

## TECHNICAL AND APPLICATION DATA

### DESCRIPTION

**EMSOL® MRP-1370** is a 100% solids epoxy novolac coating designed to provide outstanding immersion service at temperatures of up to 160°C (320°F). The two-component highly crosslinked product offers superior chemical resistance and can be applied by hand or with an airless spray system. The product provides an extended over-coating window between coats of up to 14 days, and return to service in 4 to 24 hours.

### TYPICAL USES

- Internal coating for primary containment in heated crude oil tanks up to 160 ° C (API-652)
- Internal coating of pipes and equipment up to 160° C
- Protection under insulation up to 160° C
- Chemical protection of secondary containment areas
- Chemical protection of trenches and gutters in process areas
- Loading docks for trucks and tanks
- Structures and pedestals of process equipment subject to chemical spills

### PHYSICAL AND MECHANICAL PROPERTIES

Compression (ASTM D695) .....	≤ 89.6 MPa (13,000 psi)
Tension (ASTM D638) .....	≤ 38.6 MPa (5,600 psi)
Sheer (ASTM D638) .....	1.13%
Young Modulus (ASTM D638) .....	≤ 6,755.6 MPa (979,820 psi)
Abrasion (ASTM D4060 @ Cs17 x 1K cycles) .....	loss of 12.75µm DFT
Coefficient of Thermal Expansion (ASTM C531) .....	(1.1x10 <sup>-6</sup> °F)
Adhesion (ASTM D4541: dry, profile 50-75µm) .....	211 Kg/cm <sup>2</sup> (3,000 psi)
Hardness (ASTM D2240) .....	≤ 90 Shore D
Volatile Organic Compounds (VOC).....	0 g/L (0 lb/gal)
Cathodic Disbondment (ASTM G8, 5% NaCl, 1,5 v DC, 28 days).....	5mm@ 90°C
.....	8mm@ 65°C

### HIGH TEMPERATURE RESISTANCE UNDER IMMERSION NACE TM0185 @ 160°C (320°F)

PHASE	DFT µm (mils)	Adhesion	Blistering	Under- creep	Change of color	Log Impedance Ω·cm <sup>2</sup> @0.1 Hz
Water	475 (19)	A	None	None	Yes	10.5
Hydrocarburo	350 (14)	A	None	None	Yes	10.4
Gas	275 (11)	A	None	None	Yes	10.6

#### Legend:

**NACE TM0185:** Method of comparing the performance of internal pipe coatings by autoclave testing. Comparisons were made under uniform laboratory conditions.

**Log Impedance:** Log Z > 10 = Excellent Protection, Log Z < 8 = Not recommended

**DFT:** Dry film thickness of coating

**Autoclave Temperature:** 135°C (275°F)

**Pressure:** 7.58 Bar (110 psi)

**Length of test:** 96 hours

**Water phase:** Aqueous solution of 5% NaCl (volume: 333,000 ppm)

**Hydrocarbon phase:** 50% Kerosene, 50% Toluene (volume: 333,000 ppm)

**Gas phase:** 5% H<sub>2</sub>S, 5% CO<sub>2</sub>, 90% CH<sub>4</sub> (% by volume) (volume: 333,000 ppm)

## EPOXY NOVOLAC COATING

### HIGH TEMPERATURE RESISTANCE (UP TO 160°C) WITH SUPERIOR CHEMICAL RESISTANCE

### FEATURES

- Compatible with API-652 guidelines
- Excellent corrosion resistance
- Excellent chemical resistance
- Excellent cathodic disbondment resistance
- Low permeation rate for applications subject to constant immersion
- 100% solids by volume, solvent-free
- Direct o hot metal surface application up to 148°C
- Application with conventional "airless" or plural systems
- Ready for immersion service in as little as (hydrocarbon / crude oil / water) 24 hrs @ 25°C

