

## RECOMMENDED USE DEFINITIONS

### **IMMERSION SERVICE (Most Severe) – IS**

Suitable for continuous contact with chemical exposure up to specified temperature.

### **CARGO/TEMPORARY IMMERSION – CI**

Suitable for 60 day continuous contact with chemical exposure up to specified temperature. Coating will show no effect except slight softening or color change, possibly permanent, after 60 days or less continuous immersion. When used in transport or hauling conditions, the vessel must be completely drained to prevent puddling that would constitute continuous immersion.

### **SECONDARY CONTAINMENT – SC**

Suitable for continuous contact with chemical for up to 72 hours. Softening or discoloration may occur during the exposure.

### **FREQUENT CONTACT – FC**

Suitable for frequent splash or up to 72 hours exposure to concentrated vapors. The coating will show no effects except slight softening or color change, possibly permanent, after eight hours continuous immersion in the liquid chemical or 72 hours exposure to the vapor.

### **OCCASIONAL CONTACT (Least Severe) – OC**

Suitable for occasional splash and spillage or occasional exposure to concentrated vapors. The coating shows no effects, except slight softening or color changes, following short exposure to splash or spillage which evaporates, is hosed off, or dried overnight or, 24 hours exposure to vapor.

**NOT TESTED** – This chemical has not been tested or evaluated for the listed chemical.

**NOT RECOMMENDED** – This product is not recommended for the listed exposure. The product's resistance to the listed chemical is often queried, therefore this information is provided as a reference even though the product is not recommended.

## IMPORTANT NOTES

The term "chemicals" is used broadly in this guide and can refer to various constituents including, but not limited to, acids, fatty acids, food and beverage materials, finished and unrefined hydrocarbons, as well as individual chemicals and chemical blends.

Temperature can have a significant effect on a coating's chemical resistance. Prior to coating selection, due care should be taken to determine the service temperature of stored chemicals, elevated temperature caused by natural environmental conditions (i.e. radiant heat from sun, weather), and temperature fluctuations during service (i.e. loading of cargo, service cycling).

Chemical mixtures and alternating chemical storage can aggressively degrade a coating or lining system. Prior to coating selection and application, the expected chemical exposures and sequence of chemical storage should be discussed with Tnemec Technical Service to ensure the proper coating is selected.

Proper surface preparation is always important to ensure optimum coating performance but it is even more so for coatings that will undergo chemical exposure. Carefully read product data sheets along with related application guides to determine the required level of surface preparation and surface profile.

Structural designs of tanks, structures, and containment areas can greatly affect coating performance. Sharp angles, channels, edges, corners, pits, voids, defects, rough welds, and other similar conditions present areas that are either difficult to coat or achieve the required film thickness. Avoid skip welds in favor of continuous welds. A stripe coat on these areas, prior to full coating application, can help achieve needed film thickness and prevent premature coating failure. (Reference NACE SP0178-2007 for more information.)

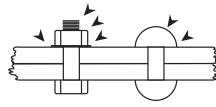
The length of a coating system's service life depends on surface cleanliness and preparation prior to application, proper application procedures, exposure conditions, physical abuse, cleaning techniques, and frequency of inspection, maintenance, and repair. No coating system has an unlimited service life. Regular inspection of the coating system can prolong service life by identifying areas in need of repair. Additionally, regular inspections can determine when the coating system is nearing its end of service and should be completely replaced.

Chemical resistance information is provided for the purpose of establishing a general profile of the coating and was obtained through laboratory testing, field experience, and industry knowledge. Test results were produced in a controlled environment and Tnemec makes no claim that any tests, or published chemical resistance information, accurately represent all environments or correlate to actual field performance. Application, environmental and design factors, chemical temperatures, chemical mixtures, sequence of storage, conditions of service, and cleaning procedures can significantly impact coating performance, so due care must be exercised in the selection and use of the coating. Tnemec disclaims responsibility for product use outside its published information. Contact Tnemec Technical Service to review full project details before the coating or coating system is selected and applied.

