



# Chemical resistance guide

## Protective & Marine Coatings

*Protective & Marine Coatings*

Issue 1 | March 2019



## Tank linings **chemical resistance guide**

This list has been abbreviated please contact us if you do not see the required chemical.

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**Sherwin-Williams protective coatings produce the most versatile range of chemically resistant linings on the market. This guide is intended to provide a summary of the capabilities of the Sherwin-Williams linings offer. It does not contain all the linings in the Sherwin-Williams offer and the chemicals listed are not the limit of chemicals to which Sherwin-Williams linings are resistant.**

Sherwin-Williams supply linings suitable for a wide variety of applications including, but not limited to: internal lining of above and below ground storage tanks, internal lining for process vessels and piping, external lining of buried tanks, vessels and equipment.

Sherwin-Williams also provide a range of linings suitable for use onto concrete surfaces which protect against chemical, abrasion and impact attack. Specialised systems are available which can provide crack bridging solutions for applications where concrete movement is expected.

Sherwin-Williams aim to provide the highest levels of service in selecting, specifying and applying the linings systems. Please do not hesitate to contact us with any enquiries or problems you have and we will provide you the best solution to satisfy your requirements.

If any training or support is required for the actual application of the lining, Sherwin-Williams have specialists who can support the local Technical Service Representatives if this is necessary.

This document is intended for guidance purposes only, please contact Sherwin-Williams for confirmation of product performance.

## Chemical products resistance guide: **specific notes**

### Introduction

An explanation of the notations against each product is as follows:

Note = storage of product subject to the conditions of the specific Chemical notes itemised.

1, 4 = Recommended provided the requirements of Notes 1 and 4 are met.

NR = Not recommended for this service.

NT = Testing is required to determine if this product is suitable for this service.

LR = Acceptable for short term immersion such as secondary containment, sumps etc.

Recommendations are based on laboratory test data, field service and / or practical experience.

Performance is subject to application and cure in strict accordance with the Product Data Sheets and specification – use of non-approved primers or fillers may have a negative impact upon performance.

The chemical resistance information included in this document is for materials cured under normal ambient conditions. Post-curing can in some cases improve the chemical resistance of certain linings (and also reduce any risk of contamination in some critical chemicals). Consult your Local Sherwin-Williams.

All concentrations listed are aqueous, unless otherwise noted.

### Substrates and primers

The resistance quoted in the guide refers to the coating system being applied directly to mild steel that has been prepared to the standard quoted on the product data sheet or over an approved primer. Application to alternative primers and substrates is possible.

### Product storage temperature

Chemical resistance is recorded as the maximum continuous storage temperature (loading temperatures may be up to 10°C higher than the storage temperature).

In certain circumstances some products have been demonstrated to be suitable for high temperature service and the recorded value may be increased subject to confirmation of the conditions – please consult your regional linings technical representative.

Care should be taken when storing high temperature aqueous chemicals. Where large temperature differentials exist between the Chemicals and external tank wall there is a danger of the tank coating system being adversely affected due to cold wall thermal shock. If temperature differences are in excess of 30°C (54°F), it is recommended that the tank is insulated to reduce thermal gradient.

### Tank cleaning

Sherwin-Williams do not advise on methods of tank cleaning, except where cleaning methods may cause damage to the coating. Please contact your local Sherwin-Williams technical representative before carrying out any cleaning protocols which may be required as part of an inspection or process.

### Mixtures

For mixtures of materials it may not simply be a case of the chemical resistance guide for the components.

Mixtures can behave differently to the sum of their components. Please consult Sherwin-Williams to confirm suitability of lining schemes for chemical blends.

### Typical thicknesses

Performance is subject to application and cure in strict accordance with the Product Data Sheets and specification. Excessive film thicknesses may have a negative impact upon the performance of a lining.

### Change in service

Please consult your local Sherwin-Williams technical representative to confirm whether it is advisable to switch service to another cargo.

# Tank linings chemical resistance guide

Chemical environment and concentration (%)	Nova-Plate™ UHS			Dura-Plate™ UHS			Phenicon™ HS			Nova-Plate™ 325			Magnalux™ 41V		
	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
2, 4-Toluene Diisocyanate	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NR	NR	
Acetic Acid 10%	NR	NR		NR	NR		NR	NR		NR	NR		140°F [60°C]	R	
Acetic Acid 100% Glacial Acetic	NR	NR		NR	NR		NR	NR		NR	NR		100°F [38°C]	R	
Acetic Acid 15%	NT	NT		NR	NR		NR	NR		NR	NR		140°F [60°C]	R	
Acetic Acid 2%; Formic Acid 2%	NR	NR		NR	NR		NR	NR		NR	NR		140°F [60°C]	R	
Acetic Acid 25%	NR	NT		NR	NR		NR	NR		NR	NR		122°F [50°C]	R	
Acetic Acid 40%	NR	NT		NR	NR		NR	NR		NR	NR		122°F [50°C]	R	
Acetic Acid 50%	NR	NT		NR	NR		NR	NR		NR	NR		122°F [50°C]	R	
Acetic Acid 75%	NR	NR		NR	NR		NR	NR		NR	NR		100°F [38°C]	R	
Acetic Acid Vapors 1%	NT	NT		NT	NT		NT	NT		NT	NT		122°F [50°C]	R	
Acetic Anhydride	NR	NR		NR	NR		NR	NR		NR	NR		NR	R	
Acetone 100%	NR	NR		NR	NR		NR	NR		NT	NT		NR	NR	
Acetophenone	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Acid Sulfite pH 1-2	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Activated Carbon Beds	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Adipic Acid 23%	NR	NR		NR	NR		NR	NR		NR	NR		122°F [50°C]	R	
Adipic Acid 25%	NR	NR		NR	NR		NR	NR		NR	NR		122°F [50°C]	R	
Alkyl Benzene, Linear	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		100°F [38°C]	R	
Alkyl Benzene Sulfate Acid 92%	NR	NR		NR	NR		NR	NR		NT	NT		140°F [60°C]	R	
Allyl Chloride, All	NT	NT		NR	NR		NT	NT		NT	NT		80°F [27°C]	R	10
Alpha Methylstyrene	100°F [38°C]	R	12	100°F [38°C]	R	12	100°F [38°C]	R	12	100°F [38°C]	R	12	100°F [38°C]	R	12
Alpha Oleum Sulfates	NT	NT		NT	NT		NT	NT		NT	NT		122°F [50°C]	R	
Aluminum Bromide	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Aluminum Chloride 30%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		80°F [27°C]	R	
Aluminum Chloride, All	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Aluminum Nitrate 10%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Aluminum Nitrate 50%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	

# Tank linings chemical resistance guide

Chemical environment and concentration (%)	Nova-Plate™ UHS			Dura-Plate™ UHS			Phenicon™ HS			Nova-Plate™ 325			Magnalux™ 41V		
	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Aluminum Nitrate, Saturated	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	R	
Aluminum Sulfate 10%	140°F [60°C]	R		140°F [60°C]	R		140°F [60°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Aluminum Sulfate 50%	140°F [60°C]	R		140°F [60°C]	R		140°F [60°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Aluminum Sulfate, All	140°F [60°C]	R		140°F [60°C]	R		140°F [60°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Ambitrol Ethylene Glycol	100°F [38°C]	R	5	100°F [38°C]	R	5	100°F [38°C]	R	5	122°F [50°C]	R	5	140°F [60°C]	R	5
Ammonia 10%	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Ammonia Vapors, Wet Gas	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Ammonium Bicarbonate 10%	100°F [38°C]	R		NT	NT		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Ammonium Bicarbonate 50%	100°F [38°C]	R		NT	NT		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Ammonium Bisulfite (Black Liquor)	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	R	
Ammonium Carbonate 25%	100°F [38°C]	R		NT	NT		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Ammonium Carbonate, All	100°F [38°C]	R		NT	NT		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Ammonium Hydroxide 10%	80°F [27°C]	R		NR	R		80°F [27°C]	R		100°F [38°C]	R		NR	NR	
Ammonium Hydroxide 20%	80°F [27°C]	R		NR	R		80°F [27°C]	R		100°F [38°C]	R		NR	NR	
Ammonium Hydroxide 30%	80°F [27°C]	R		NR	R		80°F [27°C]	R		100°F [38°C]	R		NR	NR	
Ammonium Hydroxide 40%	NT	NT		NT	NT		NT	NT		100°F [38°C]	R		NR	NR	
Ammonium Hydroxide 5%	80°F [27°C]	R		NR	R		80°F [27°C]	R		100°F [38°C]	R		80°F [27°C]	R	
Ammonium Lauryl Sulfate 30%	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Ammonium Nitrate 5%	122°F [50°C]	R		122°F [50°C]	R		140°F [60°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Ammonium Nitrate 50%	122°F [50°C]	R		122°F [50°C]	R		140°F [60°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Ammonium Nitrate 65%	122°F [50°C]	R		122°F [50°C]	R		140°F [60°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Ammonium Nitrate 83%	122°F [50°C]	R		122°F [50°C]	R		140°F [60°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Ammonium Nitrate, Saturated	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	R	
Ammonium Perchlorate 10%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Ammonium Persulfate 10%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Ammonium Phosphate 40%	122°F [50°C]	R		122°F [50°C]	R		140°F [60°C]	R		NT	NT		140°F [60°C]	R	
Ammonium Phosphate 50%	122°F [50°C]	R		122°F [50°C]	R		140°F [60°C]	R		NT	NT		140°F [60°C]	R	

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	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Ammonium Sulfate 6%	140°F [60°C]	R		122°F [50°C]	R		140°F [60°C]	R		NT	NT		140°F [60°C]	R	
Ammonium Sulfate 65%	140°F [60°C]	R		122°F [50°C]	R		140°F [60°C]	R		NT	NT		140°F [60°C]	R	
Ammonium Sulfate 8%	140°F [60°C]	R		122°F [50°C]	R		140°F [60°C]	R		NT	NT		140°F [60°C]	R	
Ammonium Sulfate Dry	140°F [60°C]	R		122°F [50°C]	R		140°F [60°C]	R		NT	NT		140°F [60°C]	R	
Ammonium Sulfide (Bisulfide)	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	R	
Ammonium Sulfide 24%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Ammonium Sulfide 45%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Ammonium Sulfite	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Ammonium Sulfite 50%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Ammonium Sulfite, Saturated	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Amyl Acetate	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	10
Amyl Alcohol	122°F [50°C]	R		122°F [50°C]	R		150°F [66°C]*	R		122°F [50°C]	R		122°F [50°C]	R	
Aniline 100%	NR	NR		NR	NR		NR	NR		NT	NT		NR	NR	
Arsenic Acid 50%	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	
Arsenic Acid, All	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	
Arsenious Acid 19 BE	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	
Arsenous Acid	NT	NT		NT	NT		NT	NT		NT	NT		122°F [50°C]	R	
Aviation Fuel JP 4	122°F [50°C]	R	5	122°F [50°C]	R	5	122°F [50°C]	R	5	NT	NT	5	100°F [38°C]	R	5
Axle Grease Lubricant	NT	NT		NT	NT		NT	NT		NT	NT		NR	R	
Banvel Herbicide	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		NT	NT	
Barium Carbonate, All	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Barium Chloride 50%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Barium Chloride, All	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Barium Cyanide, All	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R	
Benzene (Benzol)	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		100°F [38°C]	R	
Benzene Sulfonic Acid 100%	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Benzene Sulfonic Acid 25%	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	

