-5	--	---	N	N	N	---	---	---	---	---	---	---
CH_3 NH_2												
Methyl Bromide												
CAS# 74-83-9	--	---	N	N	N	L to 73	---	---	L to 73	R to 68	---	---
CH_3 Br												
Methyl Butyl Ketone												
CAS# 591-78-6	Liquid	---	N	---	---	---	---	L to 122	---	---	---	---
$CH_3CO(CH_2)_3CH_3$												
Methyl Cellosolve												
CAS# 109-86-4	--	---	N	R to 73	N	L to 120	---	---	L to 120	---	---	---
$HOCH_2$ CH_2 OCH_3												
Methyl Chloride												
CAS# 74-87-3	Dry	N	N	N	N	L to 120	N	---	L to 120	R to 68	---	---
CH_3 Cl												
Methyl Chloroform												
CAS# 71-55-6	--	N	N	L to 73	N	L to 120	---	---	L to 120	---	---	---
CH_3CCl_3												

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Methyl Ethyl Ketone (MEK) **CAS# 78-93-3** $CH_3 COC_2 H_5$	100%	N	N	R to 73	N	N	R to 73	L to 68	R to 73	L to 140	N	---
Methyl Isobutyl Carbinol **CAS# 108-11-2** $(CH_3)_2 CHCH_2 CH(CH_3)OH$	--	---	N	---	N	---	---	---	---	---	---	---
Methyl Isobutyl Ketone **CAS# 108-10-1** $(CH_3)_2 CHCH_2 COCH_3$	--	N	N	R to 73	N	R to 73	---	---	R to 73	---	---	---
Methyl Isopropyl Ketone **CAS# 563-80-4** $CH_3 COCH(CH_3)_2$	--	---	N	---	N	R to 73	---	---	R to 73	---	---	---
Methyl Methacrylate **CAS# 80-62-6** $CH_2=C(CH_3)COOCH_3$	--	---	N	---	R to 73	R to 140	---	R to 68	R to 140	---	N	---
Methyl Sulfate **CAS# 77-78-1** $(CH_3)_2 SO_4$	--	---	R to 73	L to 73	R to 73	R to 140	---	---	---	R to 68	---	---
Methylene Bromide **CAS# 74-95-3** $CH_2 Br_2$	--	---	N	N	N	L to 120	---	---	L to 120	---	---	---
Methylene Chloride **CAS# 75-09-2** $CH_2 Cl_2$	100%	---	N	N	N	N	R to 73	L to 104	N	---	N	---
Methylene Chlorobromide **CAS# 74-97-5** $CH_2 ClBr$	--	---	N	--	N	---	---	---	---	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Methylene Iodide **CAS# 75-11-6** $CH_2 I_2$	--	---	N	N	N	L to 120	---	---	L to 120	---	---	---
Methylsulfuric Acid **CAS# 75-93-4** $CH_3 HSO_4$	--	---	---	R to 140	R to 140	---	---	---	---	---	---	---
Milk	--	R to 160	L to 180	R to 212	R to 140	R to 140	R to 140	R to 212	R to 140	R to 194	R to 200	---
Mineral Oil (Paraffin Oil) **CAS# 8012-95-1**	--	R to 73	R to 180	L to 140	R to 140	R to 73	L to 73	R to 212	L to 176	---	---	---
Molasses	--	---	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
Monochloroacetic Acid **CAS# 79-11-8** $CH_2ClCOOH$	50%	---	N	R to 140	R to 140	R to 140	---	---	R to 140	---	---	---
Monochlorobenzene **CAS# 108-90-7** $C_6 H_5 Cl$	Tech Pure	---	N	R to 73	N	L to 120	---	---	L to 120	---	---	---
Monoethanolamine **CAS# 141-43-5** $HOCH_2 CH_2 NH_2$	--	---	N	---	N	---	---	---	---	---	---	---
Motor Oil	--	---	R to 73	L to 140	R to 140	R to 140	---	---	R to 140	---	---	---
Morpholine **CAS# 110-91-8** $C_4 H_8 ONH$	--	---	N	R to 140	---	R to 140	---	---	R to 140	---	N	N
Mustard, Aqueous	Work. Sol.	---	---	---	---	---	---	R to 248	---	---	R to 72	---
Naphtha **CAS# 8030-30-6**	--	---	R to 73	R to 73	R to 140	R to 73	R to 73	R to 122	L to 176	R to 140	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Naphthalene **CAS# 91-20-3** C_{10} H $_8$	--	---	R to 73	R to 73	N	R to 73	R to 73	---	R to 73	R to 194	N	---
Natural Gas **CAS# 68410-96-6**	--	R to 73	---	R to 73	R to 140	R to 140	R to 73	---	R to 140	---	---	---
Nickel Acetate **CAS# 373-02-4** $Ni(OOCCH_3)_2 \bullet 4H_2O$	--	---	R to 180	R to 73	---	R to 140	---	---	R to 140	---	---	---
Nickel Chloride **CAS# 7718-54-9** $NiCl_2$	Saturated	R to 160	R to 180	R to 180	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
Nickel Nitrate **CAS# 13138-45-9** $Ni(NO_3)_2$ o6H_2O	Saturated	R to 160	R to 180	R to 180	R to 140	R to 140	R to 140	R to 248	R to 140	---	---	---
Nickel Sulfate **CAS# 7786-81-4** $NiSO_4$	Saturated	R to 160	R to 180	R to 180	R to 140	R to 140	R to 140	R to 212	R to 140	---	R to 140	---
Nicotine **CAS# 54-11-5** C_{10} H_{14} N_2	--	---	---	---	R to 140	R to 140	R to 140	---	R to 140	---	---	---
Nicotinic Acid **CAS# 59-67-6** C_5H_4 NCOOH	--	---	---	---	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Nitric Acid	5%	---	---	---	---	---	---	R to 176	L to 140	N	R to 210	---
CAS# 7697-37-2	10%	L to 73	R to 180	R to 180	R to 140	R to 73	L to 73	R to 212	L to 140	---	---	---
HNO_3	20%	---	---	---	---	---	---	R to 212	L to 140	---	---	---
	30%	N	R to 130	R to 140	R to 140	R to 73	N	R to 212	L to 140	---	---	---