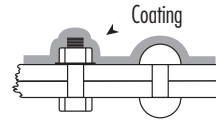
# TNEME-GLAZE | SERIES 281

## COMMON PROBLEM AREAS FOR COATINGS AND SOLUTIONS

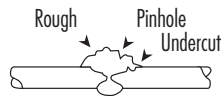
**Problem:**  
Points of failure due to thin spots in coating



**Solution:**  
Carefully and fully coat



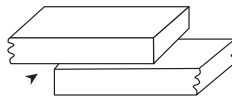
**Problem:**  
Uneven welds



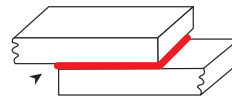
**Solution:**  
Grind smooth



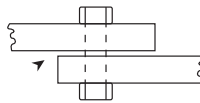
**Problem:**  
Gaps between plates, coating can not cover



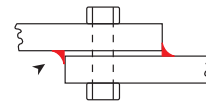
**Solution:**  
Continuous welds



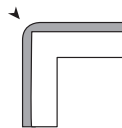
**Problem:**  
Gaps between plates, coating can not cover



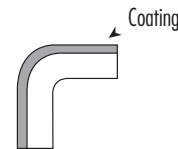
**Solution:**  
Continuous welds



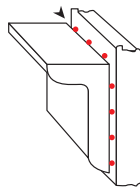
**Problem:**  
Sharp surface contours create thin spots in coating



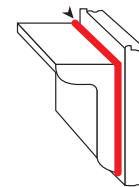
**Solution:**  
Round the contours



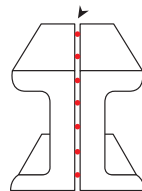
**Problem:**  
Skip welding creates gaps that coating can not cover



**Solution:**  
Continuous welds

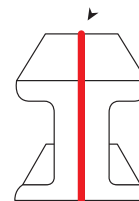


**Problem:**  
Skip welding creates gaps that coating can not cover



**Solution:**  
Continuous welds

2 channels back to back



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Chemical	Intended Use (Maximum Temperature Listed)				
	Occasional Contact	Frequent Contact	Secondary Containment	Cargo Immersion	Immersion Service
Acetaldehyde	100°F (38°C)	100°F (38°C)			
Acetic Acid					
10%	100°F (38°C)	100°F (38°C)			
30%	100°F (38°C)				
Acetic Acid, Glacial	NR	NR	NR	NR	NR
Acetic Anhydride					
100%	NR	NR	NR	NR	NR
Acetone	100°F (38°C)				
Acetyl Chloride	NR	NR	NR	NR	NR
Acrylic Acid					
100%	100°F (38°C)	100°F (38°C)			
Acrylonitrile					
100%	NR	NR	NR	NR	NR
Adipic Acid					
25%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Allyl Alcohol	100°F (38°C)	100°F (38°C)			
Allyl Chloride	NT	NT	NT	NT	NT
Aluminum Bromide	100°F (38°C)	100°F (38°C)			
Aluminum Chloride	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Aluminum Nitrate					
50%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Aluminum Sulfate (Alum)					
49%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Ammonium Bisulfite	100°F (38°C)	100°F (38°C)			
Ammonium Chloride	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Ammonium Fluoride	NT	NT	NT	NT	NT
Ammonium Hydroxide					

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	Occasional Contact	Frequent Contact	Secondary Containment	Cargo Immersion	Immersion Service
20%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
30%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Ammonium Lauryl Sulfate					
30%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Ammonium Nitrate	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Ammonium Persulfate	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Ammonium Sulfate	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Ammonium Sulfide	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Ammonium Sulfite	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Ammonium Xylene Sulfonate					
40%	100°F (38°C)	100°F (38°C)			
Amyl Acetate	100°F (38°C)	100°F (38°C)			
Amyl Alcohol	NT	NT	NT	NT	NT
Aniline	NR	NR	NR	NR	NR
Aniline Hydrochloride	NT	NT	NT	NT	NT
Antimony Chloride (tri)	100°F (38°C)	100°F (38°C)			
Aqua Ammonia	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Aqua Regia	100°F (38°C)				
Arsenous Acid	NT	NT	NT	NT	NT
Barium Chloride					
50%	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Barium Hydroxide					
50%	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Barium Sulfate	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Barium Sulfide	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Beer (non-food contact) <sup>1</sup>	NT	NT	NT	NT	NT
Benzal Chloride	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Benzaldehyde	100°F (38°C)	100°F (38°C)	100°F (38°C)		