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Chemical environment and concentration (%)	Nova-Plate™ UHS			Dura-Plate™ UHS			Phenicon™ HS			Nova-Plate™ 325			Magnalux™ 41V		
	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Benzene Sulfonic Acid 50%	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Benzene:Ethylbenzene 1/3 - 2/3	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R	
Benzoic Acid, Saturated	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Benzoyl Benzoic Acid	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Benzyl Alcohol 100%	NT	NT		NT	NT		NT	NT		NT	NT		80°F [27°C]	R	10
Benzyl Chloride 100%	NR	NR		NR	NR		NR	NR		NT	NT		80°F [27°C]	R	10
Biodiesel	122°F [50°C]	R		100°F [38°C]	R		122°F [50°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Black Liquor, Pulp Mill	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		122°F [50°C]	R	
Bleach (see Sodium Hypochlorite)															
Boric Acid, All (Borax,sodium borate)	NT	NT		NT	NT		NT	NT		100°F [38°C]	R		140°F [60°C]	R	
Brake Fluid HD 557	100°F [38°C]	R		NT	NT		100°F [38°C]	R		100°F [38°C]	R		140°F [60°C]	R	
Brine Mixture	140°F [60°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Brine, Saturated	140°F [60°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Bromine Water 5%	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Butadiene Gas	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R	
Butanediol	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Butanol	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		100°F [38°C]	R	
Butoxyethanol	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	
Butoxyethoxyethanol	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	
Butyl Acetate	NT	NT		NT	NT		NT	NT		122°F [50°C]	R	1	NR	NR	
Butyl Acrylate	NT	NT		NR	NT		NT	NT		122°F [50°C]	R	1	NR	NR	
Butyl Alcohol (Butanol)	80°F [27°C]	R		80°F [27°C]	R		80°F [27°C]	R		NT	NT		122°F [50°C]	R	
Butyl Benzyl Phthalate 100%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		140°F [60°C]	R	
Butyl Carbitol	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	
Butyl Carbitol Acetate	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Butyl Carbitol Diethyl Glycol 100%	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	
Butyl Cellosolve	NR	NR		NR	NR		NR	NR		NT	NT		122°F [50°C]	R	10

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	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Butyl Cellosolve Acetate	NT	NT		NT	NT		NT	NT		NT	NT		NT	NT	
Butyl Ether	NT	NT		NT	NT		NT	NT		NT	NT		80°F [27°C]	R	
Butyl Oxitol	100°F [38°C]	R		NR	R		100°F [38°C]	R		NT	NT		NT	NT	
Butylene Glycol	140°F [60°C]	R		140°F [60°C]	R		140°F [60°C]	R		NT	NT		100°F [38°C]	R	
Butylene Oxide	NT	NT		NR	NR		NT	NT		NT	NT		NR	NR	
Butyraldehyde	NR	NR		NR	NR		NR	NR		NR	NR		NR	NR	
Butyric Acid 100%	NR	NR		NR	NR		NR	NR		NR	NR		122°F [50°C]	R	
Butyric Acid 25%	NR	NR		NR	NR		NR	NR		NR	NR		122°F [50°C]	R	
Butyric Acid 5%	NR	NR		NR	NR		NR	NR		NR	NR		122°F [50°C]	R	
Butyric Acid 50%	NR	NR		NR	NR		NR	NR		NR	NR		122°F [50°C]	R	
Cadmium Cyanide Plating Bath	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	R	
Calcium Bisulfite, All	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	R	
Calcium Bromide 10%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Calcium Carbonate, All	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Calcium Carbonate, Dry	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Calcium Carbonate, Saturated	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Calcium Chlorate, All	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Calcium Chloride	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Calcium Chloride 40%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Calcium Chloride 50%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Calcium Chloride, Saturated	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Calcium Hydroxide	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		NR	NR	
Calcium Hydroxide 10%	140°F [60°C]	R		100°F [38°C]	R		140°F [60°C]	R		122°F [50°C]	R		NR	NR	
Calcium Hydroxide 15%	140°F [60°C]	R		100°F [38°C]	R		140°F [60°C]	R		122°F [50°C]	R		NR	NR	
Calcium Hydroxide 25%	140°F [60°C]	R		100°F [38°C]	R		140°F [60°C]	R		122°F [50°C]	R		NR	NR	
Calcium Hydroxide 5%	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		NR	NR	
Calcium Hydroxide 50%	140°F [60°C]	R		100°F [38°C]	R		140°F [60°C]	R		122°F [50°C]	R		NR	NR	

# Tank linings chemical resistance guide

Chemical environment and concentration (%)	Nova-Plate™ UHS			Dura-Plate™ UHS			Phenicon™ HS			Nova-Plate™ 325			Magnalux™ 41V		
	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Calcium Hypochlorite	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		NR	NR	
Calcium Hypochlorite 1%	NR	NR		NR	NR		NR	NR		NT	NT		NR	NR	
Calcium Hypochlorite 15%	NR	NR		NR	NR		NR	NR		NT	NT		NR	NR	
Calcium Hypochlorite 5%	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		NR	NR	
Calcium Lignosulfonate	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		122°F [50°C]	R	
Calcium Nitrate, All	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	R	
Calcium Oxide	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		140°F [60°C]	R	
Calcium Sulfate, Slurry	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	R	
Calcium Sulfite, All	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Carbon Tetrachloride	NT	NT		NT	NT		NT	NT		NR	NR		NT	NT	
Carbon Tetrachloride 90%; Chloroform 10%	NT	NT		NT	NT		NT	NT		NR	NR		NT	NT	
Castor Oil	100°F [38°C]	R	2	100°F [38°C]	R	2	100°F [38°C]	R	2	100°F [38°C]	R	2	140°F [60°C]	R	2
Cellosolve	NT	NT		NT	NT		NT	NT		NT	NT		122°F [50°C]	R	
Cellosolve Acetate	NT	NT		NT	NT		NT	NT		NT	R		NR	NR	
Chlorinated Brine pH <2.5	NR	NR		NR	NR		NR	NR		NT	NT		140°F [60°C]	R	
Chlorinated Brine pH >9.0	NR	NR		NR	NR		NR	NR		NT	NT		140°F [60°C]	R	
Chlorinated Brine pH 2.5 - 9.0	NR	NR		NR	NR		NR	NR		NT	NT		NR	R	
Chlorinated Pulp	NR	NR		NR	NR		NR	NR		NT	NT		140°F [60°C]	R	
Chlorinated Wax, All	NR	NR		NR	NR		NR	NR		NT	NT		140°F [60°C]	R	
Chlorination Washer	NR	NR		NR	NR		NR	NR		NT	NT		140°F [60°C]	R	
Chlorine Dioxide Generator	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Chlorine Dioxide Scrubber	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Chlorine Dioxide, Chlorine Bleach	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Chlorine Dioxide, Wet, Saturated	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Chlorine Water pH <2.5	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Chlorine Water pH >9.0	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Chlorine Water pH 2.5 - 9.0	NT	NT		NT	NT		NT	NT		NT	NT		NT	R	

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	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Chlorine, Dry Gas (fumes only)	NT	NT		NT	NT		NT	NT		NR	R		NT	R	
Chlorine, Wet Gas (fumes only)	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		NT	R	
Chloroacetic Acid 25%	NR	NR		NR	NR		NR	NR		NR	NR		100°F [38°C]	R	10
Chloroacetic Acid 26% - 50%	NR	R		NR	R		NR	R		NR	R		100°F [38°C]	R	10
Chloroacetic Acid 51% - 85%	NR	R		NR	R		NR	R		NR	R		NT	NT	
Chloroacetic Acid 86% - 100%	NR	R		NR	R		NR	R		NR	R		NR	NR	
Chlorobenzene	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	NR	
Chlorobenzene (Mono)	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Chlorobutane	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		122°F [50°C]	NR	
Chloroethene SM 111-Tri	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Chloroform	NT	NT		NT	NT		NT	NT		122°F [50°C]	E		NR	NR	
Chlorophenol	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Chlorotoluene	NT	NT		NT	NT		NT	NT		NT	NT		NR	R	
Chrome Bath, 19% Chromic Acid with Sodium Fluosilicate and Sulfate	NR	NR		NR	NR		NR	NR		NR	NR		NR	R	
Chromic Acid 10%	NT	NT		NR	R		NT	NT		NT	NT		NR	NR	
Chromic Acid 20%	NT	NT		NR	NT		NT	NT		NT	NT		NR	NR	
Chromic Acid 25%	NT	NT		NR	NT		NT	NT		NT	NT		NR	R	
Chromic Acid 30%	NT	NT		NR	NT		NT	NT		NT	NT		NR	R	
Chromic Acid 40%	NT	NT		NR	NT		NT	NT		NT	NT		NR	NR	
Chromic Acid 41% - 75%	NT	NT		NR	NT		NT	NT		NR	R		NR	NR	
Chromic Acid 5%	NT	NT		NR	R		NT	NT		NT	R		NR	NR	
Chromic Chloride	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Chromium Acid/Sulfuric Acid Mix 10%	NR	NR		NR	NR		NR	NR		NR	NR		NT	NT	
Chromium Plate	NR	NR		NR	NR		NR	NR		NR	NR		140°F [60°C]	R	6
Chromium Sulfate, All	NR	NR		NR	NR		NR	NR		NR	NR		140°F [60°C]	R	
Citric Acid 10%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Citric Acid 25%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	