	40%	N	R to 120	R to 73	R to 140	R to 73	N	L to 248	L to 140	---	---	---
	50%	N	R to 110	N	R to 100	L to 73	N	---	L to 140	---	---	---
	65%	---	---	---	---	---	---	L to 248	---	---	---	---
	70%	N	R to 100	N	R to 73	L to 73	N	---	L to 73	---	---	---
	85%	---	---	---	---	---	---	N	---	---	---	---
	100%	N	N	N	N	N	N	---	N	---	---	---
Nitrobenzene **CAS# 98-95-3** $C_6H_5NO_2$	100%	N	N	L to 140	N	N	---	R to 122	N	---	---	---
Nitroglycerine	--	---	N	---	N	R to 73	---	---	R to 73	---	---	---
CAS# 55-63-0	1%	---	N	---	---	---	---	---	---	---	R to 73	R to 73
$CH_2NO_3CHNO_3CH_2NO_3$												
Nitroglycol **CAS#628-96-6** $NO_3(CH_2)_2NO_3$	--	---	---	---	N	---	---	---	---	---	---	---
Nitrous Acid **CAS# 7782-77-6** HNO_2	10%	---	R to 73	L to 73	R to 140	R to 73	---	---	R to 73	---	---	---
Nitrous Oxide **CAS# 10024-97-2** N_2O	--	---	R to 73	R to 73	R to 73	R to 73	---	---	R to 73	---	R to 68	---
n-Octane **CAS# 111-65-9** C_8H_{18}	--	---	R to 73	---	---	---	---	---	---	---	R to 73	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Oleic Acid **CAS# 112-80-1** $CH_3 (CH_2)_7 CH=CH(CH_2)_7 COOH$	--	R to 160	L to 180	R to 73	R to 140	L to 140	R to 150	R to 248	L to 140	R to 140	R to 73	---
Oleum **CAS# 57-06-7** $x H_2 SO_4 oySO_3$	--	N	N	N	N	N	N	N	N	---	---	---
Olive Oil **CAS# 8001-25-0**	--	R to 160	L to 180	R to 73	R to 140	R to 140	---	R to 248	R to 140	---	---	---
Oxalic Acid	50%	R to 160	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 144-62-7	10%	---	---	---	---	---	---	R to 140	---	R to 140	---	---
$HOOCCOOHo2H_2O$	Saturated	---	---	---	---	---	---	R to 122	---	---	---	---
Oxygen Gas **CAS# 7782-44-7** O_2	--	R to 160	R to 180	N	R to 140	R to 140	---	R to 212	R to 140	R to 140	---	---
Ozone **CAS# 10028-15-6** O_3	--	---	R to 180	L to 73	R to 140	L to 120	---	---	L to 120	L to 68	---	---
Palm Oil **CAS# 8002-75-3**	--	---	---	R to 73	---	R to 140	---	---	R to 140	---	---	---
Palmitic Acid	10%	R to 73	R to 73	R to 180	R to 140	R to 120	R to 150	---	R to 120	---	---	---
CAS# 57-10-3	70%	---	R to 73	R to 180	R to 73	R to 120	---	---	R to 120	---	---	---
$CH_3 (CH_2)_{14} COOH$												
Paraffin **CAS# 8002-74-2** $C_{36} H_{74}$	--	R to 73	R to 180	R to 140	R to 140	L to 140	---	R to 212	L to 140	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Peanut Oil												
CAS# 8002-03-7	--	---	L to 180	R to 140	---	---	---	R to 248	---	---	---	---
n-Pentane												
CAS# 109-66-0	--	N	L to 180	N	L to 140	L to 120	---	---	L to 120	---	---	---
$CH_3 (CH_2)_3 CH_3$												
Peracetic Acid												
CAS# 79-21-0	40%	N	N	R to 73	R to 73	---	---	---	---	---	---	---
CH_3 COOOH												
Perchloric Acid (Type I)	10%	---	R to 73	---	---	---	---	R to 212	---	---	---	---
CAS# 7601-90-3	15%	---	---	R to 140	R to 73	R to 140	L to 73	---	R to 140	---	---	---
$HClO_4$	70%	R to 73	---	L to 73	R to 73	R to 73	N	R to 212	R to 73	---	---	---
Perchloroethylene												
CAS# 127-18-4	--	N	N	L to 73	L to 140	L to 120	---	L to 212	L to 120	L to 68	N	---
(tetrachloroethylene)												
$Cl_2 C=CCl_2$												
Perphosphate	--	---	---	R to 140	R to 73	---	---	---	---	---	---	---
CAS# 7758-23-8												
Petroleum Ether	--	---	---	R to 140	---	---	---	R to 212	---	---	---	---
CAS# 8032-32-4												
Phenol	--	N	R to 73	R to 73	R to 73	R to 140	R to 73	---	R to 73	N	---	---
CAS# 108-95-2	5%	---	---	---	---	---	---	---	L to 73	---	L to 140	---
$C_6 H_5 OH$	50%	---	---	---	---	---	---	R to 176	---	---	---	---
	90%	---	---	---	---	N	---	---	N	---	---	---
	Solid	---	---	---	---	---	---	L to 122	---	---	---	---
Phenylhydrazine												
CAS# 100-63-0	--	---	N	N	N	N	---	R to 104	N	---	---	---
$C_6H_5 NHNH_2$												

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Phenylhydrazine Hydrochloride												
CAS# 59-88-1	10%	---	---	---	---	---	---	R to 140	N	---	---	---
$C_6H_5NHNH_2 \cdot HCl$												
Phosphine												
CAS# 7803-51-2	Gas	---	---	---	---	---	---	R to 104	---	---	---	---
PH_3												
Phosphoric Acid	10%	---	R to 180	R to 212	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 7664-38-2	50%	R to 73	R to 180	R to 212	R to 140	R to 140	R to 73	R to 212	R to 140	L to 104	---	---
$H_3 PO_4$	85%	---	R to 180	R to 212	R to 140	R to 73	---	---	R to 73	---	---	---
	98%	---	---	---	---	---	---	R to 212	---	---	---	---
