

Technical Data Sheet

DESCRIPTION

The EMSOL® MRP-1300 is a ceramic-filled NOVALAC putty with outstanding chemical and high temperature resistance. Recommended for the reconstruction and repair of equipment and metal substrates. Easy-to-use and machinable***. Compatible with many types of metals, concrete, fiberglass, etc.

***Requires diamond tipped tooling for proper machining.

TYPICAL APPLICATIONS

- Repair/sealing of tanks/hoppers subject to abrasion/erosion
- Repair/reconstruction of heat exchangers:
 - Tubular plate, casings, heads, deflectors, flanges
- Repair/reconstruction of Centrifugal, Axial, Vacuum Pumps, etc.:
 - Casings/volutes, impellers, spurs, seal seats
- Pipe repair/reconstruction:
- Perforations, undercuts, low thicknesses, weld beads
- Repair of cracks and porosities

PHYSICAL & MECHANICAL PROPERTIES

Compressive Strength (ASTM D695)	107 MPa (15,000 psi)
Flexural Strength (ASTM D790)	90 MPa (13,000 psi)
Abrasion Resistance (ASTM D4060 @ Cs17 x 1K cycles)	35 mg
Coefficient of Thermal Expansion (ASTM C531)	(1.8x10 ⁻⁶ °F)
Thermal Stability Loss after 48 hours @ 149°C (300°F)	0.3 mg
Adhesion (ASTM D1002)	246 Kg/cm ² (2,550 psi)
Adhesion (ASTM D4541)	197Kg/cm ² (2,550 psi)
Hardness (ASTM D2240)	> 80
Density (ASTM C905)	1.6g/cm ³ (13.37 lb/gal)
Volatile Organic Compounds	0 g/lit (0 lbs/gal)

CHEMICAL RESISTANCE

Ammonium Hydroxide	Hydrochloric Acid	Sodium Hydroxide
Aromatic and Aliphatic Solvents	Hydrogen chloride <38%	Chlorinated Solvents (except dichloromethane)
Black Liquor	Hydrofluoric acid <35%	Sodium Hypochlorite <6%
White Liquor	Hydrogen Sulfide Gas	Potassium Hydroxide
Butyl Acetate	Methyl-Ethyl-Ketone (MEK)	For more information and resistance concentrations see the chemical resistance chart.
Butyl Carbitol Acetate	Nitric acid ≤ 30%	
Chlorides	Phosphoric Acid <75%	
Chromic acid < 30%	Sulfuric acid ≤ 50%	
Phosphates	Sulfates	

HIGH PERFORMANCE CERAMIC REBUILDING PUTTY

BENEFITS

- Excellent resistance to corrosion and erosion
- Easy to mix and use
- Excellent working time
- Fast setting (7-10 hrs.)
- Resistant to freezing temperatures
- Resistant to thermal shocks
- 100% solids by volume
- It is not toxic
- Has no offensive odor during application

COLORS

- Component "A": Gray
- Component "B": White
- Finish: matt

PRESENTATION

- 4 x 1 Kg Kits

THEORETICAL COVERAGE

- 0.21 m² @ 3 mm per 1 Kg unit

RECOMMENDED FILM THICKNESS

MIXING RATIO

By Weight	By Volume
5.19 : 1	4.5 : 1

WORKING LIFE

Temperature	Time
4°C (40°F)	5 hrs
24°C (75°F)	60 minutes
33°C (92°F)	25 minutes

CURING TIME

	21°C (70°F)
Overcoat:	1.5-2 hrs
Light Loading:	12 hrs
Immersion:	30 hrs
Chemical contact:	7 days

SERVICE TEMPERATURE

Dry:	232°C (450°F)
Spills/Splashes:	182°C (360°F)
Immersion:	100°C (212°F)

SHELF LIFE

- 2 years

SURFACE PREPARATION

Metallic Substrates:

"ONLY APPLY OVER CLEAN, DRY, SOLID/FIRM AND ROUGHENED SURFACES"