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Chemical environment and concentration (%)	Nova-Plate™ UHS			Dura-Plate™ UHS			Phenicon™ HS			Nova-Plate™ 325			Magnalux™ 41V		
	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Citric Acid 35%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Citric Acid 40%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Citric Acid 5%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Citric Acid 50%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Citric Acid, All	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	R	
Clay, Saturated	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Coconut Oil, All	100°F [38°C]	R	2	NT	NT	2	100°F [38°C]	R	2	100°F [38°C]	R	2	140°F [60°C]	R	2
Cod Liver Oil	100°F [38°C]	R	2	NT	NT	2	100°F [38°C]	R	2	100°F [38°C]	R	2	80°F [27°C]	R	2
Copper Chloride 50%	100°F [38°C]	R		NT	NT		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Copper Chloride, All	100°F [38°C]	R		NT	NT		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Copper Chromate Arsenic 4%	NT	NT		NT	NT		NT	NT		NT	NT		80°F [27°C]	R	
Copper Cyanide, All	100°F [38°C]	R		NT	NT		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Copper Cyanide, Potassium	100°F [38°C]	R		NT	NT		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Copper Matte, 30% FeCl <sub>3</sub> , 19% HCL	NR	R		NR	R		NR	R		NT	NT		140°F [60°C]	R	
Copper Nitrate, All	100°F [38°C]	R		NT	NT		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Copper Plating, Acid	NT	NT		NT	NT		NT	NT		NT	NT		122°F [50°C]	R	
Copper Plating, Cyanide	NT	NT		NT	NT		NT	NT		NT	NT		122°F [50°C]	R	
Copper Sulfate, All	100°F [38°C]	R		NT	NT		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Corn Oil	140°F [60°C]	R	2	140°F [60°C]	R	2	140°F [60°C]	R	2	122°F [50°C]	R	2	140°F [60°C]	R	2
Corn Starch	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Corn Steep Liquor	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Corn Syrup	140°F [60°C]	R		140°F [60°C]	R		140°F [60°C]	R		NT	NT		140°F [60°C]	R	
Cottonseed Oil	80°F [27°C]	R	2	80°F [27°C]	R	2	80°F [27°C]	R	2	NT	NT	2	140°F [60°C]	R	2
Cresol (Cresylic Acid)	NR	R		NR	R		NR	R		NR	R		NR	NR	
Crude Oil, Sour	280°F [137°C]	R		150°F [66°C]	R		250°F (121°C)	R		350°F[177°C]	R		200°F [93°C]	R	
Crude Oil, Sweet	280°F [137°C]	R		150°F [66°C]	R		250°F (121°C)	R		350°F[177°C]	R		200°F [93°C]	R	
Cumene	80°F [27°C]	R		80°F [27°C]	R		122°F [50°C]	R		122°F [50°C]	R		100°F [38°C]	R	

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Chemical environment and concentration (%)	Nova-Plate™ UHS			Dura-Plate™ UHS			Phenicon™ HS			Nova-Plate™ 325			Magnalux™ 41V		
	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Cupric and Cuprous Chloride	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Cupric and Cuprous Cyanide	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Cyclohexane	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		122°F [50°C]	R	
Cyclohexanone	NR	NR		NR	NR		NT	NT		NR	NR		NT	NT	
Cyclohexene	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT	
Cyclohexylamine	NR	NR		NR	NR		NR	NR		NT	NT		NR	NR	
Cymene	NT	NT		NT	NT		NT	NT		NT	NT		122°F [50°C]	R	
Decanoic Acid, All	NR	NR		NR	NR		NR	NR		NR	NR		122°F [50°C]	R	
Decanol 100%	122°F [50°C]	R		122°F [50°C]	R		150°F [66°C]	R		122°F [50°C]	R		122°F [50°C]	R	
Decyl Alcohol (1-Decanol)	122°F [50°C]	R		122°F [50°C]	R		150°F [66°C]*	R		122°F [50°C]	R		122°F [50°C]	R	
Desmophen 670-90	140°F [60°C]	R		140°F [60°C]	R		140°F [60°C]	R		NT	NT		NT	NT	
Desmophen 800	140°F [60°C]	R		140°F [60°C]	R		140°F [60°C]	R		NT	NT		NT	NT	
Dextrose Solution	100°F [38°C]	R	5	100°F [38°C]	R	5	100°F [38°C]	R	5	100°F [38°C]	R	5	140°F [60°C]	R	5
Diallyl Phthalate	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		140°F [60°C]	R	
Dibutyl Carbitol	NT	NT		NR	NR		NT	NT		NT	NT		80°F [27°C]	R	
Dibutyl Ether	NT	NT		NR	NR		NT	NT		NT	NT		140°F [60°C]	R	
Dibutyl Phthalate	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		122°F [50°C]	R	
Dibutyl Sebacate, All	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		140°F [60°C]	R	
Dichlorotoluene	NT	NT		NR	NR		NT	NT		NT	NT		NR	NR	
Diesel Fuel	122°F [50°C]	R		122°F [50°C]	R		150°F [66°C]	R		122°F [50°C]	R		150°F [66°C]	R	
Diesel Fuel/Water 50:50 V/V	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	NT		140°F [60°C]	R	
Diesel Oil, #2, #3	122°F [50°C]	R		122°F [50°C]	R		150°F [66°C]	R		122°F [50°C]	R		150°F [66°C]	R	
Diethanolamine	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		122°F [50°C]	R	10
Diethyl Carbonate	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		NR	NR	
Diethyl Ether	NT	NT		NR	NR		NT	NT		NT	NT		NR	NR	
Diethyl Formamide	NR	NR		NR	NR		NR	NR		NR	NR		NR	NR	
Diethyl Glycol	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		150°F [66°C]	R	

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	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Diethyl Ketone	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Diethyl Sulfate	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	
Diethylbenzene	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		80°F [27°C]	R	
Diethylene Glycol	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Diethylene Glycol Monobutyl Ether	NR	NR		NR	NR		NR	NR		NT	NT		NT	NT	
Diethylenetriamine	NR	NR		NR	NR		NR	NR		NT	NT		NT	NT	
Diethylhexyl Phosphoric Acid 20%	NR	NR		NR	NR		NR	NR		NT	NT		140°F [60°C]	R	
Diethylketone	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Diisobutyl Ketone	NR	R		NR	NR		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R	
Diisobutyl Phthalate	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Diisobutylene	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R	
Diisopropanolamine	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Dilute Caustic	80°F [27°C]	R		80°F [27°C]	R		80°F [27°C]	R		NT	NT		NT	NT	
Dimethyl Aniline	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		122°F [50°C]	R	
Dimethyl Formamide	NR	NR		NR	NR		NT	NT		NT	NT		NR	R	
Dimethyl Morpholine	NR	NR		NR	NR		NT	NT		NT	NT		100°F [38°C]	R	
Dimethyl Phthalate	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		122°F [50°C]	R	
Dimethyl Sulfide	NR	NR		NR	NR		NT	NT		NT	NT		NR	NR	
Dimethyl Sulfoxide	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	
Dimethyl Thiazolidine	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Dimethylaminopropylamine	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Dioctyl Phthalate	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	10
Dipotassium Phosphate 50%	NR	NR		NR	NR		NT	NT		NT	NT		100°F [38°C]	R	
Dipropylene Glycol	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Divinylbenzene	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	10
Dodecanol (Lauryl Alco)	122°F [50°C]	R		122°F [50°C]	R		150°F [66°C]*	R		122°F [50°C]	R		140°F [60°C]	R	
Dodecene	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	

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	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Dodecyl Alcohol (Lauryl)	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	NT		122°F [50°C]	R	
Dodecyl Benzene Sulfonic Acid	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Dodecylbenzene	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		100°F [38°C]	R	
Dowanol DB Diethylene Glycol	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Dowanol DB Glycol Ether	NT	NT		NR	NR		NT	NT		NT	NT		100°F [38°C]	R	
Dowanol EB Glycol Ether	NT	NT		NR	NR		NT	NT		NT	NT		100°F [38°C]	R	
Dowanol PM Glycol Ether	NT	NT		NR	NR		NT	NT		NT	NT		NT	NR	
Epichlorohydrin	NT	NT		NR	NR		NT	NT		NT	NT		NT	R	
Epoxidized Soybean Oil	NT	NT		NR	NR		NT	NT		NT	NT		140°F [60°C]	R	
Esters, Fatty Acid	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Ethanol 10%	122°F [50°C]	R		122°F [50°C]	R		150°F [66°C]	R		122°F [50°C]	R		122°F [50°C]	R	
Ethanol 100%	122°F [50°C]	R		122°F [50°C]	R		150°F [66°C]	R		122°F [50°C]	R		100°F [38°C]	R	
Ethanol 20%	122°F [50°C]	R		122°F [50°C]	R		150°F [66°C]	R		122°F [50°C]	R		122°F [50°C]	R	
Ethanol 50%	122°F [50°C]	R		122°F [50°C]	R		150°F [66°C]*	R		122°F [50°C]	R		122°F [50°C]	R	
Ethanol 95%	122°F [50°C]	R		122°F [50°C]	R		150°F [66°C]*	R		122°F [50°C]	R		100°F [38°C]	R	
Ethanolamine	NT	NT		NT	NT		NT	NT		NT	NT		80°F [27°C]	R	10
Ethoxyl Ethanol	NT	NT		NT	NT		NT	NT		NT	NT		NT	NT	
Ethyl Acetate	NT	NT		NR	NR		NT	NT		NT	NT		NR	NR	
Ethyl Acrylate	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Ethyl Alcohol, Liquor (see Ethanol)	122°F [50°C]	R		122°F [50°C]	R	13	150°F [66°C]	R	13	122°F [50°C]	R		100°F [38°C]	R	
Ethyl Amine 20%	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Ethyl Chloride	NT	NT		NT	NT		NT	NT		HC	R		NR	NR	
Ethyl Chloroformate	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Ethyl Ether (Diethylether)	NT	NT		NT	NT		NT	NT		NT	NT		NT	NT	
Ethyl Hexyl Acrylate	NT	NT		NT	NT		NT	NT		NT	NT		NT	NT	
Ethyl Sulfate	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		100°F [38°C]	R	
Ethyl Thiochloroformate	NR	NR		NR	NR		NR	NR		NT	NT		NT	NT	

