

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.

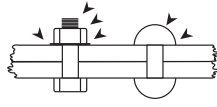
Structural designs of tanks, structures, and containment areas can greatly affect coating performance. Sharp angles, channels, edges, corners, pits, voids, defects, rough welds, and other similar conditions present areas that are either difficult to coat or achieve the required film thickness. Avoid 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.

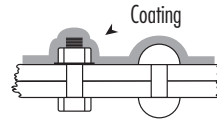
Chemical resistance information is provided for the purpose of establishing a general profile of the coating and was obtained through laboratory testing, field experience, and industry knowledge. Test results were produced in a controlled environment and Tnemec makes no claim that any tests, or published 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.

COMMON PROBLEM AREAS FOR COATINGS AND SOLUTIONS

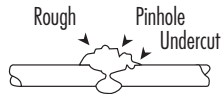
Problem:
Points of failure due to thin spots in coating



Solution:
Carefully and fully coat



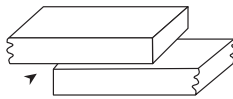
Problem:
Uneven welds



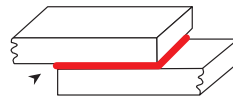
Solution:
Grind smooth



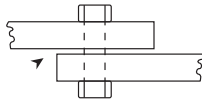
Problem:
Gaps between plates, coating can not cover



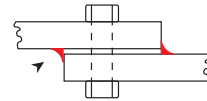
Solution:
Continuous welds



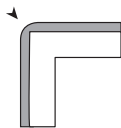
Problem:
Gaps between plates, coating can not cover



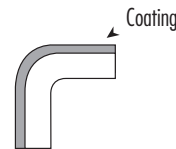
Solution:
Continuous welds



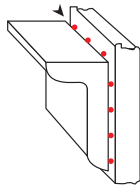
Problem:
Sharp surface contours create thin spots in coating



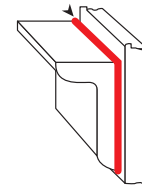
Solution:
Round the contours



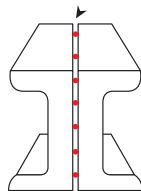
Problem:
Skip welding creates gaps that coating can not cover



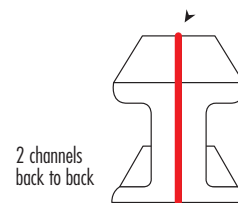
Solution:
Continuous welds



Problem:
Skip welding creates gaps that coating can not cover



Solution:
Continuous welds



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¹ Product is NOT suitable for direct or indirect food contact. Intended Use and temperature information relates to product's performance capabilities only.

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Chemical	Intended Use (Maximum Temperature Listed)				
	Occasional Contact	Frequent Contact	Secondary Containment	Cargo Immersion	Immersion Service
1, 1, 1-Trichloroethane (Trichloroethane)	NR	NR	NR	NR	NR
Acetic Acid, Glacial	100°F (38°C)	100°F (38°C)			
Acetic Anhydride	100°F (38°C)	100°F (38°C)			
Acetone	NR	NR	NR	NR	NR
Activated Carbon	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Aluminum Nitrate	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Ammonium Nitrite	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Ammonium Perchlorate (Dry)	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)	100°F (38°C)	100°F (38°C)
Ammonium Phosphate	NR	NR	NR	NR	NR
Amyl Acetate	NR	NR	NR	NR	NR
Aniline	NR	NR	NR	NR	NR
Aviation Gas	NR	NR	NR	NR	NR
Barium Chloride	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Barium Hydroxide	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Barium Nitrate	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)
Benzene	NR	NR	NR	NR	NR
Borax	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Butyric Acid	NR	NR	NR	NR	NR
Calcium Carbonate	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)		
Calcium Oxide	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)		
Coal (high and low sulfur)	100°F (38°C)	100°F (38°C)	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 Sulfate (dry)	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
Corn Mash Solution (non-food contact) ¹	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Cyclohexane	NR	NR	NR	NR	NR
Cyclohexanol	NR	NR	NR	NR	NR
Dibutyl Phthalate	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Diocetyl Phthalate	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Ethyl Benzene	NR	NR	NR	NR	NR
Fatty Acids (Greater than C6)	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Ferric Chloride	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Ferric Sulfate	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Furan	NR	NR	NR	NR	NR
Furfuryl Alcohol	NR	NR	NR	NR	NR
Gasoline (Unleaded)	NR	NR	NR	NR	NR
Glycerin	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Heptane	NR	NR	NR	NR	NR
Hexane	NR	NR	NR	NR	NR
Hexanol	NR	NR	NR	NR	NR
Hydrochloric Acid	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Hydrofluoric Acid	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Hydrogen Sulfide	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Iodine	100°F (38°C)	100°F (38°C)			
Isobutyl Acetate	NR	NR	NR	NR	NR
Isobutyl Alcohol	NR	NR	NR	NR	NR
Isopropyl Acetate	NR	NR	NR	NR	NR
Isopropyl Alcohol	NR	NR	NR	NR	NR
Jet A Fuel	NR	NR	NR	NR	NR
JP-4 Aviation Fuel	NR	NR	NR	NR	NR
JP-5 Aviation Fuel	NR	NR	NR	NR	NR
Kerosene	NR	NR	NR	NR	NR