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Chemical	Intended Use (Maximum Temperature Listed)				
	Occasional Contact	Frequent Contact	Secondary Containment	Cargo Immersion	Immersion Service
Benzene	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Benzene Sulfonic Acid	100°F (38°C)	100°F (38°C)			
Benzene Thiol	NR	NR	NR	NR	NR
Boric Acid					
5%	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Bromine					
5%	NR	NR	NR	NR	NR
Bromine Gas (Dry)	NT	NT	NT	NT	NT
Bromine Gas (Wet)	NT	NT	NT	NT	NT
Butyl Acid Levulinic	100°F (38°C)	100°F (38°C)			
Butyl Acrylate	NT	NT	NT	NT	NT
Butyl Amine	NR	NR	NR	NR	NR
Butyl Ether	100°F (38°C)	100°F (38°C)			
Butyric Acid	NR	NR	NR	NR	NR
Cadmium Chloride	100°F (38°C)	100°F (38°C)			
Cadmium Plating (Cyanide)	100°F (38°C)	100°F (38°C)			
Calcium Bisulfite	100°F (38°C)	100°F (38°C)			
Calcium Carbonate	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Calcium Chloride					
50%	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Calcium Hydroxide (Lime Slurry)					
30%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Calcium Hypochlorite					
5%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Calcium Nitrate	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Calcium Nitrite	NT	NT	NT	NT	NT
Calcium Oxide					

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	Occasional Contact	Frequent Contact	Secondary Containment	Cargo Immersion	Immersion Service
1%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Calcium Sulfate	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Calcium Sulfite	100°F (38°C)	100°F (38°C)			
Caprylic Acid (Octanoic Acid)	NT	NT	NT	NT	NT
Carbon Bisulfide (Di) Fumes (wet)	100°F (38°C)	100°F (38°C)			
Carbon Dioxide	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Carbon Tetrachloride	100°F (38°C)	100°F (38°C)			
Castor Oil	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Chloracetic Acid					
20%	100°F (38°C)	100°F (38°C)			
Chlorine Dioxide	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Chloroacetic Acid					
50%	NR	NR	NR	NR	NR
100%	NR	NR	NR	NR	NR
Chlorobenzene	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Chlorobutane	NT	NT	NT	NT	NT
Chloroform	NR	NR	NR	NR	NR
Chlorophenol	NR	NR	NR	NR	NR
Chlorosulfonic Acid	NR	NR	NR	NR	NR
Chlorotoluene	100°F (38°C)	100°F (38°C)			
Chromic Acid					
10%	100°F (38°C)	100°F (38°C)			
Chromic Chloride	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Citric Acid					
50%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Copper Chloride	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Copper Nitrate	100°F (38°C)	100°F (38°C)			

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	Occasional Contact	Frequent Contact	Secondary Containment	Cargo Immersion	Immersion Service
Copper Plating (Acid)	100°F (38°C)	100°F (38°C)			
Copper Plating (Cyanide)	100°F (38°C)	100°F (38°C)			
Copper Sulfate					
10%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
20%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
50%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Corn Oil (non-food contact) <sup>1</sup>	100°F (38°C)	100°F (38°C)			
Cottonseed Oil (non-food contact) <sup>1</sup>	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Cresol	NR	NR	NR	NR	NR
Cresylic Acid	NR	NR	NR	NR	NR
Crude Oil (Sour)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Cumene	NR	NR	NR	NR	NR
Cyclohexane	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Cyclohexanone	100°F (38°C)	100°F (38°C)			
Cymene	100°F (38°C)	100°F (38°C)			
Dextrose	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Dibromopropane Phosphate	100°F (38°C)	100°F (38°C)			
Dibutyl Phthalate	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Dichloroacetic Acid					
20%	NR	NR	NR	NR	NR
Diesel Fuel (Fuel Oil, Diesel Oil)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Diethanolamine	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Diethylene Chloroformate	NT	NT	NT	NT	NT
Diethylene Glycol Monobutyl Ether Acetate (Butyl "Carbitol" Acetate)	NR	NR	NR	NR	NR
Diethylketone	100°F (38°C)	100°F (38°C)			
Dimethyl Carbonyl Chloride	NR	NR	NR	NR	NR