Phosphoric Anhydride												
CAS# 1314-56-3	--	---	R to 73	R to 73	R to 73	---	---	---	---	---	---	---
$P_2 O_5$												
Phosphorous (Red)												
CAS# 7723-14-0	--	---	---	---	R to 73	R to 140	---	---	R to 140	---	R to 120	---
P												
Phosphorous (White/Yellow)												
CAS# 12185-10-3	--	--	---	---	R to 73	R to 140	---	---	R to 140	---	R to 120	---
P4												
Phosphorus Oxychloride												
CAS# 10025-87-3	Liquid	---	---	---	---	---	---	R to 68	---	---	---	---
$POCl_3$												
Phosphorus Pentoxide												
CAS# 1314-56-3	--	---	R to 73	R to 73	R to 73	R to 140	---	---	R to 140	---	---	---
$P_2 O_5$												
Phosphorus Trichloride												
CAS# 7719-12-2	--	--	N	R to 73	N	R to 120	L to 73	L to 122	R to 120	---	---	---
PCl_3												

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Phthalic Acid	--	---	N	R to 140	L to 140	R to 140	---	---	R to 140	---	---	---
CAS# 88-99-3	Susp.	---	N	---	---	---	---	R to 212	---	---	---	---
$C_6 H_4 (COOH)_2$												
Picric Acid	10%	N	N	R to 73	N	R to 73	R to 73	R to 212	R to 73	L to 68	---	---
CAS# 88-89-1	Saturated.	---	---	---	---	---	---	R to 212	---	---	---	---
$C_6 H_2 (NO_2)_3 OH$												
Pine Oil												
CAS# 8002-09-3	--	---	N	R to 140	---	R to 73	---	---	R to 73	---	---	---
Plating Solutions (Brass)	--	---	R to 180	R to 140	R to 140	R to 140	L to 73	---	R to 140	---	---	---
Plating Solutions (Cadmium)	--	---	R to 180	R to 140	R to 140	R to 140	L to 73	---	R to 140	---	---	---
Plating Solutions (Chrome)	--	---	R to 180	R to 140	R to 140	R to 140	L to 73	---	R to 140	---	---	---
Plating Solutions (Copper)	--	---	R to 180	R to 140	R to 140	R to 140	L to 73	---	R to 140	---	---	---
Plating Solutions (Gold)	--	---	R to 180	R to 140	R to 140	R to 140	L to 73	---	R to 140	---	---	---
Plating Solutions (Lead)	--	---	R to 180	R to 140	R to 140	R to 140	L to 73	---	R to 140	---	---	---
Plating Solutions (Nickel)	--	---	R to 180	R to 140	R to 140	R to 140	L to 73	---	R to 140	---	---	---
Plating Solutions (Rhodium)	--	---	R to 180	R to 140	R to 140	R to 140	L to 73	---	R to 140	---	---	---
Plating Solutions (Silver)	--	---	R to 180	R to 140	R to 140	R to 140	L to 73	---	R to 140	---	---	---
Plating Solutions (Tin)	--	---	R to 180	R to 140	R to 140	R to 140	L to 73	---	R to 140	---	---	---
Plating Solutions (Zinc)	--	---	R to 180	R to 140	R to 140	R to 140	L to 73	---	R to 140	---	---	---
Potash (Aq)-See Potassium Hydroxide												
CAS# 1310-58-3												
KOH												

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Potassium Alum **CAS# 10043-67-1** AlK $(SO_4)_2$ o12H_2 O	--	---	R to 180	---	R to 140	R to 140	---	---	R to 140	---	---	---
Potassium Aluminum Sulfate **CAS# 10043-67-1** AlK $(SO_4)_2$ o12H_2 O	--	---	R to 180	R to 180	R to 140	---	L to 73	---	---	---	---	---
Potassium Amyl Xanthate **CAS# 2720-73-2** $CH_3(CH_2)_4OC(=S)$-S.K	--	---	---	---	R to 73	---	---	---	---	---	---	---
Potassium Bicarbonate **CAS# 298-14-6** $KHCO_3$	Saturated	---	R to 180	R to 140	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
Potassium Bi- chromate	Saturated	---	R to 180	R to 140	R to 140	---	L to 73	R to 212	---	---	---	---
CAS# 7778-50-9 K_2 Cr_2 O_7	40%	---	---	---	---	---	---	R to 212	---	---	---	---
Potassium Bisulfate **CAS# 7646-93-7** $KHSO_4$	--	---	R to 180	R to 212	R to 140	R to 140	---	R to 212	R to 140	---	---	---
Potassium Borate **CAS#12045-78-2** K_2 B_4 O_7 o4H_2 O	--	--	R to 180	R to 140	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
Potassium Bromate	--	---	R to 180	R to 212	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
CAS# 7758-01-2 $KBrO_3$	10%	---	---	---	---	---	---	---	R to 180	---	---	---
Potassium Bromide **CAS# 7758-02-3** KBr	--	---	R to 180	R to 212	R to 140	R to 140	R to 140	R to 248	R to 140	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Potassium Carbonate **CAS# 584-08-7** $K_2 CO_3$	--	R to 73	R to 180	R to 180	R to 140	R to 140	R to 140	N	R to 140	---	---	---
Potassium Chlorate (Aqueous) **CAS# 3811-04-9** $KClO_3$	--	R to 160	R to 180	R to 212	R to 140	R to 140	R to 140	N	R to 140	---	---	---
Potassium Chloride **CAS# 7747-40-7** KCl	--	R to 160	R to 180	R to 212	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
Potassium Chromate **CAS# 7789-00-6** $K_2 CrO_4$	--	---	R to 180	R to 212	R to 140	R to 140	R to 140	---	R to 140	---	---	---