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Chemical environment and concentration (%)	Nova-Plate™ UHS			Dura-Plate™ UHS			Phenicon™ HS			Nova-Plate™ 325			Magnalux™ 41V		
	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Ethylbenzene	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	NT		100°F [38°C]	R	
Ethylbenzene: Benzene 2/3:1/3	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	NT		100°F [38°C]	R	
Ethylene Chloride	NT	NT		NR	NR		NT	NT		NT	NT		NR	NR	
Ethylene Glycol	100°F [38°C]	R	5	100°F [38°C]	R	5	100°F [38°C]	R	5	122°F [50°C]	R	5	140°F [60°C]	R	5
Ethylene Glycol Monobutyl Ether	NT	NT		NR	NR		NT	NT		NT	NT		100°F [38°C]	R	
Ethylene Oxide	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Eucalyptus Oil	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Fatty Acids, Saturated	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Fatty Acids, Unsaturated	NT	NT		NT	NT		NT	NT		122°F [50°C]	R	2	140°F [60°C]	R	2
Fatty Ester	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R	
Ferric Acetate, Saturated	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Ferric Ammonium Citrate Solution	NT	NT		NT	NT		NT	NT		NT	NT		NT	NT	
Ferric Chloride 38%	100°F [38°C]	R	7	NT	NT		100°F [38°C]	R	7	100°F [38°C]	R	7	140°F [60°C]	R	
Ferric Sulfate 12%	100°F [38°C]	R	7	NT	NT		100°F [38°C]	R	7	100°F [38°C]	R	7	140°F [60°C]	R	
Ferrous Chloride, All	100°F [38°C]	R	7	NT	NT		100°F [38°C]	R	7	100°F [38°C]	R	7	140°F [60°C]	R	
Fertilizer (Liquid Urea)	100°F [38°C]	R	6	100°F [38°C]	R	6	100°F [38°C]	R	6	100°F [38°C]	R	6	NT	NT	
Fertilizer, URAN	100°F [38°C]	R	6	100°F [38°C]	R	6	100°F [38°C]	R	6	100°F [38°C]	R	6	140°F [60°C]	R	
Fish Oil	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Fly Ash, Slurry	NR	R		NR	R		NR	R		NT	NT		140°F [60°C]	R	
Formaldehyde 44%	NT	NT		NR	R		NT	NT		NT	NT		140°F [60°C]	R	
Formaldehyde, All	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Formic Acid 10%	NR	NR		NR	NR		NR	NR		NR	NR		140°F [60°C]	R	
Formic Acid 98%	NR	NR		NR	NR		NR	NR		NR	NR		80°F [27°C]	R	10
Fuel Oil - No. 1	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		180°F [82°C]	R	
Fuel Oil - No. 2	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		180°F [82°C]	R	
Fuel Oil - No. 6 (Bunker C)	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		180°F [82°C]	R	
Fuel Oil, Heating Oil	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		180°F [82°C]	R	

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Chemical environment and concentration (%)	Nova-Plate™ UHS			Dura-Plate™ UHS			Phenicon™ HS			Nova-Plate™ 325			Magnalux™ 41V		
	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Furfural 100%	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Furfural to 10%	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Furfuryl Alcohol 100%	NR	NR		NR	NR		NT	NT		NT	NT		NR	NR	
Gasoline (White)	122°F [50°C]	R	6	122°F [50°C]	R	6	122°F [50°C]	R	6	122°F [50°C]	R	6	122°F [50°C]	R	
Gasoline (White) 50% Unleaded, 50% Tapwater	122°F [50°C]	R	6	122°F [50°C]	R	6	122°F [50°C]	R	6	122°F [50°C]	R	6	NT	NT	
Gasoline (White) 80% Unleaded Methanol 20%	NT	NT	6	NT	NT	6	NT	NT	6	122°F [50°C]	R	6	NR	NR	
Gasoline (White) 90% Unleaded, 10% Methanol	NR	NR	6	NR	NR	6	100°F [38°C]	R	6	122°F [50°C]	R	6	NT	NT	
Gasoline (White) 90% Unleaded, 10% MTBE	122°F [50°C]	R	6	122°F [50°C]	R	6	122°F [50°C]	R	6	122°F [50°C]	R	6	NT	NT	
Gasoline E85	122°F [50°C]	R	6	100°F [38°C]	R	6	122°F [50°C]	R	6	122°F [50°C]	R	6	NT	NT	
Gasoline Reference Fuel C	122°F [50°C]	R	6	122°F [50°C]	R	6	122°F [50°C]	R	6	122°F [50°C]	R	6	100°F [38°C]	R	
Gasoline, Aviation	122°F [50°C]	R	5	122°F [50°C]	R	5	122°F [50°C]	R	5	122°F [50°C]	R	5	140°F [60°C]	R	5
Gasoline, Commercial	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		100°F [38°C]	R	
Gasoline, Diesel 50%, 50% Tapwater	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		180°F [27°C]	R		122°F [50°C]	R	
Gasoline, Jet Fuel JP4	122°F [50°C]	R		80°F [27°C]	R		122°F [50°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Gasoline, Leaded	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Gasoline, Premium Unleaded	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Gasoline, Regular Unleaded	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Glacial Acetic Acid (see Acetic Acid 100%)	NR	NR		NR	NR		NR	NR		NR	NR		100°F [38°C]	NR	
Glucose	NT	NT		NT	NT		NT	NT		NT	NT		150°F [66°C]	R	
Glutaraldehyde 50%	NR	NR		NR	NR		NR	NR		NR	NR		100°F [38°C]	NR	
Glutaric Acid 50%	NR	NR		NR	NR		NR	NR		NR	NR		100°F [38°C]	R	
Glycerin	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Glycerol	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		100°F [38°C]	R	
Glycol	100°F [38°C]	R	5	100°F [38°C]	R	5	100°F [38°C]	R	5	122°F [50°C]	R	5	140°F [60°C]	R	5
Glycolic Acid 70%	NT	NT		NT	NT		NT	NT		NT	NT		80°F [27°C]	R	
Glyconic Acid 50%	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	
Glyoxal 40%	NR	NR		NR	NR		NR	NR		NR	NR		100°F [38°C]	R	

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Chemical environment and concentration (%)	Nova-Plate™ UHS			Dura-Plate™ UHS			Phenicon™ HS			Nova-Plate™ 325			Magnalux™ 41V		
	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Green Liquor, All	NR	R		NR	R		NR	R		122°F [50°C]	R		100°F [38°C]	R	
Heptane	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Heptanoic Acid	NT	R		NR	R		NT	R		NT	NT		100°F [38°C]	R	
Hexachloroethane	NR	NR		NR	NR		NR	NR		NR	NR		NR	R	
Hexamethylenetetramine 40%	NR	NR		NR	NR		NR	NR		NR	NR		100°F [38°C]	R	
Hexane	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Hexylene Glycol	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Hydraulic Fluid	140°F [60°C]	R	6	140°F [60°C]	R	6	140°F [60°C]	R	6	NT	NT		140°F [60°C]	R	6
Hydrazine	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Hydrazine 35%	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Hydrazine Hydrate	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Hydroiodic Acid 20%	NR	NR		NR	NR		NR	NR		NT	NT		100°F [38°C]	R	7
Hydroiodic Acid 40%	NR	NR		NR	NR		NR	NR		NT	NT		100°F [38°C]	R	7
Hydrobromic Acid 20%	NR	NR		NR	NR		NR	NR		NT	NT		100°F [38°C]	R	7
Hydrobromic Acid 25%	NR	NR		NR	NR		NR	NR		NT	NT		100°F [38°C]	R	7
Hydrobromic Acid 50%	NR	NR		NR	NR		NR	NR		NT	NT		100°F [38°C]	R	7
Hydrobromic Acid 62%	NR	NR		NR	NR		NR	NR		NT	NT		NT	R	7
Hydrochloric Acid 10%	NR	NR		NR	NR		NR	NR		80°F [27°C]	R	7	122°F [50°C]	R	7
Hydrochloric Acid 15%	NR	NR		NR	NR		NR	NR		80°F [27°C]	R	7	122°F [50°C]	R	7
Hydrochloric Acid 20%	NR	NR		NR	NR		NR	NR		80°F [27°C]	R	7	122°F [50°C]	R	7
Hydrochloric Acid 30%	NR	NR		NR	NR		NR	NR		80°F [27°C]	R	7	100°F [38°C]	R	7
Hydrochloric Acid 37%	NR	NR		NR	NR		NR	NR		80°F [27°C]	R	7	100°F [38°C]	R	7
Hydrochloric Acid 5%	NR	NR		NR	NR		NR	NR		80°F [27°C]	R	7	122°F [50°C]	R	7
Hydrocyanic Acid, All	NR	NR		NR	NR		NR	NR		NR	NR		140°F [60°C]	R	7
Hydrofluoric Acid 35%	NR	NR		NR	NR		NR	NR		NR	NT		NT	NT	
Hydrofluoric Acid 10%	NR	NR		NR	NR		NR	NR		NR	NT		NT	NT	
Hydrofluoric Acid 20%	NR	NR		NR	NR		NR	NR		NR	NT		NT	NT	

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	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Hydrofluoric Acid 35%	NR	NR		NR	NR		NR	NR		NR	NT		NT	NT	
Hydrofluoric Acid 50%	NR	NR		NR	NR		NR	NR		NR	NT		NT	NT	
Hydrofluoric Acid 70%	NR	NR		NR	NR		NR	NR		NR	NT		NT	NT	
Hydrofluosilicic Acid 10%	NR	NR		NR	NR		NR	NR		NR	NT		NT	NT	
Hydrofluosilicic Acid 25%	NR	NR		NR	NR		NR	NR		NR	NT		NT	NT	
Hydrofluosilicic Acid 30%	NR	NR		NR	NR		NR	NR		NR	NT		NR	NR	
Hydrofluosilicic Acid 35%	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Hydrogen Peroxide 10%	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Hydrogen Peroxide 30%	NR	NR		NR	NR		NR	NR		NT	NT		122°F [50°C]	R	
Hydrogen Peroxide 5%	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Hydrogen Peroxide 50%	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Hydrogen Sulfide 5%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		140°F [60°C]	R	
Hydrogen Sulfide Gas	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Hydrogen Sulfide, Wet	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Hydrosulfite Bleach, Aqueous	NR	R		NR	R		NR	R		NT	NT		140°F [60°C]	R	
Hydroxyacetic Acid 70% (see Glycolic Acid)	NR	R		NR	R		NR	R		NT	NT		80°F [27°C]	R	
Hypochlorous Acid 10%	NR	R		NR	R		NR	NT		NR	NT		140°F [60°C]	R	
Hypophosphorous Acid 50%	NR	R		NR	R		NR	R		NR	NT		100°F [38°C]	R	
Iodine Vapor	NR	NR		NR	NR		NR	NR		NT	NT		122°F [50°C]	R	
Iodine, Crystals	NT	NT		NT	NT		NT	NT		NT	NT		122°F [50°C]	R	
Iron and Steel Cleaning Bath	NR	NR		NR	NR		NR	NR		NT	NT		140°F [60°C]	R	
Iron Plating Solution	NR	NR		NR	NR		NR	NR		NT	NT		140°F [60°C]	R	6
Iso Butane	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		122°F [50°C]	R	
Isoamyl Alcohol	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		NT	NT		140°F [60°C]	R	
Isobutyl Alcohol	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		NT	NT		140°F [60°C]	R	
Isodecanol Alcohol	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		NT	NT		140°F [60°C]	R	
Isononyl Alcohol	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		NT	NT		140°F [60°C]	R	