1. Clean/remove contamination or dirt with solvent according to the procedure established by the SSPC-SP1 standard (solvent wash). Use a fast-evaporating solvent/degreaser that leaves no residue. Acceptable degreasers such as: Xylene (di-methylbenzene), MEC (methyl-ethyl ketone), Acetone (propanone), Toluene, Isopropyl Alcohol >91%. Decontaminate the surface with a brush and/or lint-free cloth (DO NOT USE TOWN) soaked in degreaser.
2. To obtain the best possible adhesion, prepare the surface using abrasive blasting (grit-blast). Use only angular abrasives such as aluminum oxide, steel slag, copper slag, vitrified carbon, etc. that leave a minimum anchor profile of 75 µm (3 mils). Preparation with hand tools such as emery/grinder, sandpaper and files is acceptable but the degree of adhesion will be lower.
3. Abrasive blasting level must be equivalent to SSPC-SP10 (NACE 2, SA 2.5.) "Near White Metal"
4. Apply the product to the prepared surface before rust forms. If there is a possibility of rust formation prior to product application, contact your EMSOL representative for recommendation of a primer and/or rust inhibitor.

NON-Metallic Surfaces (concrete, fiberglass, etc.):

"ONLY APPLY OVER CLEAN, DRY, SOLID/FIRM AND ROUGHENED SURFACES"

Inspect the surface and make sure it is firm. If the surface is painted, it is recommended to remove the paint until reaching the original substrate. If applied to a painted surface, the adhesion of the product will be limited to the adhesion of the existing paint, so it is critical that it is in good condition and well adhered to the substrate. Existing paints must have an adhesion level > 21 kg/cm² (300 psi) per ASTM D-4541 test.

Clean the surface with a degreaser or detergent until all dirt/contamination is removed. Use a fast-evaporating solvent/degreaser that leaves no residue. Acceptable degreasers: Xylene (di-methyl-benzene), MEC (methyl-ethyl-ketone), Acetone (propanone), Toluene, Isopropyl Alcohol >91%. Decontaminate the surface with a brush and/or lint-free cloth (DO NOT USE TOWN) soaked in degreaser/solvent.

Concrete surfaces can be prepared with pressure water washing (pressure washer) in conjunction with emulsifying detergents.

Glossy, smooth or painted surfaces should be sanded to a minimum surface roughness comparable to #100 grit sandpaper.

Protect the prepared surface to prevent recontamination or soiling.

PRODUCT MIXING

Empty the contents of component "B" into the container of component "A" and mix until a completely homogeneous color mixture is achieved using the supplied mixing spatula or a "Jiffy" type mixer and drill at low revolutions (300-500 rpm). Avoid incorporating air into the mixture. If the product is cold (< 15°C) it is recommended that it be preheated to a maximum of 30°C to facilitate mixing. Scrape the bottom and sides of the container to ensure complete mixing.

To avoid a reduction in the pot life of the mixture, DO NOT let the product sit in the mixing container, spread it over the application surface or transfer it to a paint tray to prevent it from overheating and your working time will be reduced.

NOTE: If ambient temperature is above 30°C, mix only the appropriate amount of product that application personnel can apply in 20-30 minutes.

PARTIAL MIXING

By Volume: 4.5 parts "A" to 1 part "B"

By Weight: 5.19 parts "A" to 1 part "B"

APPLICATION

Initially, vigorously apply a small amount of the mixed product ensuring 100% contact with the prepared surface. Completely fill in roughness and any imperfections in the substrate. Apply the rest of the product until the required thickness or profile is achieved, avoiding trapping air bubbles.

If necessary, EMSOL MRP-1300 can be applied in multiple coats. Make sure additional coats are applied while the previous coat of product is hard but still tacky (maximum overcoat time is 90 to 120 minutes). If the previous coat of product is no longer tacky or the overcoat time has been exceeded, sand the surface lightly until a uniform color is achieved, wipe with a solvent-soaked rag, allow to dry, and apply additional product.

If EMSOL MRP-1300 is to be machined on a lathe, allow the lathe to cure/set a minimum of 10-12 hours @ 21°C or 5-6 hours @ 30°C. Use only diamond tipped tools.

CLEANING

Clean tools immediately with an appropriate solvent or isopropyl alcohol before product hardens.

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