Potassium Cyanide **CAS# 151-50-8** KCN	--	---	R to 180	R to 180	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
Potassium Dichromate **CAS# 7778-50-9** $K_2 Cr_2 O_7$	Saturated	--	R to 180	R to 180	R to 140	R to 140	R to 140	---	R to 140	---	---	---
Potassium Ethyl Xanthate **CAS# 140-89-6** $KS_2 COC_2 H_5$	--	---	---	---	R to 73	---	---	---	---	---	---	---
Potassium Ferricyanide **CAS# 13746-66-2** $K_3 Fe(CN)_6$	--	---	R to 180	R to 180	R to 140	R to 140	R to 140	R to 248	R to 140	---	---	---
Potassium Ferrocyanide **CAS# 13943-58-3** $K_4 Fe(CN)_6$ o3H_2 O	--	---	R to 180	R to 180	R to 140	R to 140	---	R to 248	R to 140	---	---	---
Potassium Fluoride **CAS# 7789-23-3** KF	--	---	R to 180	R to 180	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Potassium Hydroxide	10%	---	---	---	---	---	---	R to 176	---	---	---	---
CAS# 1310-58-3	20%	---	---	---	---	---	---	R to 176	---	---	---	---
KOH	25%	R to 160	R to 180	R to 212	R to 140	R to 140	R to 140	---	R to 140	---	---	---
	35%	---	---	---	---	---	---	---	---	---	R to 176	---
	50%	---	R to 180	---	---	---	---	R to 176	---	L to 104	---	---
Potassium Hydrogen Sulfite	10%	---	---	---	---	---	---	R to 140	---	---	---	---
CAS# 10117-38-1	Saturated	---	---	---	---	---	---	R to 212	---	---	---	---
$KHSO_3$												
Potassium Hypochlorite	--	R to 160	R to 180	---	R to 140	R to 120	---	---	R to 120	---	---	---
CAS# 7778-66-7	3%	---	---	---	---	---	---	R to 212	---	---	---	---
KClO												
Potassium Iodide												
CAS# 7681-11-0	--	---	R to 180	R to 73	R to 73	R to 140	---	R to 212	R to 140	---	---	---
KI												
Potassium Nitrate	--	R to 160	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	L to 104	---	---
CAS# 7757-79-1	50%	---	---	---	---	---	---	R to 212	---	---	---	---
KNO_3												
Potassium Orthophosphate												
CAS# 7778-77-0	Saturated	---	---	---	---	---	---	R to 212	---	---	---	---
H_2KPO_4												
Potassium Perborate												
CAS# 13769-41-0	--	---	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
$KBHO_3$												
Potassium Perchlorate												
CAS# 7778-74-7	--	---	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
$KClO_4$												

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Potassium Permanganate	10%	---	R to 180	R to 73	R to 140	R to 140	R to 140	R to 176	R to 140	---	---	---
CAS# 7722-64-7	20%	---	---	---	---	---	---	R to 212	---	---	---	---
$KMnO_4$	25%	---	R to 180	R to 73	R to 73	R to 140	---	---	R to 140	---	---	---
	30%	---	---	---	---	---	---	R to 212	---	---	---	---
	Saturated	---	---	---	---	---	---	R to 212	---	---	---	---
Potassium Persulfate												
CAS# 7727-21-1	--	---	R to 180	R to 140	R to 140	R to 140	R to 140	R to 176	R to 140	---	---	---
$K_2 S_2 O_8$												
Potassium Sulfate												
CAS# 7778-80-5	--	R to 160	R to 180	R to 180	R to 140	R to 140	R to 140	R to 212	R to 140	R to 194	---	---
$K_2 SO_4$												
Potassium Sulfide												
CAS# 1312-73-8	--	---	R to 180	R to 140	---	R to 140	R to 140	R to 68	R to 140	---	---	---
$K_2 S$												
Potassium Sulfite												
CAS# 10117-38-1	--	---	R to 180	R to 140	---	R to 140	---	---	R to 140	---	---	---
$K_2 SO_3$ o2H_2 O												
Propane												
CAS# 74-98-6	--	---	R to 73	R to 73	R to 140	R to 140	R to 73	R to 248	R to 140	R to 140	---	---
$C_3 H_8$												
Propargyl Alcohol												
CAS# 107-19-7	--	---	L to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
$HC{\equiv}CCH_2$ OH												
Propionic Acid												
CAS# 79-09-4	--	N	N	R to 140	---	R to 140	---	R to 140	R to 140	---	N	L to 104
$CH_3 CH_2 CO_2 H$												
Propyl Alcohol (Type I)												
CAS# 71-23-8	--	73	L to 73	R to 140	R to 140	R to 140	R to 140	R to 122	R to 140	---	---	---
$CH_3CH_2CH_2OH$												

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Propylene Dichloride **CAS# 78-87-5** CH_3 $CHClCH_2$ Cl	100%	---	N	N	N	N	---	---	N	---	---	---
Propylene Oxide **CAS# 75-56-9** CH_3 $CHCH_2$ O	--	---	N	R to 73	N	R to 140	---	---	R to 140	---	---	---
Pyridine **CAS# 110-86-1** $N(CH)_4$ CH	--	---	N	L to 140	N	R to 73	---	R to 68	R to 73	L to 68	---	---
Pyrogallic Acid **CAS# 87-66-1** C_6 H_3 $(OH)_3$	--	---	---	---	R to 73	--	--	---	---	---	---	---