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	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Isononyl Alcohol	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		NT	NT		140°F [60°C]	R	
Isooctylthioglycolcolate	NT	NT		NT	NT		NT	NT		NT	NT		122°F [50°C]	R	
Isoocetyl Alcohol	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		NT	NT		140°F [60°C]	R	
Isophorone	NT	NT		NR	NR		NT	NT		NT	NT		100°F [38°C]	R	
Isopropanol Amine	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Isopropyl Acetate	NT	NT		NR	NR		NT	NT		NT	NT		NR	NR	
Isopropyl Alcohol (Isopropanol)	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R	
Isopropyl Amine	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Isopropyl Ether	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Isopropyl Myristate	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Isopropyl Palmitate	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Itaconic Acid 25%	NR	NT		NR	NT		NR	NT		NT	NT		100°F [38°C]	R	
Jet Fuels	122°F [50°C]	R	5	122°F [50°C]	R	5	122°F [50°C]	R	5	122°F [50°C]	R	5	140°F [60°C]	R	5
Jet Turbine Oil	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	5
Kaolin (Saturated China Clay)	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Kerosene	80°F [27°C]	R		80°F [27°C]	R		122°F [50°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Lactic Acid 10%	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	R	
Lactic Acid 20%	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	R	
Lactic Acid 5%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Lactic Acid Concentrated	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	R	
Lactic Acid, All	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	R	
Lard	140°F [60°C]	R	2	140°F [60°C]	R	2	140°F [60°C]	R	2	NT	NT	2	140°F [60°C]	R	2
Latex	100°F [38°C]	R	6	100°F [38°C]	R	6	100°F [38°C]	R	6	NT	NT	6	140°F [60°C]	R	6
Lauric Acid	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Lauryl Alcohol	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Lauryl Chloride	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	R	
Lauryl Mercaptain, All	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	

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Chemical environment and concentration (%)	Nova-Plate™ UHS			Dura-Plate™ UHS			Phenicon™ HS			Nova-Plate™ 325			Magnalux™ 41V		
	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Lead Acetate, All	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Lead Chloride	100°F [38°C]	R		NT	NT		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Lead Nitrate	100°F [38°C]	R		NT	NT		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Lecithin	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		140°F [60°C]	R	
Levulinic Acid, All	NR	NT		NR	NT		NR	NT		NR	NT		140°F [60°C]	R	
Limestone, Saturated	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		140°F [60°C]	R	
Linseed Oil	100°F [38°C]	R	2	NT	NT		100°F [38°C]	R	2	100°F [38°C]	R	2	140°F [60°C]	R	2
Lithium Bromide, Saturated	100°F [38°C]	R		NT	NT		100°F [38°C]	R		100°F [38°C]	R		140°F [60°C]	R	
Lithium Carbonate, Saturated	100°F [38°C]	R		NT	NT		100°F [38°C]	R		100°F [38°C]	R		140°F [60°C]	R	
Lithium Chloride 40%	100°F [38°C]	R		NT	NT		100°F [38°C]	R		100°F [38°C]	R		140°F [60°C]	R	
Lithium Chloride, Saturated	100°F [38°C]	R		NT	NT		100°F [38°C]	R		100°F [38°C]	R		140°F [60°C]	R	
Lithium Hydroxide 10%	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		NR	NR	
Lithium Hydroxide, Saturated	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		NR	NR	
Lithium Hypochlorite, All	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
LP Gas	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Lube / Motor Oils, All	122°F [50°C]	R	6	122°F [50°C]	R	6	122°F [50°C]	R	6	122°F [50°C]	R	6	140°F [60°C]	R	6
Magnesium Bisulfite, All	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Magnesium Carbonate, All	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Magnesium Chloride, All	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Magnesium Hydroxide, All	140°F [60°C]	R		100°F [38°C]	R		140°F [60°C]	R		122°F [50°C]	R		NR	NR	
Magnesium Nitrate, All	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		140°F [60°C]	R	
Magnesium Sulfate, All	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		140°F [60°C]	R	
Maleic Acid	NR	NT		NR	NT		NT	NT		NT	NT		122°F [50°C]	R	
Maleic Anhydrite	NR	NT		NR	NT		NR	NT		NR	NT		100°F [38°C]	R	
Manganese Chloride, All	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Manganese Sulfate, All	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
MEK Peroxide in Plasticizer	NT	NT		NT	NT		NT	NT		NT	NT		NT	NT	

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Chemical environment and concentration (%)	Nova-Plate™ UHS			Dura-Plate™ UHS			Phenicon™ HS			Nova-Plate™ 325			Magnalux™ 41V		
	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Mercaptoacetic Acid, All	NR	NT		NR	NT		NR	NT		NR	NT		100°F [38°C]	NR	
Methanol 100%	100°F [38°C]	R	5, 13	NR	R		NR	NR		NR	NR		80°F [27°C]	R	5
Methanol 5%	100°F [38°C]	R		NR	R		NR	NR		100°F [38°C]	R		100°F [38°C]	R	
Methyl Acetate	NT	NT		NR	NR		NT	NT		80°F [27°C]	R		NR	NR	
Methyl Amyl Ketone MAK	NT	NT		NT	NT		100°F [38°C]	R		NT	NT		NT	NT	
Methyl Cellosolve	NR	NR		NR	NR		NR	NR		NT	NT		NT	NT	
Methyl Chloride	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Methyl Diethanolamine	NT	NT		NT	NT		NT	NT		NT	NT		122°F [50°C]	R	
Methyl Ethyl Ketone (MEK)	NT	NT		NT	NT		100°F [38°C]	R		NT	NT		NR	NR	
Methyl Isobutyl Ketone (MIBK)	NT	NT		NT	NT		100°F [38°C]	R		NT	NT		NR	NR	
Methyl Tertiary Butyl Ether (MTBE)	80°F [27°C]	R		80°F [27°C]	R		122°F [50°C]	R		NT	NT		NR	NR	
Methylamine	NR	NR		NR	NR		NR	NR		NT	NT		NR	NR	
Methylaminoethanol	NR	NR		NR	NR		NR	NR		NT	NT		NR	NR	
Methylamyl Alcohol	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Methyldiethanolamine 50%	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	
Methylene Chloride	NT	NT		NR	NR		NT	NT		122°F [50°C]	R		NR	NR	
Methylstyrene	100°F [38°C]	R	12	100°F [38°C]	R	12	100°F [38°C]	R	12	100°F [38°C]	R	12	100°F [38°C]	R	10, 12
Mineral Oils	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Mineral Spirits	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Molasses	100°F [38°C]	R	5	100°F [38°C]	R	5	100°F [38°C]	R	5	NT	NT		140°F [60°C]	R	5
Molten Sulfur	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Monomethylhydrazine	NR	NR		NR	NR		NR	NR		NT	NT		NR	NR	
Morpholine	NR	NR		NR	NR		NT	NT		NT	NT		NR	NR	
Motor Oil	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		NT	NT		140°F [60°C]	R	
Muratic Acid (see Hydrochloric Acid)															
Myristic Acid	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Naphthalene	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	

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	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Naphthas	122°F [50°C]	R	6	100°F [38°C]	R	6	122°F [50°C]	R	6	122°F [50°C]	R	6	122°F [50°C]	R	
Naphthenic Acid	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Neodene	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		NT	NT	
Neodol	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		NT	NT	
Nickel Chloride 50%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Nickel Chloride, All	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Nickel Nitrate, All	100°F [38°C]	R		NT	NT		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Nickel Plating Solution #1	NT	NT		NR	NR		NT	NT		NT	NT		140°F [60°C]	R	
Nickel Plating Solution #2	NT	NT		NR	NR		NT	NT		NT	NT		140°F [60°C]	R	
Nickel Plating, Bright	NT	NT		NR	NR		NT	NT		NT	NT		140°F [60°C]	R	
Nickel Sulfate, All	100°F [38°C]	R		NT	NT		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Nitric Acid 0% - 5%	NR	NR		NR	NR		NR	NR		NT	NT		140°F [60°C]	R	7
Nitric Acid 6% - 10%	NR	NR		NR	NR		NR	NR		NT	NT		122°F [50°C]	R	7
Nitric Acid 11% - 20%	NR	NR		NR	NR		NR	NR		NT	NT		100°F [38°C]	R	7
Nitric Acid 21%- 29%	NR	NR		NR	NR		NR	NR		NT	NT		100°F [38°C]	R	7
Nitric Acid 30% - 35%	NR	NR		NR	NR		NR	NR		NT	NT		NR	NR	
Nitric Acid 36% - 40%	NR	NR		NR	NR		NR	NR		NT	NT		NR	R	
Nitric Acid 60%	NR	NR		NR	NR		NR	NR		NT	NT		NR	R	
Nitric Acid 70%	NR	NR		NR	NR		NR	NR		NT	NT		NR	NR	
Nitric Acid, Fumes <60%	NR	NR		NR	NR		NR	NR		NT	NT		140°F [60°C]	NR	
n-Methyl-2-Pyrrolidone	NT	NT		NT	NT		NT	NT		NT	NT		NR	R	
n-Octyl Mercaptan	100°F [38°C]	R		NR	R		100°F [38°C]	R		NT	NT		NT	NT	
Nonylphenol	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	
Octanoic Acid (see Caprylic Acid)	NT	NT		NR	NR		NT	NT		NT	NT		140°F [60°C]	R	
Octanol	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R	
Oil, Lubricating	122°F [50°C]	R	6	122°F [50°C]	R	6	122°F [50°C]	R	6	122°F [50°C]	R	6	140°F [60°C]	R	6
Oil, Silicon	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	