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	Occasional Contact	Frequent Contact	Secondary Containment	Cargo Immersion	Immersion Service
Lactic Acid	NR	NR	NR	NR	NR
Lead Acetate	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Lithium Chloride	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Lithium Hydroxide (saturated)	NR	NR	NR	NR	NR
Magnesium Hydroxide	NR	NR	NR	NR	NR
Methyl Ethyl Ketone	NR	NR	NR	NR	NR
Methyl Propyl Ketone	NR	NR	NR	NR	NR
Methylene Chloride	NR	NR	NR	NR	NR
Mineral Oil	NR	NR	NR	NR	NR
Mineral Spirits	NR	NR	NR	NR	NR
Naphtha	NR	NR	NR	NR	NR
n-Butyl Acetate (Butyl Acetate)	NR	NR	NR	NR	NR
n-Butyl Alcohol (1-Butanol) (Butanol (Normal))	NR	NR	NR	NR	NR
Nitric Acid	100°F (38°C)	100°F (38°C)	100°F (38°C)		
n-Methyl-2-Pyrrolidone	NR	NR	NR	NR	NR
n-Octyl Alcohol (Octanol)	NR	NR	NR	NR	NR
n-Propyl Alcohol (Propyl Alcohol)	NR	NR	NR	NR	NR
Oleic Acid	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Perchloroethylene	NR	NR	NR	NR	NR
Petroleum Ether	NR	NR	NR	NR	NR
Phosphoric Acid	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Pine Oil	NR	NR	NR	NR	NR
Potassium Fluoride	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)
Pulpmill (Black Liquor)	NR	NR	NR	NR	NR
Pulpmill (Green Liquor)	NR	NR	NR	NR	NR

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	Occasional Contact	Frequent Contact	Secondary Containment	Cargo Immersion	Immersion Service
Pulpmill (White Liquor)	NR	NR	NR	NR	NR
Silicone Fluids	NR	NR	NR	NR	NR
Skydrol	NR	NR	NR	NR	NR
Sodium Bicarbonate	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Sodium Bisulfate	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sodium Bisulfite	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sodium Borate	100°F (38°C)	100°F (38°C)	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)	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 Fluoride	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Sodium Hydrosulfide	100°F (38°C)	100°F (38°C)	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)	100°F (38°C)	100°F (38°C)
13%	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Sodium Lauryl Sulfate	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Sodium Nitrate (dry)	100°F (38°C)	100°F (38°C)	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 Thiosulfate	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Soybean Oil (non-food contact) ¹	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Styrene	NR	NR	NR	NR	NR
Sulfuric Acid (Sulphuric Acid)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Tall Oil	NR	NR	NR	NR	NR
Tannic Acid	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)		
Tetrahydrofuran	NR	NR	NR	NR	NR

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Toluene	NR	NR	NR	NR	NR
Transmission Fluid	NR	NR	NR	NR	NR
Triethanolamine	NR	NR	NR	NR	NR
Turpentine	NR	NR	NR	NR	NR
Urea Ammonium Nitrate	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Vegetable Oil (non-food contact) ¹	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Water (fresh, non-potable)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Xylene	NR	NR	NR	NR	NR
Zinc Bromide	100°F (38°C)	100°F (38°C)	100°F (38°C)		
Zinc Chloride	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Zinc Phosphate (dry)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)	100°F (38°C)
Zinc Sulfate	100°F (38°C)	100°F (38°C)	100°F (38°C)		

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