Quinone **CAS# 106-51-4** C_6 H_4 O_2	--	---	---	R to 140	---	R to 140	---	---	R to 140	---	---	---
Rayon Coagulating Bath	--	---	R to 180	---	R to 140	R to 140	R to 140	---	R to 140	---	---	---
Salicylaldehyde **CAS# 90-02-8** C_6 H_4 OHCHO	--	---	N	R to 73	N	R to 120	---	---	R to 120	---	---	---
Salicylic Acid **CAS# 69-72-7** C_6 H_4 (OH)(COOH)	--	---	---	R to 140	R to 140	R to 140	---	R to 212	R to 140	---	---	---
Selenic Acid Aq. **CAS# 13410-01-0** H_2 SeO_4	--	---	R to 180	---	R to 140	R to 140	R to 140	---	R to 140	---	---	---
Silicic Acid **CAS# 10193-36-9** SiO_2 onH_2 O	--	---	R to 180	R to 140	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Silicone Oil (Polydimethylsiloxane) **CAS# 63148-62-9**	--	---	R to 180	R to 212	R to 73	R to 73	---	---	R to 73	---	---	---
Silver Acetate **CAS# 563-63-3** $AgCH_3COO$	Saturated	---	R to 180	---	---	---	---	R to 212	---	---	---	---
Silver Chloride **CAS# 7783-90-6** AgCl	--	R to 160	R to 180	R to 140	R to 140	---	---	---	---	---	---	---
Silver Cyanide **CAS# 506-64-9** AgCN	--	---	R to 180	R to 180	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
Silver Nitrate **CAS# 7761-88-8** $AgNO_3$	--	R to 160	R to 180	R to 180	R to 140	R to 140	L to 73	---	R to 140	---	---	---
	50%	---	---	---	---	---	---	R to 212	---	---	---	---
Silver Sulfate **CAS# 10294-26-5** $Ag_2\ SO_4$	--	R to 160	R to 180	R to 140	R to 140	R to 140	L to 73	---	R to 140	---	---	---
Sodium Acetate **CAS# 127-09-3** $CH_3\ COONa$	Saturated	---	R to 180	R to 212	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
Sodium Alum **CAS# 10102-71-3** $AlNa(SO_4)_2\ o12H_2\ O$	--	---	R to 180	---	R to 140	---	---	---	---	---	---	---
Sodium Aluminate	30%	---	---	---	---	---	---	---	---	---	R to 165	---
CAS# 1302-42-7 $Na_2\ Al_2\ O_4$	Saturated	---	R to 180	---	R to 140	---	---	---	---	---	---	---
Sodium Benzoate	--	---	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 532-32-1 $C_6\ H_5\ COONa$	50%	---	---	---	---	---	---	R to 212	---	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Sodium Bicarbonate												
CAS# 144-55-8	--	R to 73	R to 180	R to 212	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
$NaHCO_3$												
Sodium Bisulfate	--	R to 73	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 7681-38-1	50%	---	---	---	---	---	---	R to 212	---	---	---	---
$NaHSO_4$												
Sodium Bisulfite												
CAS# 7631-90-5	--	---	R to 180	R to 140	R to 140	R to 140	---	---	R to 140	---	---	---
$NaHSO_3$												
Sodium Borate (Borax)	1%	---	---	---	---	---	---	---	---	---	R to 113	---
CAS# 1303-96-4	Saturated	R to 160	R to 180	R to 180	R to 140	R to 140	R to 140	---	R to 140	---	---	---
$Na_2\ B_4\ O_7\ o10H_2\ O$												
Sodium Bromide	Saturated	R to 120	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 7647-15-6	50%	---	--	---	---	---	---	R to 248	---	---	---	---
NaBr												
Sodium Carbonate	--	R to 73	R to 180	R to 212	R to 140	R to 140	R to 140	N	R to 140	R to 140	---	---
CAS# 497-19-8	1.70%	---	---	---	---	---	---	---	---	---	R to 210	---
$Na_2\ CO_3$												
Sodium Chlorate												
CAS# 7775-09-9	Saturated	---	R to 180	R to 140	R to 73	R to 140	R to 140	N	R to 140	---	---	---
$NaClO_3$												
Sodium Chloride	Saturated	-	R to 180	R to 140	R to 140	R to 140	R to 140	R to 212	R to 140	R to 194	---	---
CAS# 7647-14-5	10%	---	---	---	---	---	---	R to 212	---	---	R to 140	---
NaCl												
Sodium Chlorite												
CAS# 7758-19-2	25%	---	R to 180	R to 73	N	R to 140	---	---	R to 140	---	---	---
$NaClO_2$												
Sodium Chromate												
CAS# 7775-11-3	--	R to 120	R to 180	R to 140	---	R to 140	---	R to 176	R to 140	---	---	---
$Na_2\ CrO_4\ o4H_2\ O$												

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Sodium Cyanide												
CAS# 143-33-9	--	---	R to 180	R to 180	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
NaCN												
Sodium Dichromate	Saturated	---	R to 180	---	R to 140	---	---	---	---	---	---	---
CAS# 10588-01-9	20%	---	R to 180	R to 180	R to 140	R to 140	R to 140	---	R to 140	---	---	---
$Na_2 Cr_2 O_7$ o2H_2 O	50%	---	---	---	---	---	---	R to 212	---	---	---	---
Sodium Ferricyanide												
CAS#14217-21-1	Saturated	---	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
$Na_3 Fe(CN)_6$												
Sodium Ferrocyanide												
CAS# 14434-22-1	Saturated	---	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