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	Occasional Contact	Frequent Contact	Secondary Containment	Cargo Immersion	Immersion Service
Dimethyl Formamide	100°F (38°C)	100°F (38°C)			
Dimethyl Sulfoxide	NT	NT	NT	NT	NT
Dimethylaminopropylamine	NR	NR	NR	NR	NR
Dimethylaniline	NR	NR	NR	NR	NR
Dinitro Toluene	100°F (38°C)	100°F (38°C)			
Dinitrobenzene	100°F (38°C)	100°F (38°C)			
Dodecyl Alcohol (Lauryl Alcohol)	100°F (38°C)	100°F (38°C)			
Ethoxy Ethanol	100°F (38°C)	100°F (38°C)			
Ethoxylated Nonyl Phenol	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Ethyl Acetate	100°F (38°C)	100°F (38°C)			
Ethyl Acrylate	NT	NT	NT	NT	NT
Ethyl Bromide	NR	NR	NR	NR	NR
Ethyl Chloride	NR	NR	NR	NR	NR
Ethyl Chloroformate	100°F (38°C)	100°F (38°C)			
Ethyl Ether	100°F (38°C)	100°F (38°C)			
Ethyl Hexyl Acrylate	NT	NT	NT	NT	NT
Ethyl Sulfate	NT	NT	NT	NT	NT
Ethylamine	NR	NR	NR	NR	NR
Ethylene Dichloride	NR	NR	NR	NR	NR
Ethylene Glycol	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Ethylene Glycol Monobutyl Ether (Butyl "Cellosolve")	100°F (38°C)	100°F (38°C)			
Ethylene Glycol Monobutyl Ether Acetate (Butyl "Cellosolve" Acetate)	100°F (38°C)	100°F (38°C)			
Ethylene Oxide	NT	NT	NT	NT	NT
Ferric Chloride	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Ferric Nitrate	100°F (38°C)	100°F (38°C)			
Ferric Sulfate					

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Chemical	Intended Use (Maximum Temperature Listed)				
	Occasional Contact	Frequent Contact	Secondary Containment	Cargo Immersion	Immersion Service
20%	100°F (38°C)	100°F (38°C)			
Fluorosilicic Acid (Hydrofluorosilicic Acid)					
10%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
25%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Formaldehyde					
37%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Furfuryl Alcohol	100°F (38°C)				
Gasoline (Unleaded)	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Glucose (non-food contact) <sup>1</sup>	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Glycerin	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Glycol Acid	100°F (38°C)	100°F (38°C)			
Gold Plating (Cyanide)	100°F (38°C)	100°F (38°C)			
Grape Juice	NT	NT	NT	NT	NT
Heptane	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Hexane	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Hydrazine					
35%	NR	NR	NR	NR	NR
Hydrazine Hydrate	NR	NR	NR	NR	NR
Hydriodic Acid					
20%	NT	NT	NT	NT	NT
Hydrobromic Acid					
20%	NT	NT	NT	NT	NT
48%	NT	NT	NT	NT	NT
Hydrochloric Acid					
5%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
10%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
20%	100°F (38°C)	100°F (38°C)	100°F (38°C)		

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Chemical	Intended Use (Maximum Temperature Listed)				
	Occasional Contact	Frequent Contact	Secondary Containment	Cargo Immersion	Immersion Service
28%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
37%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Hydrofluoric Acid					
10%	100°F (38°C)				
20%	NR	NR	NR	NR	NR
Hydrogen Peroxide					
30%	NR	NR	NR	NR	NR
Hypochlorous Acid	NR	NR	NR	NR	NR
Iodine (Crystals and vapor)	100°F (38°C)	100°F (38°C)			
Isooctylthioglycolate	100°F (38°C)	100°F (38°C)			
Isophorone	NR	NR	NR	NR	NR
Isopropyl Acetate	100°F (38°C)	100°F (38°C)			
Isopropyl Alcohol	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Isopropyl Ether	NR	NR	NR	NR	NR
Jet A Fuel	100°F (38°C)	100°F (38°C)	100°F (38°C)		
JP-4 Aviation Fuel	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Kerosene	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Lactic Acid					
2%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
10%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
85%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Lard (non-food contact) <sup>1</sup>	NT	NT	NT	NT	NT
Lauric Acid	100°F (38°C)	100°F (38°C)			
Lauryl Chloride	NT	NT	NT	NT	NT
Lead Acetate	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Lecithin	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Levulinic Acid	100°F (38°C)	100°F (38°C)			
Linseed Oil	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)