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	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Oil, Turbine-Synthetic	150°F [66°C]	R		150°F [66°C]	R		150°F [66°C]	R		NT	NT		140°F [60°C]	R	
Oil, Water Soluble	NT	NT		NT	NT		NT	NT		NT	NT		NT	NT	
Oleic Acid, All	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	R	
Oleo Margarine	NT	NT		NT	NT		NT	NT		NT	NT		NT	NT	
Oleum (Fuming Sulfuric Acid)	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Olive Oils	122°F [50°C]	R	2	NT	R		122°F [50°C]	R	2	NT	NT		140°F [60°C]	R	2
Orthoxylene	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		100°F [38°C]	R	
Oxalic Acid 10%	NT	NT		NT	NT		NT	NT		NR	R		100°F [38°C]	R	
Oxalic Acid, Saturated	NT	NT		NT	NT		NT	NT		NR	R		100°F [38°C]	R	
Palm Oil	122°F [50°C]	R	2	NT	R		122°F [50°C]	R	2	122°F [50°C]	R	2	140°F [60°C]	R	2
Palmitic Acid	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Paraffin Wax	150°F [66°C]	R		150°F [66°C]	R		150°F [66°C]	R		150°F [66°C]	R		100°F [38°C]	R	
Paraformaldehyde 50%	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Paraxylene	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		NT	NT		NR	NR	
Peanut Butter	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Peanut Oil	122°F [50°C]	R	2	NT	R		122°F [50°C]	R	2	NT	NT		140°F [60°C]	R	2
Pentachloroethane	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Pentane	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R	
Pentanedioic Acid (see Glutaric Acid 50%)	NR	NR		NR	NR		NR	NR		NT	NT		100°F [38°C]	R	
Perchloric Acid 10%	NR	NR		NR	NR		NR	NR		NT	NT		140°F [60°C]	R	
Perchloric Acid 30%	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	
Petroleum Jelly	150°F [66°C]	R		150°F [66°C]	R		150°F [66°C]	R		150°F [66°C]	NT		140°F [60°C]	R	
Phenol (Carbolic Acid) 100%	NR	NR		NR	NR		NR	NR		NR	NR		NR	NR	
Phenol Formaldehyde Resin, All	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	6
Phosphoric 100% (Vapor)	NT	NT		NR	NR		NT	NT		NR	R		140°F [60°C]	R	7
Phosphoric Acid 10%	NR	NR		NR	NR		NR	NR		122°F [50°C]	R		140°F [60°C]	R	7
Phosphoric Acid 100% (Vapor and Conditions)	NT	NT		NR	NR		NT	NT		NR	NR		100°F [38°C]	R	7

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	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Phosphoric Acid 105% (Superphos)	NR	NR		NR	NR		NR	NR		NT	NT		140°F [60°C]	R	7
Phosphoric Acid 115% (Polyphos)	NR	NR		NR	NR		NR	NR		NT	NT		140°F [60°C]	R	7
Phosphoric Acid 20%	NR	NR		NR	NR		NR	NR		NR	NR		140°F [60°C]	R	7
Phosphoric Acid 40%	NT	NT		NR	NR		NT	NT		NR	NR		140°F [60°C]	R	7
Phosphoric Acid 5%	NR	NR		NR	NR		NR	NR		NR	NR		140°F [60°C]	R	7
Phosphoric Acid 50%	NR	NR		NR	NR		NR	NR		NR	NR		140°F [60°C]	R	7
Phosphoric Acid 85%	NR	NR		NR	NR		NR	NR		NR	R		140°F [60°C]	R	7
Phosphoric Acid:HCL Acid 15:9	NT	NT		NR	NR		NT	NT		NT	NT		NT	NT	
Phosphorous Acid 70%	NT	NT		NR	NR		NT	NT		NT	NT		140°F [60°C]	R	7
Phthalic Acid, All	NR	NR		NR	NR		NR	NR		NR	NR		140°F [60°C]	R	
Phthalic Anhydride	NR	NR		NR	NR		NR	NR		NR	NR		NT	NT	
Pickling Acids	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Pine Oil	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Platformate	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		NT	NT	
Polyol	140°F [60°C]	R	6	140°F [60°C]	R	6	140°F [60°C]	R	6	NT	NT		140°F [60°C]	R	6
Potassium Acetate	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	R	
Potassium Bichromate	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Potassium Bromide, All	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Potassium Carbonate 10%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Potassium Carbonate 25%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Potassium Carbonate 50%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Potassium Chlorate	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Potassium Chloride 20%	140°F [60°C]	R		140°F [60°C]	R		140°F [60°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Potassium Chloride, All	140°F [60°C]	R		140°F [60°C]	R		140°F [60°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Potassium Cyanide	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Potassium Ferricyanide, All	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Potassium Hydroxide 10%	100°F [38°C]	R	3	100°F [38°C]	R	3	150°F [66°C]	R	3	150°F [66°C]	R		NR	NR	

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	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Potassium Hydroxide 20%	100°F [38°C]	R	3	100°F [38°C]	R	3	150°F [66°C]	R	3	150°F [66°C]	R		NR	NR	
Potassium Hydroxide 25%	100°F [38°C]	R	3	100°F [38°C]	R	3	150°F [66°C]	R	3	150°F [66°C]	R		NR	NR	
Potassium Hydroxide 44%; Acrylic Acid 21%	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Potassium Hydroxide 45%	150°F [66°C]	R	3	150°F [66°C]	R	3	150°F [66°C]	R	3	122°F [50°C]	R	3	NR	NR	
Potassium Hydroxide 5%	80°F [27°C]	R	3	80°F [27°C]	R	3	80°F [27°C]	R	3	122°F [50°C]	R	3	NR	NR	
Potassium Hydroxide 50%	150°F [66°C]	R	3	150°F [66°C]	R	3	150°F [66°C]	R	3	122°F [50°C]	R	3	NR	NR	
Potassium Hypochlorite	NR	NR		NR	NR		NT	NT		NT	NT		NR	NR	
Potassium Iodide, All	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	
Potassium Nitrate, All	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	
Potassium Permanganate, All	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	
Potassium Persulfate, All	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	
Potassium Phosphate 50%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		NT	NT	
Potassium Pyrophosphate 60%	NT	NT		NT	NT		NT	NT		NT	NT		NT	NT	
Potassium Silicofluoride	NT	NT		NT	NT		NT	NT		NT	NT		NT	NT	
Potassium Sulfate, All	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		100°F [38°C]	R	
Potassium Sulfite 45%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		100°F [38°C]	R	
Potassium Thiosulfate Solution	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		NR	R	
Power Steering Fluid										NT	NT		NT	NT	
Propane	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		100°F [38°C]	R	
Propanediol	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		122°F [50°C]	R	
Propionic Acid 50%	NT	NT		NR	NR		NR	NR		NR	NR		122°F [50°C]	R	
Propyl Acetate	NT	NT		NR	NR		NT	NT		NT	NT		NR	NR	
Propyl Alcohol	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R	
Propyl Cellosolve	NR	R		NR	NR		NR	R		NT	NT		80°F [27°C]	R	
Propylene Glycol	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Propylene Glycol [Dowanol PMA] Monomethyl Ether Acetate 100%	NR	NR		NR	NR		NT	NT		NT	NT		NT	NT	

# Tank linings chemical resistance guide

Chemical environment and concentration (%)	Nova-Plate™ UHS			Dura-Plate™ UHS			Phenicon™ HS			Nova-Plate™ 325			Magnalux™ 41V		
	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Propylene Glycol [Dowanol PMA]	NR	NR		NR	NR		NT	NT		NT	NT		NT	NT	
Monomethyl Ether Acetate 20%	NR	NR		NR	NR		NT	NT		NT	NT		NT	NT	
p-Toluenesulfonic Acid	NT	NT		NT	NT		NT	NT		NT	NT		NT	NT	
Pulp Mill Blow Down from Digester	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Pulp, Slurry	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		NT	NT		NT	NT	
PVC Powder	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	
Pyridine 100%	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Quaternary Amine Salts	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Rayon Spin Bath	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Rayon Spin Liquor	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Rock Salt	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Salicylic Acid	NT	NT		NT	NT		NT	NT		NT	NT		122°F [50°C]	R	
Selenious Acid, All	NR	NR		NR	NR		NR	NR		NT	NT		140°F [60°C]	R	
Shell, Orthoxylene	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		100°F [38°C]	R	
Silver Nitrate	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Silver Plating Solution	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Skydrol	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		80°F [27°C]	R	
Soda Ash (Sodium Carbonate)	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Sodium (Acid) Phosphate	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Sodium Acetate	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Sodium Alkyl Aryl Sulfate, All	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Sodium Aluminate, All	140°F [60°C]	R		140°F [60°C]	R		140°F [60°C]	R		NT	NT		122°F [50°C]	R	
Sodium Benzoate	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Sodium Bicarbonate	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		NT	NT	
Sodium Bicarbonate 10%	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		NT	NT	
Sodium Bicarbonate 20%	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		NT	NT	

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Chemical environment and concentration (%)	Nova-Plate™ UHS			Dura-Plate™ UHS			Phenicon™ HS			Nova-Plate™ 325			Magnalux™ 41V		
	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Sodium Bicarbonate, Saturated	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		NT	NT	
Sodium Bisulfate, All	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	R	
Sodium Bisulfide	NT	R		NT	R		NT	R		NT	NT		140°F [60°C]	R	
Sodium Bisulfite 38%	NT	R		NR	NR		NT	R		122°F [50°C]	R		140°F [60°C]	R	
Sodium Bisulfite, Saturated	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Sodium Borate, Saturated	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Sodium Bromate	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Sodium Bromate 5%	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Sodium Bromide	NT	R		NT	R		NT	R		NT	NT		140°F [60°C]	R	
Sodium Bromide 5%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		140°F [60°C]	R	
Sodium Bromide Waste	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		140°F [60°C]	R	
Sodium Bromide;Sodium Hydroxide	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Sodium Carbonate 10%	140°F [60°C]	R		140°F [60°C]	R		140°F [60°C]	R		140°F [60°C]	R		NT	NT	
Sodium Carbonate 25%	140°F [60°C]	R		140°F [60°C]	R		140°F [60°C]	R		140°F [60°C]	R		NT	NT	
Sodium Carbonate 30%	140°F [60°C]	R		140°F [60°C]	R		140°F [60°C]	R		140°F [60°C]	R		NT	NT	
Sodium Carbonate 35%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		140°F [60°C]	R		NT	NT	
Sodium Carbonate, Saturated	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		140°F [60°C]	R		NT	NT	
Sodium Carbonate, Slurry	140°F [60°C]	R		140°F [60°C]	R		140°F [60°C]	R		140°F [60°C]	R		NT	NT	
Sodium Chlorate (solid)	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Sodium Chlorate 50%	NR	NR		NR	NR		NT	NT		NT	NT		140°F [60°C]	R	
Sodium Chlorate; Sodium Chloride	140°F [60°C]	R		NT	NT		140°F [60°C]	R		NT	NT		140°F [60°C]	R	
Sodium Chloride	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Sodium Chloride Solution 10%	140°F [60°C]	R		100°F [38°C]	R		140°F [60°C]	R		NT	NT		140°F [60°C]	R	
Sodium Chloride; Sodium Hydrosulfite	NR	NR		NR	NR		NR	NR		NT	NT		140°F [60°C]	R	
Sodium Chloride; Sodium Hydroxide	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Sodium Chlorite pH >6	NR	NT		NR	NT		NR	NT		122°F [50°C]	R		122°F [50°C]	R	
Sodium Chlorite, Saturated	80°F [27°C]	R		80°F [27°C]	R		80°F [27°C]	R		122°F [50°C]	R		122°F [50°C]	R	