$Na_4 Fe(CN)_6$												
Sodium Fluoride												
CAS# 7681-49-4	--	R to 120	R to 180	R to 180	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
NaF												
Sodium Hydrogen Sulfite												
CAS# 7631-90-5	50%	---	---	---	---	---	---	R to 212	---	---	---	---
$NaHSO_3$												
Sodium Hydroxide (Caustic Soda)	5%	---	---	---	---	---	---	L to 68	---	---	---	---
CAS# 1310-73-2	15%	R to 120	R to 180	R to 212	R to 140	R to 140	R to 140	---	R to 140	---	---	R to 212
NaOH	30%	R to 120	R to 180	R to 212	R to 140	R to 140	R to 140	N	R to 140	---	---	---
	50%	R to 120	R to 180	R to 212	R to 140	R to 140	R to 140	---	R to 140	L to 104	R to 194	---
	70%	R to 120	---	R to 212	R to 140	R to 140	R to 140	---	R to 140	---	---	---
Sodium Hypochlorite	--	R to 120	R to 180	R to 73	R to 73	R to 140	R to 140	---	R to 140	---	---	---
CAS# 7681-52-9	2% Cl	---	---	---	---	---	---	R to 212	---	---	---	---
NaOClo5H_2 O	5% Cl	---	R to 180	R to 120	R to 140	L to 140	---	---	L to 140	---	---	---
	12% Cl	R to 73	R to 180	R to 120	R to 140	R to 73	R to 140	R to 68	R to 73	---	R to 190	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Sodium Iodide **CAS# 7681-82-5** NaI	--	---	R to 180	---	R to 140	---	---	---	---	---	---	---
Sodium Metaphosphate **CAS# 10361-03-2** $(NaPO_3)n$	--	---	R to 180	R to 120	R to 140	---	---	---	---	---	---	---
Sodium Metasilicate **CAS# 6834-92-0** **H2SiO3**	100%	---	---	---	---	---	---	---	---	---	R to 212	
Sodium Nitrate **CAS# 7631-99-4** $NaNO_3$	Saturated	R to 160	R to 180	R to 180	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
Sodium Nitrite **7632-00-0** $NaNO_2$	--	R to 160	R to 180	R to 73	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
Sodium Palmitate **CAS# 408-35-5** $CH_3(CH_2)_{14}COONa$	5%	---	R to 180	R to 140	R to 140	---	---	---	---	---	---	---
Sodium Perborate **CAS# 7632-04-4** $NaBO_3 o4H_2 O$	--	R to 120	R to 180	R to 73	R to 140	R to 73	---	---	R to 73	---	---	---
Sodium Perchlorate **CAS# 7601-89-0** $NaClO_4$	--	---	R to 180	R to 212	R to 140	R to 140	---	---	R to 140	---	---	---
Sodium Peroxide **CAS# 1313-60-6** $Na_2 O_2$	10%	---	R to 180	---	R to 140	R to 140	---	---	R to 140	---	---	---
Sodium Phosphate	Acid	R to 120	R to 180	R to 212	R to 140	R to 140	R to 140	R to 140	R to 140	---	---	---
CAS# 7601-54-9	Alkaline	---	R to 120	R to 180	R to 212	R to 140	R to 140	---	R to 140	---	---	---
$NaH_2 PO_4$	Neutral	---	R to 120	R to 180	R to 212	R to 140	R to 140	---	R to 180	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Sodium Silicate	--	---	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 6834-92-0	10%	---	---	---	---	---	---	R to 140	---	---	---	---
$2Na_2$ $OoSiO_2$	50%	---	---	---	---	---	---	R to 212	---	---	---	---
	100%	---	---	---	---	---	---	---	---	---	R to 194	---
Sodium Sulfate	Saturated	R to 160	R to 180	R to 212	R to 140	R to 140	R to 140	R to 212	---	---	---	---
CAS# 7757-82-6	0.10%	---	---	---	---	---	---	R to 140	---	---	---	---
Na_2SO_4												
Sodium Sulfide	30%	---	---	---	---	---	---	---	---	---	R to 165	---
CAS# 1313-82-2	Saturated	R to 160	R to 180	R to 212	R to 140	R to 140	R to 140	---	R to 140	L to 104	---	---
Na_2S												
Sodium Sulfite												
CAS# 7757-83-7	Saturated	R to 160	R to 180	R to 212	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
Na_2SO_3												
Sodium Thiosulfate	--	---	R to 180	R to 180	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 7772-98-7	50%	---	---	---	---	---	---	R to 248	---	---	---	---
$Na_2S_2O_3o5H_2O$												
Soybean Oil	--	---	L to 180	R to 73	---	R to 140	---	---	R to 140	---	---	---
CAS# 8001-22-7												
Stannic Chloride												
CAS# 7646-78-8	Saturated	---	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
$SnCl_4$												
Stannous Chloride	15%	R to 120	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 7772-99-8	Saturated	---	---	---	---	R to 140	---	---	R to 140	---	---	---
$SNCl_2$												
Starch	--	---	R to 180	R to 140	R to 140	R to 140	---	---	R to 140	---	---	---
CAS# 9005-25-8												
Soluble Starch												
CAS# 9005-84-9	Saturated	---	R to 180	---	---	R to 140	---	---	R to 140	---	---	---
$(C6H10O5)_n$												

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Stearic Acid **CAS# 57-11-4** $CH_3(CH_2)_{16}COOH$	--	---	R to 73	R to 73	R to 140	R to 120	R to 150	---	R to 120	L to 194	---	---