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	Occasional Contact	Frequent Contact	Secondary Containment	Cargo Immersion	Immersion Service
Lithium Hydroxide					
10%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Lithium Hydroxide (saturated)	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Maleic Acid	100°F (38°C)	100°F (38°C)			
Malic Acid	100°F (38°C)	100°F (38°C)			
Mercury and Salts	100°F (38°C)	100°F (38°C)			
Methanol (Methyl Alcohol)	NR	NR	NR	NR	NR
Methyl Acetate	100°F (38°C)	100°F (38°C)			
Methyl Amyl Alcohol	NT	NT	NT	NT	NT
Methyl Chloride	NR	NR	NR	NR	NR
Methyl Ethyl Ketone	100°F (38°C)				
Methyl Isobutyl Ketone	100°F (38°C)	100°F (38°C)			
Methyl Oleate	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Methylene Chloride	NR	NR	NR	NR	NR
Milk (non-food contact) <sup>1</sup>	NT	NT	NT	NT	NT
Mineral Oil	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Mineral Spirits	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Molasses (non-food contact) <sup>1</sup>	NT	NT	NT	NT	NT
Naphtha	100°F (38°C)	100°F (38°C)			
Naphthalene	100°F (38°C)	100°F (38°C)			
Naphthenic Acid	NR	NR	NR	NR	NR
n-Butyl Acetate (Butyl Acetate)	100°F (38°C)	100°F (38°C)			
Nickel Plating (bright)	100°F (38°C)	100°F (38°C)			
Nitric Acid					
10%	100°F (38°C)				
25%	100°F (38°C)				
70%	NR	NR	NR	NR	NR

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Chemical	Intended Use (Maximum Temperature Listed)				
	Occasional Contact	Frequent Contact	Secondary Containment	Cargo Immersion	Immersion Service
Nitrilotriethanol	100°F (38°C)	100°F (38°C)			
Nitrobenzene	100°F (38°C)	100°F (38°C)			
Nitromethane	100°F (38°C)	100°F (38°C)			
n-Octyl Alcohol (Octanol)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Oleic Acid	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Oxalic Acid					
10%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Pelargonic Acid	NT	NT	NT	NT	NT
Pentachloroethane	NT	NT	NT	NT	NT
Perchloric Acid					
30%	NR	NR	NR	NR	NR
Perchloroethylene	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Phenol (Carbolic Acid)	NR	NR	NR	NR	NR
Phenolsulfonic Acid					
65%	NR	NR	NR	NR	NR
Phosphoric Acid					
5%	NR	NR	NR	NR	NR
10%	NR	NR	NR	NR	NR
25%	NR	NR	NR	NR	NR
43%	NR	NR	NR	NR	NR
85%	NR	NR	NR	NR	NR
Phosphorous Oxychloride	100°F (38°C)	100°F (38°C)			
Phosphorous Trichloride	100°F (38°C)	100°F (38°C)			
Picric Acid					
10%	NT	NT	NT	NT	NT
Polyacrylic Acid					
50%	NT	NT	NT	NT	NT

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Chemical	Intended Use (Maximum Temperature Listed)				
	Occasional Contact	Frequent Contact	Secondary Containment	Cargo Immersion	Immersion Service
Polymer Emulsion	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Polymer Mannich	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Potassium Acetate	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Potassium Bicarbonate	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Potassium Bromide	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Potassium Carbonate					
25%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Potassium Chlorate	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Potassium Chloride	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Potassium Cyanide	100°F (38°C)	100°F (38°C)			
Potassium Fluoride	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Potassium Hydroxide					
50%	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Potassium Nitrate	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Potassium Permanganate	NR	NR	NR	NR	NR
Potassium Persulfate	NT	NT	NT	NT	NT
Potassium Sulfate	100°F (38°C)	100°F (38°C)			
Propanediol	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Propylene Glycol	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Pulpmill (Green Liquor)	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Pulpmill (White Liquor)	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Pyridine	NR	NR	NR	NR	NR
Rayon Spin Liquor	NR	NR	NR	NR	NR
Salicylaldehyde	100°F (38°C)	100°F (38°C)			
Salicylic Acid	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Silicon Tetrachloride	NT	NT	NT	NT	NT
Silver Nitrate	100°F (38°C)	100°F (38°C)			
Skydrol	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)