### COLORS

- Medium Grey, Light Gray

### UNIT SIZE

- 4 x ¼ Gal Kits                      • 1 Gal
- 4 Gal                                      • 20 Gal

### RECOMMENDED FILM THICKNESS

- Average: 800 µm (32 mils) applied in two coats of 16 mils.
- Min/Max: 400/1000µm (16 – 40 mils) per coat

### THEORETICAL COVERAGE

- 9.31m<sup>2</sup> @ 400 µm per gal (100.2 ft<sup>2</sup> /gal @ 16mils)

### MIX RATIO

Weight	Volume
N/A	3 : 1

### POT LIFE

Temperature	Time
24°C (75°F)	35 min

### RECOAT/CURE SCHEDULE

#### @ 25°C (77°F)

Overcoating (max):	14 days
Overcoating (min):	3 hours
Dry to the touch:	4 hours
Immersion:	24 hours
Chemical Service:	7 days

### IN-SERVICE TEMPERATURE

Dry:	177°C (350°F)
Immersion (water or crude):	160°C (320°F)

### SHELF LIFE

- 1 year @ 24°C (75°F) in sealed container

## SURFACE PREPARATION

For best performance, surface preparation can be achieved through the following methods:

**Steel** If surface is contaminated clean/Degrease all steel surfaces as per SSPC-SP prior to abrasive blasting with a suitable cleaner/degreaser such as: Xylene, MEK, Acetone. Do not use a cleaner/degrease that can leave a residue. Clean surface with abrasive blasting to achieve a minimum cleaning level of "Near White Metal Finish" NACE-2, SSPC-SP10 and a 75-100 µm (3-4 mils) angular anchor profile. Ensure surface temperature of the steel is at least 3°C (5°F) above the dew point. If the prepared surface is not coated within a few hours of completing the surface preparation, protect the surface to prevent flash rusting. Do not allow flash rust to form. If surface becomes flash rusted or contaminated, repeat surface preparation procedure. If metal surface is made of stainless steel do not use steel slag or any type of abrasive that contains steel.

**NOTE:** Concrete surfaces must have an appropriate vapor barrier installed or a vapor transmission ratio below 3 lb /1000ft<sup>2</sup>/24hr. Contact EMSOL for more information about the EMSOL CS-1000, Concrete Sealer as an alternative vapor barrier if these conditions are not met.

**New Concrete** surfaces are best prepared by abrasive blasting or shot blasting to roughen and remove the weak surface laitance an acceptable alternative would be grinding with coarse/medium diamond cups wheels. When prepared properly the surface should have the firm granular appearance of "medium" sandpaper.

**Aged Concrete** surfaces may be prepared by either high-pressure water jetting at sufficient pressure to remove all loose contamination and yielding a firm, "medium" sandpaper finish. Worn concrete in wastewater service may be prepared using only about 3,500psi, however aged concrete, which has never been in aggressive service, may require jetting with over 8,000psi to achieve the same result. Air abrasive blasting is also a satisfactory method of preparation.

### Previously Painted Substrates

Contact EMSOL for more information

## INSTRUCTIONS FOR USE

Mix only the amount of product that can be applied without exceeding the pot life of the mixed product. The mixing ratio by volume is 3:1. Combine the correct volumes of components A and B in a clean, dry container. Mix until a homogeneous color mix is obtained, using a Jiffy type mixer and drill at low speed (300-500 rpm). Avoid adding air to the mixture. Scrape the bottom and walls of the container to ensure a total and homogeneous mixture. To avoid a reduction in the pot life of the mixture, DO NOT leave the mixed product resting in the mixing container, spread the mixed product it over he prepared surface to avoid overheating and reduce the working time of the mixture.

If it is necessary to dilute the material in order to spray it, consult your EMSOL representative before proceeding. If the product is diluted, adjust the minimum time between coats to 18 - 24 hours @ 25°C and 60% relative humidity. If the temperature is lower or the relative humidity is higher, the time between re-coats may have to be increased.