Stoddard's Solvent **CAS# 8052-41-3**	--	---	N	---	N	R to 73	R to 140	---	R to 73	---	---	---
Styrene **CAS# 100-42-5** $C_6H_5CH=CH_2$	--	---	N	R to 73	---	L to 73	---	---	L to 73	R to 104	---	---
Succinic Acid **CAS# 110-15-6** $COOH(CH_2)_2COOH$	--	---	R to 180	R to 140	R to 140	R to 140	---	---	R to 140	---	---	---
Sugar **CAS# 50-99-7** $C_6H_{12}O_6$	Aq.	---	R to 180	---	R to 140	R to 140	---	---	R to 140	---	---	---
Sulfamic Acid **CAS# 5329-14-6** HSO_3NH_2	20%	--	N	R to 180	N	---	---	---	---	---	---	---
Sulfur **CAS# 7404-34-9** S	--	---	R to 180	R to 212	R to 140	R to 140	R to 140	---	---	R to 104	---	---
Sulfur Chloride **CAS# 10025-67-9** S_2Cl_2	--	---	---	L to 73	---	---	---	---	---	---	---	---
Sulfur Dioxide **CAS# 7446-09-5** SO_2	Gas Dry Gas Wet	N N	R to 73 N	R to 140 R to 140	R to 140 R to 73	R to 140 R to 120	--- R to 73	--- N	R to 140 R to 120	--- ---	--- ---	--- ---
Sulfur Trioxide **CAS# 7446-11-9** SO_3	Gas Dry Gas	--- ---	--- N	--- ---	R to 140 R to 73	N N	--- ---	N N	N ---	L to 68 ---	--- ---	--- ---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Sulfuric Acid	30%	R to 120	R to 180	R to 180	R to 140	R to 140	R to 140	R to 248	R to 140	---	---	---
CAS# 7664-93-9	50%	R to 73	R to 180	R to 140	R to 140	R to 120	L to 73		R to 140	---	---	R to 212
H_2SO_4	60%	L to 73	R to 180	R to 73	R to 140	R to 120	L to 73	R to 248	---	---	---	---
	70%	L to 73	R to 180	R to 73	R to 140	R to 120	L to 73	---	---	---	---	---
	80%	L to 73	R to 180	R to 73	R to 140	R to 120	N	L to 248	---	---	---	---
	90%	L to 73	R to 150	R to 73	R to 73	R to 120	N	R to 212	---	---	---	---
	93%	N	R to 140	L to 73	R to 73	L to 73	N	---	---	---	---	---
	94% - 98%	N	R to 130	L to 73	N	L to 73	N	L to 212	N	---	R to 140	R to 140
	100%	N	N	N	N	N	N	---	N	L to 194	---	---
Sulfurous Acid												
CAS# 7782-99-2	--	---	R to 73	R to 140	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
H_2SO_3												
Tall Oil	--	---	L to 180	R to 180	R to 140	R to 120	---	---	R to 120	---	---	---
CAS# 8002-26-4												
Tannic Acid	10%	N	R to 180	R to 73	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
CAS# 1401-55-4	Saturated	---	---	---	---	---	---	R to 212	---	---	---	---
$C_{76}H_{52}O_{46}$												
Tartaric Acid	--	R to 160	R to 180	R to 140	R to 140	R to 140	R to 140	R to 248	R to 140	---	---	---
CAS# 526-83-0	Saturated	---	---	---	---	---	---	R to 248	---	R to 194	---	---
$HOOC(CHOH)_2COOH$												
Terpineol												
CAS# 8000-41-7	--	---	---	---	L to 140	---	---	---	---	---	---	---
$C_{10}H_{17}OH$												
Tetrachloroethane												
CAS# 79-34-5	--	---	N	L to 73	L to 140	L to 120	---	---	L to 120	---	---	---
$CHCl_2CHCl_2$												
Tetrachloroethylene												
CAS# 127-18-4	--	N	N	L to 73	L to 140	L to 120	---	L to 212	L to 120	L to 68	---	---
$Cl_2C=CCl_2$												

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Tetraethyl Lead **CAS# 78-00-2** $Pb(C_2H_5)_4$	--	---	R to 73	R to 73	R to 73	---	---	---	---	R to 68	---	---
Tetrahydrofuran **CAS# 109-99-9** C_4H_8O	--	N	N	L to 73	N	L to 73	L to 73	L to 68	N	---	---	---
Tetralin **CAS# 119-64-2** $C_{10}H_{12}$	--	---	N	N	N	N	---	---	N	---	---	---
Tetra Sodium Pyrophosphate **CAS# 7722-88-5** $Na_4P_2O_7o10H_2O$	--	---	R to 180	---	R to 140	---	---	---	---	---	---	---
Thionyl Chloride **CAS# 7719-09-7** $SOCl_2$	--	---	N	N	N	N	R to 140	N	N	---	---	---
Tin (II) Chloride **CAS# 7772-99-8** $SnCl_2$	--	---	R to 180	---	---	---	---	R to 212	---	---	---	---
Tin (IV) Chloride **CAS# 7646-78-8** $SnCl_4$	--	---	R to 180	---	---	---	---	R to 212	---	---	---	---
Titanium Tetrachloride **CAS# 7550-45-0** $TiCl_4$	--	---	---	R to 140	L to 73	R to 120	---	---	R to 120	---	---	---
Toluene (Toluol) **CAS# 108-88-3** $CH_3C_6H_5$	--	N	N	L to 73	N	L to 120	N	---	L to 120	R to 140	N	N
Tomato Juice	--	---	R to 180	R to 212	R to 140	R to 140	---	---	R to 140	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Tributyl Citrate **CAS# 77-94-1** $C_{18}H_{32}O_7$	--	---	N	L to 73	R to 73	L to 120	---	---	L to 120	---	---	---
Tributyl Phosphate **CAS# 126-73-8** $(C_4H_9)_3PO_4$	--	---	N	L to 140	N	R to 73	---	---	R to 73	R to 194	---	---
Trichloroacetic Acid	50%	---	N	R to 140	R to 140	R to 140	---	R to 104	R to 140	---	---	---