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Chemical	Intended Use (Maximum Temperature Listed)				
	Occasional Contact	Frequent Contact	Secondary Containment	Cargo Immersion	Immersion Service
Sodium Acetate	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sodium Aluminate	NR	NR	NR	NR	NR
Sodium Bicarbonate	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sodium Bisulfate					
30%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sodium Bisulfite					
38%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sodium Bromate					
5%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sodium Carbonate	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sodium Carbonate (slurry)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Sodium Chloride (sat'd) (Brine, Water (Sea), Salt Brine)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Sodium Chlorite (>6 pH)	NT	NT	NT	NT	NT
Sodium Chromate					
50%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sodium Cyanide					
18%	100°F (38°C)	100°F (38°C)			
Sodium Dichromate (all)	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sodium Fluoride	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sodium Hydrosulfide					
72%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sodium Hydroxide (Caustic Soda)					
50%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sodium Hypochlorite (Bleach)					
5%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sodium Oxalate	100°F (38°C)	100°F (38°C)	100°F (38°C)		

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	Occasional Contact	Frequent Contact	Secondary Containment	Cargo Immersion	Immersion Service
Sodium Peroxide	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sodium Phosphate					
10%	100°F (38°C)	100°F (38°C)			
Sodium Polymethacrylate	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sodium Silicate	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sodium Silicofluoride	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sodium Sulfate					
6%	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Sodium Sulfide (all)	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sodium Sulfite	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sodium Tartrate	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sodium Thiosulfate					
30%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Stearic Acid (conc)	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Styrene	100°F (38°C)	100°F (38°C)			
Sugars (non-food contact) <sup>1</sup>	NT	NT	NT	NT	NT
Sulfamic Acid					
25%	100°F (38°C)	100°F (38°C)			
Sulfite Liquor (paper industry)	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sulfur Dioxide (dry)	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sulfur Dioxide (wet)	NT	NT	NT	NT	NT
Sulfur Trioxide (wet)	NT	NT	NT	NT	NT
Sulfuric Acid (Sulphuric Acid)					
5%	100°F (38°C)	100°F (38°C)			
10%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
30%	100°F (38°C)	100°F (38°C)	100°F (38°C)		
50%	NR	NR	NR	NR	NR

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	Occasional Contact	Frequent Contact	Secondary Containment	Cargo Immersion	Immersion Service
70%	NR	NR	NR	NR	NR
98%	NR	NR	NR	NR	NR
Tall Oil	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Tartaric Acid	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Tetrachloroethane	NR	NR	NR	NR	NR
Tetrachloroethylene	100°F (38°C)	100°F (38°C)			
Tetrahydrofuran	NT	NT	NT	NT	NT
Tetrahydrofurfuryl Alcohol	100°F (38°C)	100°F (38°C)			
Tetrasodium Pyrophosphate	NR	NR	NR	NR	NR
Thionyl Chloride	NR	NR	NR	NR	NR
Thionyl Chloride (water solution)	NR	NR	NR	NR	NR
Toluene	100°F (38°C)	100°F (38°C)			
Toluenesulfonic Acid	100°F (38°C)	100°F (38°C)			
Toluidine	NT	NT	NT	NT	NT
Trichloroacetic Acid					
20%	100°F (38°C)	100°F (38°C)			
Trichlorobenzene	100°F (38°C)	100°F (38°C)			
Trichloroethylene	100°F (38°C)	100°F (38°C)			
Tricresyl Phosphate	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Triethyl Phosphite	100°F (38°C)	100°F (38°C)			
Triethylamine	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Triethylenetetramine	NR	NR	NR	NR	NR
Trisodium Phosphate (Sodium Phosphate (Tribasic))					
20%	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Turpentine	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Urea					
50%	100°F (38°C)	100°F (38°C)	100°F (38°C)		

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	Occasional Contact	Frequent Contact	Secondary Containment	Cargo Immersion	Immersion Service
Urea Ammonium Nitrate	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Vegetable Oil (non-food contact) <sup>1</sup>	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Vinegar (non-food contact) <sup>1</sup>	NT	NT	NT	NT	NT
Vinyl Chloride	NR	NR	NR	NR	NR
Water (deionized, non-potable) (Water (Demineralized, Non-potable))	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Water (distilled, non-potable)	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Wine (non-food contact) <sup>1</sup>	NT	NT	NT	NT	NT
Xylene	100°F (38°C)	100°F (38°C)			
Zinc Plating (Acid Fluoborate)	NT	NT	NT	NT	NT
Zinc Plating (Acid Sulfate)	NT	NT	NT	NT	NT
Zinc Plating (Cyanide)	NT	NT	NT	NT	NT

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