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Chemical environment and concentration (%)	Nova-Plate™ UHS			Dura-Plate™ UHS			Phenicon™ HS			Nova-Plate™ 325			Magnalux™ 41V		
	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Sodium Chromate (saturated)	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Sodium Citrate	100°F [38°C]	R		NT	NT		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Sodium Cyanide	100°F [38°C]	R		NT	NT		100°F [38°C]	R		NT	NT		140°F [60°C]	R	10
Sodium Cyanide 15%	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	10
Sodium Hexametaphosph, All	NR	NR		NR	NR		NR	NR		NT	NT		100°F [38°C]	R	
Sodium Hydrosulfite 40%	100°F [38°C]	R		NT	R		100°F [38°C]	R		NT	NT		NR	R	
Sodium Hydroxide 10%	100°F [38°C]	R	3	100°F [38°C]	R	3	150°F [66°C]	R	3	150°F [66°C]	R	3	NR	NR	
Sodium Hydroxide 2%	140°F [60°C]	R	3	140°F [60°C]	R	3	150°F [66°C]	R	3	150°F [66°C]	R	3	NR	NR	
Sodium Hydroxide 20%	100°F [38°C]	R	3	100°F [38°C]	R	3	150°F [66°C]	R	3	150°F [66°C]	R	3	NR	NR	
Sodium Hydroxide 25%	100°F [38°C]	R	3	100°F [38°C]	R	3	150°F [66°C]	R	3	150°F [66°C]	R	3	NR	NR	
Sodium Hydroxide 5%	140°F [60°C]	R	3	140°F [60°C]	R	3	150°F [66°C]	R	3	150°F [66°C]	R	3	NR	NR	
Sodium Hydroxide 50%	100°F [38°C]	R	3	100°F [38°C]	R	3	150°F [66°C]	R	3	150°F [66°C]	R	3	NR	NR	
Sodium Hypochlorite 12.5%	NR	NR		NR	R		NR	R		NR	NR		NR	R	
Sodium Hypochlorite 15%	NR	NR		NR	NT		NR	NT		NR	NR		NR	R	
Sodium Hypochlorite 20%	NR	NR		NR	NR		NR	NR		NR	NR		NR	R	
Sodium Hypochlorite 3%	NR	NR		NR	R		NR	R		NR	NR		NR	R	
Sodium Hypochlorite 5.5%	NR	NR		NR	R		NR	R		NR	NR		NR	R	
Sodium Lauryl Sulfate 20%	NT	NT		NT	NT		NT	NT		NT	NT		122°F [50°C]	R	
Sodium Nitrate, All	140°F [60°C]	R		140°F [60°C]	R		140°F [60°C]	R		122°F [50°C]	R		140°F [60°C]	R	10
Sodium Nitrite, 41-47%	NT	NT		NT	NT		NT	R		NT	NT		NT	NT	
Sodium N-Methyldithiocarbamate	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Sodium Oxalate, Saturated	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Sodium Persulfate	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Sodium Phosphate (Tri), All	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	
Sodium Phosphate 10%	100°F [38°C]	R		NT	NT		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Sodium Phosphate 50%	100°F [38°C]	R		NT	NT		100°F [38°C]	R		122°F [50°C]	R		140°F [60°C]	R	
Sodium Polyacrylate 25%	100°F [38°C]	R		NT	NT		100°F [38°C]	R		NT	NT		140°F [60°C]	R	

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Chemical environment and concentration (%)	Nova-Plate™ UHS			Dura-Plate™ UHS			Phenicon™ HS			Nova-Plate™ 325			Magnalux™ 41V		
	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Sodium Polymethacrylate	NT	NT		NT	NT		NT	NT		NT	NT		122°F [50°C]	R	
Sodium Silicate, All	100°F [38°C]	R		NT	NT		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Sodium Sulfate, All	NT	R		NT	R		NT	R		NT	NT		140°F [60°C]	R	
Sodium Sulfide, All	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Sodium Sulfide, Saturated	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Sodium Sulfitte, All	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Sodium Tartrate, All	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Sodium Tetraborate, Saturated	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Sodium Thiocyanate 57%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Sodium Thiosulfate (Hypo)	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	
Soya Oil	100°F [38°C]	R	2	100°F [38°C]	R	2	100°F [38°C]	R	2	122°F [50°C]	R	2	140°F [60°C]	R	
Soybean Oil	100°F [38°C]	R	2	100°F [38°C]	R	2	100°F [38°C]	R	2	100°F [38°C]	R	2	140°F [60°C]	R	
Stannic Chloride, All	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Stannous Chloride, All	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Starch	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Stearic Acid, All	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Steep Water	140°F [60°C]	R		140°F [60°C]	R		140°F [60°C]	R		NT	NT		140°F [60°C]	R	
Strontium Nitrate, 41-47%	NT	NT		NT	NT		NT	R		NT	NT		NT	NT	
Styrene	100°F [38°C]	R	12	100°F [38°C]	R	12	100°F [38°C]	R	12	100°F [38°C]	R	12	100°F [38°C]	R	10, 12
Sugar 10%	100°F [38°C]	R	5, 8	100°F [38°C]	R	5, 8	100°F [38°C]	R	5, 8	NT	NT		140°F [60°C]	R	5, 8
Sugar Beet, Liquor	100°F [38°C]	R	5, 8	100°F [38°C]	R	5, 8	100°F [38°C]	R	5, 8	122°F [50°C]	R	5, 8	140°F [60°C]	R	5, 8
Sugar Cane, Liquor	100°F [38°C]	R	5, 8	100°F [38°C]	R	5, 8	100°F [38°C]	R	5, 8	122°F [50°C]	R	5, 8	140°F [60°C]	R	5, 8
Sugar, Saturated	100°F [38°C]	R	5, 8	100°F [38°C]	R	5, 8	100°F [38°C]	R	5, 8	122°F [50°C]	R	5, 8	140°F [60°C]	R	5, 8
Sulfamic Acid 10%	NT	NT		NR	NR		NT	NT		NT	NT		140°F [60°C]	R	
Sulfamic Acid 25%	NT	NT		NR	NR		NT	NT		NT	NT		140°F [60°C]	R	
Sulfite/Sulfate Black Liquors	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	R	
Sulfolane 60%	NT	NT		NT	NT		NT	NT		NT	NT		NT	NT	

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Chemical environment and concentration (%)	Nova-Plate™ UHS			Dura-Plate™ UHS			Phenicon™ HS			Nova-Plate™ 325			Magnalux™ 41V		
	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Sulfur Dioxide, Dry Gas	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	R	
Sulfur Dioxide, Wet Gas	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	R	
Sulfur Trioxide, Dry	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Sulfur Trioxide, Wet (see Sulfuric Acid)	NT	NT		NT	NT		NT	NT		NT	NT				
Sulfur, Molten, Dry	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Sulfur, Precipitated	NT	NT		NT	NT		NT	NT		NT	NT		NT	NT	
Sulfuric Acid 10%	100°F [38°C]	R	7	NR	NR		NR	NR		122°F [50°C]	R	7	140°F [60°C]	R	7
Sulfuric Acid 25%	100°F [38°C]	R	7	NR	NR		NR	NR		122°F [50°C]	R	7	140°F [60°C]	R	7
Sulfuric Acid 5%	100°F [38°C]	R	7	NR	NR		NR	NR		122°F [50°C]	R	7	140°F [60°C]	R	7
Sulfuric Acid 50%	NR	NR		NR	NR		NR	NR		122°F [50°C]	R	7	140°F [60°C]	R	7
Sulfuric Acid 70%	NR	NR		NR	NR		NR	NR		NR	R		100°F [38°C]	R	7
Sulfuric Acid 75%	NR	NR		NR	NR		NR	NR		NR	R		100°F [38°C]	R	7
Sulfuric Acid 80%	NR	NR		NR	NR		NR	NR		NR	R		NT	NT	
Sulfuric Acid 93%	NR	NR		NR	NR		NR	NR		NR	R		NR	NR	
Sulfuric Acid 98%	NR	NR		NR	NR		NR	NR		NT	R		NR	NR	
Sulfuric Acid/Chlorine Solution	NR	NR		NR	NR		NR	NR		NT	NT		NR	NR	
Sulfuric Acid:Ferrous 10, Saturated	NT	NT		NT	NT		NT	NT		NT	NT		NT	NT	
Sulfuric Acid:Phosphorous 20%	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Sulfurous Acid	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	
Sulfurous Acid 10%	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Tall Oil	100°F [38°C]	R	2	NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Tall Oil Fatty Acid	100°F [38°C]	R	2	NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Tall Oil Reactor	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Tallow/Sulfuric Acid	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Tannic Acid, All	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Tartaric Acid, All	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Tert Butyl Peroxybenzoate	NR	NR		NR	NR		NR	NR		NT	NT		NR	NR	

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	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Tetrachloroethane	NR	NR		NR	NR		NR	NR		NT	NT		NR	NR	
Tetrachloroethylene (Perchloroethylene)	100°F [38°C]	R		NR	R		100°F [38°C]	R		NT	NT		100°F [38°C]	R	
Tetraethylenepentamine	NR	NR		NR	NR		NR	NR		NT	NT		NT	NT	
Tetrahydrofuran	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Texanol	NT	NT		NT	NT		NT	NT		NT	NT		NR	R	
Thioglycolic Acid (see Mercaptoacetic)	NR	NR		NR	NR		NR	NR		NT	NT		NT	NT	
Thionyl Chloride	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Tin Fluoborate Plating Bath	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Toluene Sulfonic Acid, All	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Toluene, Toluol (Methyl Benzene, Methyl Benzol)	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		80°F [27°C]	R	
Toluidine	NR	NR		NR	NR		NT	NT		NT	NT		NR	NR	
Transformer Oils (Esters)	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Transformer Oils (Silicone and Mineral)	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Tri (Dimethylaminomethyl) Phronol	NT	NT		NT	NT		NT	NT		NT	NT		NT	NT	
Trichloroacetic Acid (see Chloroacetic Acid)	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Trichlorobenzene [1, 2, 4]	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Trichloroethane	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Trichloroethylene	NR	NR		NR	NR		NR	NR		100°F [38°C]	R	1	NR	NR	
Tricresyl Phosphate	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Triethanolamine	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT		140°F [60°C]	R	10
Triethylamine, All	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		100°F [38°C]	R	10
TriethyleneGlycol	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Triethylenetetramine	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Trimethyl Benzene	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		NT	NT		100°F [38°C]	R	
Trimethyl Phosphite	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	
Tripropylene Glycol	80°F [27°C]	R		80°F [27°C]	R		80°F [27°C]	R		NT	NT		140°F [60°C]	R	
Trisodium Phosphate	NR	NR		NR	NR		NR	NR		122°F [50°C]	R		140°F [60°C]	R	