CAS# 76-03-9	10%	---	N	---	---	R to 140	---	---	R to 140	---	---	---
CCl_3COOH												
Trichlorobenzene **CAS# 12002-48-1** $C_6H_3Cl_3$	--	---	N	---	---	---	---	R to 140	---	---	---	---
Trichloroethane **CAS# 71-55-6** $C_2H_3Cl_3$	--	---	N	---	---	---	---	---	---	---	N	---
Trichloroethylene **CAS# 79-01-6** $CHCl=CCl_2$	--	N	N	N	N	L to 120	N	R to 176	L to 68	L to 68	N	---
Triethanolamine **CAS# 102-71-6** $(HOCH_2CH_2)_3N$	--	L to 73	N	R to 140	R to 73	R to 73	R to 73	L to 104	R to 73	---	---	---
Triethylamine **CAS# 121-44-8** $(C_2H_5)_3N$	--	---	N	N	R to 140	R to 73	---	---	R to 73	---	---	---
Trimethylolpropane **CAS# 77-99-6** $(CH_2OH)_3C_3H_5$	--	---	R to 73	R to 140	R to 73	L to 120	---	---	L to 120	---	---	---
Trisodium Phosphate **CAS# 10101-89-0** $Na_3PO_4 \bullet 12H_2O$	--	R to 73	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	---	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Turpentine **CAS# 8006-64-2**	--	N	N	N	R to 140	L to 120	L to 73	---	L to 120	R to 140	---	---
Urea	--	---	N	R to 180	R to 140	R to 140	R to 140	---	R to 140	---	---	---
CAS# 57-13-6	10%	---	---	---	---	---	---	R to 212	---	---	---	---
$CO(NH_2)_2$	Saturated	---	---	---	---	---	---	R to 176	---	L to 140	---	---
Urine	--	R to 160	R to 180	R to 180	R to 140	R to 140	R to 140	---	R to 140	---	---	---
Vaseline (Petroleum Jelly) **CAS# 8009-03-8**	--	---	N	R to 140	N	R to 120	---	---	R to 120	---	---	---
Vegetable Oil	--	---	L to 180	R to 140	R to 140	R to 140	---	R to 248	R to 140	---	---	---
Vinegar **CAS# 64-19-7**	--	R to 73	R to 180	R to 140	R to 140	R to 140	R to 140	---	R to 140	R to 194	---	---
Vinyl Acetate **CAS# 108-05-4** $CH_3COOCH=CH_2$	--	---	N	R to 73	N	R to 140	---	L to 68	R to 140	---	---	---
Water, Acid Mine H_2O	--	R to 160	R to 200	R to 140	R to 140	R to 140	R to 180	---	R to 180	---	---	---
Water, Deionized H_2O	--	R to 160	R to 200	R to 140	R to 140	R to 140	R to 180	---	R to 180	R to 194	---	---
Water, Distilled H_2O	--	R to 160	R to 200	R to 212	R to 140	R to 140	R to 180	R to 248	R to 180	R to 194	---	---
Water, Potable H_2O	--	R to 160	R to 200	R to 212	R to 140	R to 140	R to 180	R to 248	R to 180	R to 194	---	---
Water, Salt H_2O	--	R to 160	R to 200	R to 212	R to 140	R to 140	R to 180	---	R to 180	R to 194	---	---
Water, Sea H_2O	--	R to 160	R to 200	R to 212	R to 140	R to 140	R to 180	R to 248	R to 180	R to 194	---	---
Water, Soft H_2O	--	R to 160	R to 200	R to 212	R to 140	R to 140	R to 180	---	R to 180	R to 194	---	---

******May not be fully applicable to pressurized applications******

Chemical Formula	Concentration	ABS	CPVC	PP (PP-R, PP-RCT)	PVC	PE (MDPE, HDPE, PE-RT)	PB	PVDF	PEX	PA (PA11, PA12)	PSU	PPSU
Water, Residential Waste	--	R to 73	R to 200	R to 212	R to 140	R to 140	R to 180	---	R to 180	R to 194	---	---
H_2O												
Whiskey	--	---	R to 180	R to 140	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
White Liquor	--	R to 73	R to 180	---	R to 140	---	---	---	---	---	---	---
Wine	--	R to 73	R to 180	R to 140	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
Xylene (Xylol)												
CAS# 1330-20-7	--	N	N	N	N	N	N	L to 140	N	L to 194	---	---
$C_6H_4(CH_3)_2$												
Zinc Acetate												
CAS# 557-34-6	--	---	R to 180	---	---	---	---	---	---	---	---	---
$Zn(CH_3COO)_2o2H_2O$												
Zinc Carbonate												
CAS# 3486-35-9	--	---	R to 180	R to 140	---	R to 140	---	R to 212	R to 140	---	---	---
$ZnCO_3$												
Zinc Chloride	--	R to 120	R to 180	R to 180	R to 140	R to 140	---	---	R to 140	---	---	---
CAS# 76-46-85-7	50%	---	---	---	---	---	---	---	---	L to 73	---	---
$ZnCl_2$	Saturated	---	---	---	---	---	---	R to 212	---	---	---	---
Zinc Nitrate	Saturated	R to 160	R to 180	R to 180	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
CAS# 7779-88-6	20%	---	---	---	---	---	---	---	---	---	R to 210	---
$Zn(NO_3)_2o6H_2O$												
Zinc Oxide												
CAS# 1314-13-2	--	---	R to 180	---	---	---	---	R to 212	---	---	---	---
ZnO												
Zinc Stearate												
CAS# 557-05-1	--	---	---	---	---	---	---	R to 122	---	---	---	---
$(CH_3(CH_2)_{16}COO)_2Zn$												
Zinc Sulfate	Saturated	R to 160	R to 180	R to 212	R to 140	R to 140	R to 140	R to 212	R to 140	---	---	---
CAS# 7733-02-0	20%	---	---	---	---	---	---	---	---	---	R to 212	---
$ZnSO_4o7H_2O$												