Maximum Thinning Volume			
Method	Volume	% by Vol	Solvent
Brush	125 ml/L (16 oz/gal)	12%	Xylene or MEK
Roller	125 ml/L (16 oz/gal)	12%	Xylene or MEK
Spray	50.5 ml/L (6.5 oz/gal)	5%	Xylene or MEK

## PRODUCT APPLICATION

### Application with brush, roller, or spatula:

DO NOT AVOID THIS STEP. Prior to the application wipe the surface with a lint free cloth/rag soaked in Xylene o MEK to remove any surface contaminant. Apply the product by hand using brushes and/or spatulas. Initially, rub a small amount of the mixed product into the prepared surface making sure to achieve 100% contact. Completely fill in any rough or imperfect parts of the substrate. Apply the rest of the product until you achieve the required thickness avoiding trapping air bubbles.

Preferably, the EMSOL MRP-1370 should be applied in multiple layers. The maximum time between layers is 14 days @ 25°C. However, it is good practice to insure that the surface is not contaminated before additional coats are installed. To clean to surface, or any time the overcoating window has been exceeded, sand or use an abrasive jet until 100% of the surface has a matte finish. Wipe with a rag soaked in solvent according to SSPC-SP1 and let dry. Apply the additional layer. This same process is recommended to make repairs or corrections where necessary.

### Spray Application:

EMSOL MRP-1370 can be sprayed using an "Airless" plural component or single leg rig using the following parameters:

Parameter	Conventional	Plural
Tip Size	0.023" - 0.027"	0.025" - 0.029"
Pump (minimum size)	56:1	56:1
Hoses	50ft x 3/8" ID (min)	50ft x 1/2" D.I. (min) A= 1/2" (D.I.) y B= 1/2" (D.I.)
Whip	10ft x 1/4" - 3/8" ID ( min)	20ft x 1/4" - 3/8" D.I. ( min)
Static Mixer	2 x (1/2" D.I. x 12" largo)	2 x (1/2" D.I. x 12" largo)
Temperature	N/A	A=54-75°C, B=32-35°C

ID = Internal diameter

## CLEAN UP

Clean tools immediately before the product hardens with an appropriate solvent or isopropyl alcohol. Equipment and tools can be cleaned with solvents such as Methyl Ethyl Ketone (MEK), Xylene (Di-methylbenzene), Toluene, Isopropyl alcohol etc.

EMSOL warrants its products to be free from defects in material and workmanship. EMSOL's sole obligation and Buyer's exclusive remedy in connection with the products shall be limited, at EMSOL's option, to either replacement of products not conforming to this warranty or credit to Buyer's account in the invoiced amount of the nonconforming products. Any claim under this Warranty must be made by Buyer to EMSOL in writing within five days of Buyer's discovery of the claimed defect, but in no event later than the expiration of the applicable shelf life, or one year from the delivery date, whichever is earlier. Buyer's failure to notify EMSOL of such nonconformance as required herein shall bar Buyer from recovery under this warranty.

**EMSOL makes no other warranties concerning this product. No other warranties, either expressed or implied, or statutory, such as warranties of merchantability or fitness for a particular purpose, shall apply. In no event shall EMSOL be liable for consequential or incidental damages.**

Any recommendation or suggestion relating to the use of the products made by EMSOL, whether in its technical literature, or in response to specific inquiry, or otherwise, is based on data believed to be reliable; however, the products and information are intended for use by Buyers having requisite skill and know-how in the industry, and therefore it is for the Buyer to satisfy itself of the suitability of the products for its own particular use, and it shall be deemed that Buyer has done so, at its sole discretion and risk. Variation in environment, changes in procedures of use, or extrapolation of data may cause unsatisfactory results. EMSOL reserves the right to make changes to the product's formulation without previous notice. For the latest Technical and Application Data Sheets contact EMSOL. EMSOL® is a registered trademark.