# Tank linings chemical resistance guide

Chemical environment and concentration (%)	Nova-Plate™ UHS			Dura-Plate™ UHS			Phenicon™ HS			Nova-Plate™ 325			Magnalux™ 41V		
	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Trisodium Phosphate, Saturated	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	R	
Turbine Oil	100°F [38°C]	R	6	100°F [38°C]	R	6	100°F [38°C]	R	6	100°F [38°C]	R	6	100°F [38°C]	R	6
Turbine Oil Castrol Optigear Synthetic A320	NT	NT		NT	NT		NT	NT		NT	NT		NT	NT	
Turpentine	100°F [38°C]	R		NT	NT		100°F [38°C]	R		100°F [38°C]	R		140°F [60°C]	R	
Uran Fertilizer Urea	100°F [38°C]	R	6	100°F [38°C]	R	6	100°F [38°C]	R	6	100°F [38°C]	R	6	140°F [60°C]	R	
Urea 33%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		140°F [60°C]	R	
Urea 50%	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		140°F [60°C]	R	
Urea Ammonium Nitrate	100°F [38°C]	R	6	NT	NT	6	100°F [38°C]	R	6	100°F [38°C]	R	6	140°F [60°C]	R	
Urea Formaldehyde Resin	NT	NT		NT	NT		NT	NT		NT	NT		100°F [38°C]	R	
Urea:Ammonium:Nitrate 35:44:20	100°F [38°C]	R	6	100°F [38°C]	R	6	100°F [38°C]	R	6	100°F [38°C]	R	6	140°F [60°C]	R	
Vegetable Oil	100°F [38°C]	R	2, 6	100°F [38°C]	R	2, 6	100°F [38°C]	R	2, 6	122°F [50°C]	R	2, 6	140°F [60°C]	R	
Vegetable Fat	140°F [60°C]	R	2, 6	NT	NT	2, 6	140°F [60°C]	R	2, 6	122°F [50°C]	R	2, 6	NT	NT	
Vinegar (see Acetic Acid, 10-80%)	NT	NT		NT	NT		NT	NT		NR	NR		140°F [60°C]	R	
Vinyl Acetate 100%	NR	NR		NR	NR		NR	NR		NT	NT		NR	NR	
Vinyl Chloride	NT	NT		NT	NT		NT	NT		NT	NT		NR	NR	
Vinyl toluene	100°F [38°C]	R	12	100°F [38°C]	R	12	100°F [38°C]	R	12	100°F [38°C]	R	12	100°F [38°C]	R	10, 12
VM&P Naphtha	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		NT	NT	
Voranol P-400 Polyol (see Ethylene Glycol)	100°F [38°C]	R	5	100°F [38°C]	R	5	100°F [38°C]	R	5	122°F [50°C]	R	5	140°F [60°C]	R	5
Waste, Organic	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		150°F [66°C]	R	
Wastewater / Sewage	100°F [38°C]	R		100°F [38°C]	R		100°F [38°C]	R		122°F [50°C]	R		150°F [66°C]	R	
Water, Condensate Return	NT	NT		150°F [66°C]	R		NT	NT		NT	NT		140°F [60°C]	R	
Water, Deionized	100°F [38°C]	R	5	100°F [38°C]	R	5	100°F [38°C]	R	5	210°F [99°C]	R	5	140°F [60°C]	R	5
Water, Demineralized	100°F [38°C]	R	5	100°F [38°C]	R	5	100°F [38°C]	R	5	210°F [99°C]	R	5	140°F [60°C]	R	5
Water, Distilled	100°F [38°C]	R	5	100°F [38°C]	R	5	122°F [50°C]	R	5	210°F [99°C]	R	5	140°F [60°C]	R	5
Water, Fresh	122°F [50°C]	R	5	122°F [50°C]	R	5	122°F [50°C]	R	5	210°F [99°C]	R	5	150°F [66°C]	R	5
Water, Salt	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		210°F [99°C]	R		140°F [60°C]	R	
Water, Sea	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		210°F [99°C]	R		140°F [60°C]	R	

## Tank linings chemical resistance guide

Chemical environment and concentration (%)	Nova-Plate™ UHS			Dura-Plate™ UHS			Phenicon™ HS			Nova-Plate™ 325			Magnalux™ 41V		
	IM	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note	IM (°C)	SC	Note
Water, Steam Condensate	122°F [50°C]	R		150°F [66°C]	R		NT	NT		210°F [99°C]	R		140°F [60°C]	R	
Water, Tap Hard	122°F [50°C]	R	5	122°F [50°C]	R	5	122°F [50°C]	R	5	210°F [99°C]	R	5	150°F [66°C]	R	5
Water, Tap Soft	122°F [50°C]	R	5	122°F [50°C]	NT	5	122°F [50°C]	NT	5	210°F [99°C]	R	5	150°F [66°C]	R	5
White Liquor (Pulp Mill)	NT	NT		NT	NT		NT	NT		122°F [50°C]	R		140°F [60°C]	R	
White Liquor, Clear or Amber	100°F [38°C]	R		NT	NT		NT	NT							
Xylene (Xylol)	122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		122°F [50°C]	R		80°F [27°C]	R	
Zinc Plating - Acid Fluoborate	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Zinc Plating - Acid Sulfate	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	
Zinc Plating - Cyanide	NT	NT		NT	NT		NT	NT		NT	NT		140°F [60°C]	R	

## Chemical resistance guide: Notes

### 1. Water miscible and hydrolysable chemicals

Certain products, such as esters (acetates, phthalates, etc) and chlorinated or brominated materials, can react with water and form acidic compounds.

Other cargoes, such as crude methanol or fermentation ethyl alcohol, may contain acidic impurities. Such acids may damage the lining

These products are suitable for storage in coated tanks when dry. Such products must have a maximum water content of 0.02 % (200 ppm), be free from acids and stored in completely dry tanks. Subsequent water contamination must be avoided. Water washing of the tank is only acceptable after full recovery of the coating and should be avoided wherever possible

### 2. Vegetable and animal oils and fats.

Vegetable and animal oil, fats etc. are esters of polyols with fatty acids and nearly always contain free fatty acid. If in contact with water, especially at higher temperatures, these can saponify, resulting in increased free fatty acid content. Free fatty acids can be very aggressive to tank coatings. Thus, during loading, storage and discharge the acid values should not exceed the values shown below. Acid value measured in accordance with ISO 660 (1996) is the only accepted method to determine a cargo's suitability for storage. The free fatty acid percentages are a guide only as the acid value is dependant on the molecular weight of the Fatty Acid(s).

Inorganic Zinc Silicates - Maximum Acid Value (acc.to ISO 660 (1996)) - 5 mg KOH/g oil

Other Linings - Maximum Acid Value (acc.to ISO 660 (1996)) - 30 mg KOH/g oil

Vinyl Esters: Maximum Acid Value (acc.to ISO 660 (1996)) - No Limit

### 3. Caustic products.

Dilute caustic solutions can be very aggressive towards tank linings. Care should be taken when cleaning tanks containing Caustic materials to avoid prolonged contact of the lining with dilute solutions.

In alkaline conditions (particularly Sodium and Potassium Hydroxide) glass flake containing materials may show reduced performance. In these cases it is recommended to use the non-glass flake versions.

### 4. Amines.

These amines can be stored when free from moisture. If water is present, the alkalinity may increase to a pH higher than 10. The maximum water content is 0.05% (500 ppm). To prevent contamination by water, both the product and the tank must be completely dry at the time of loading and the product should preferably be stored under a dry nitrogen gas-blanket.

### 5. Materials with special purity requirements.

Many of the lining systems in this Product Resistance Guide are resistant to materials which have specific purity requirements, and these may require global, regional or company approvals/certification to enable their use for this service.

Regulatory approvals for food/water contact vary by country and region.

The use of a lining inside a Jet Fuel storage tank may require a specific approval from a military or commercial organization. Sherwin-Williams have materials with globally recognised certification.

Other materials may require high purity (for example Fibre grade MEG or Methanol) and it is important to consider this when making a selection.

Please consult Sherwin-Williams for the status of approvals in your country / region.

### 6. Generically identified materials.

These products are believed to be suitable for storage in the indicated tank lining since they seem to be generically similar to products successfully stored. Since the composition may vary, a detailed specification for the product to be stored must be supplied to Sherwin-Williams – a recommendation on the product notation can usually be made without testing, however in some cases confirming tests may be required.

### 7. Discoloration on storage.

Storage of some product, including strong acids (such as Hydrochloric, Sulphuric and Phosphoric acid), may cause some discoloration of the coating. Depending on the cause of the discolouration, subsequent cleaning of the tanks may be difficult so that contamination of the subsequent products may occur.

### 8. Molasses and other sugar solutions in inorganic linings.

Molasses and other unrefined sugar solutions may generate acids by fermentation. These acids may damage the coating. This process is faster at elevated temperature.

#### The cargo can be carried in Inorganic Zinc lined tanks, provided:

- The pH is higher than 6.
- The temperature does not exceed 45°C (113°F).

#### In addition:

- After having contained these products, the tank must be thoroughly cleaned and diluted residues must not be left in the tank.

## Chemical resistance guide: **Notes**

### **9. Automotive gasolines.**

Automotive gasolines can vary widely in composition.

Addition of considerable amounts of aromatic and/or oxygenated solvents are common. When these cargoes have to be transported the tank coating should be fully cured.

Limits for oxygenated solvents (in volume) as set out in European Directive 2003/17/EC.

### **10. Post-curing.**

These commodities must only be carried in tanks in which the lining has been post cured.

After discharging and removal of all residual cargo, the lining must be conditioned. Contact Sherwin-Williams for details.

### **11. Crude oil and derivatives.**

These products may contain acidic compounds, organic as well as inorganic. The effect of these compounds will not necessarily depend only upon the content of sulphuric compounds in the product.

If water contamination occurs during transportation or storage of the product, pH will depend upon the actual acidity of the product, upon the amount of water and upon the time of transportation or storage and temperature.

#### **The cargo can be carried in Inorganic Zinc-lined tanks, provided:**

- The cargo has an acid value of 0.4 or less.
- The pH of an aqueous phase at time of transportation or storage must be within the range of 6 to 9.

### **12. Cargos with stability issues.**

The tank coating is resistant to the cargo as specified. However the stability of the cargo may be adversely affected and therefore carriage of this cargo should not exceed 90 days. Prior to loading of this product, the tank should be suitably cleaned and the level of inhibitor present in the cargo should be checked to ensure compliance with the requirements of the cargo.

### **13. Different performance between standard cure and fast / low temperature cure.**

In this chemical there is a slight difference between the performance of the fast / low temperature cure and the standard cure grade – please consult your local Sherwin-Williams Technical Representative.



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