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Technical Data Sheet

Epox-1111

(Super Metal)

Product Description

A two component paste grade system for repairing and rebuilding machinery and equipment. Based on a silicon steel alloy blended with high molecular weight reactive polymers. When cured, the material is durable yet fully machinable. Also used as a high strength structural adhesive for bonding or for creation of irregular load bearing shims with good electrical insulation characteristics. For use in original equipment manufacture or repair situation.

Application areas

When mixed and applied as detailed in the instruction for use, the system is ideally suited for application to the following

Shafts	keyways	pipes
Hydraulic rams	engine blocks	tank
Bearing housings	casings	flange faces

Typical Properties

Property	**part A**	**part B**	**mixed system**
Appearance	paste	paste	paste
Colour	dark gray	light gray	dark gray
Density (g/cm3)	2.7	1.7	2.1
Pot life at 25°C, 100 g, min			15min

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Processing

Mix ratio Product	by weight
Part A resin	100
Part B hardener	33

Pretreatment

The strength and durability of a bonded joint are dependent on proper treatment of the surfaces to be bonded. At the very least, joint surfaces should be cleaned with a good degreasing agent such as acetone, isopropanol (for plastics) or other proprietary degreasing agents in order to remove all traces of oil, grease and dirt. Low-grade alcohol, gasoline, or paint thinners should never be used. The strongest and most durable joints are obtained by either mechanically abrading or chemically etching the degreased surfaces. Abrading should be followed by a second degreasing treatment.

Instructions for use

1. **ensure an effective molecular weld**

   apply only to to clean, firm, dry and well roughened surfaces

   a. brush away loose contamination and degrease with a rag soaked in(cleaner/degreaser)or any other effective cleaner which does not leave a residue e.g. methyl ethyl ketone (MEK).use a flame to sweat out oil from deeply impregnated surfaces
   b. roughen surfaces by blast cleaning, deeply scoring or grinding.
   c. Stabilize cracks by drilling extremities. Long cracks should be drilled, tapped and bolted every 3-4 inches(77-103mm)
   d. Vee-out all cracks using a rotary file.
   e. Finally degrease again. use clean rags to avoid spreading contamination.

2. **Applying**

   For the best results

   Do not apply when

   a. The temperature is below 41 f(5 c) or the relative humidity is above 90%
   b. rain, snow, fog or mist is present
   c. there is moisture on the metal surface or is likely to be deposited by subsequent condensation.
   d. The working environment is likely to be contaminated by oil/grease from adjacent equipment or smoke from kerosene heaters or tobacco smoking.

2-1 Apply the Epox 1111 directly on to the prepared surface with applicator our spatula provided.

2-2 Press down firmly to fill all cracks, remove entrapped air, and ensure maximum contact with the surface.

2-3 Over cracks, gaps and holes, stipple in reinforcement tape.

3. . Completion of the molecular reaction

Allow Epox-1111 to solidify as below subjecting it to the condition indicated.

temperature	Movement or use involving no loading or immersion	Machining and/or light loading	Full mechanical or thermal loading	Immersion in chemical
41 F/ 5 C	4 hours	6 hours	4 day	5 day
50 F/ 10 C	3 hours	4 hours	2 day	4 day
59 F/ 15 C	135 min	3 hours	1.5 day	3 day
68 F/ 20 C	105 min	2 hours	1 day	2 day
77 F/ 25 C	60 min	90 min	20 hours	1.5 day
86 F/ 30 C	45 min	60 min	16 hours	1 day

4. Effecting the secondary molecular reaction

The mechanical properties, heat resistance and chemical resistance and chemical resistance of Epox-1111 will be improved by post curing.

After 2-4 hours of applying Epox-1111 ,post cure the material using forced air heaters, heat lamps , etc. for a minimum of 4 hours at 140-212 F (60-100 C)

5. Application of a further layer of Epox-1111

Whenever possible the Epox-1111 should be applied in a single layer to achieve the required thickness.

Best recommendation when recoating with suitable Epox products is to allow the Epox-1111 to reach the machining and or light loading level of cure. After this time, the surface most be roughened by abrading or grit blasting to achieve a frosted appearance with minimum surface profile of 40 microns before overcoating.

Alternatively, for service not involving immersion with a cold wall Epox-1111 can be directly overcoated within 90 minute at 50 F (10 C) within 60 minutes at 68 F (20 C) ,or within 30 minutes at 86 F (30 C).

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Equipment maintenance

All tools should be cleaned with hot soapy water before the adhesive residue dries. Removing cooked debris is a difficult and time consuming operation. If solvents such as acetone are used for cleaning, staff should take appropriate precautions and, in addition, avoid skin and eye contact.

Typical Physical Properties

Property	value	test method
Tensile shear		ASTM D1002
Mild steel	2755 psi (19 mpa)	ASTM D1002
Stainless steel	2900 psi (20 mpa)	ASTM D1002
Aluminium	1885 psi (13 mpa)	ASTM D1002
Pull of adhesion	2900 psi (20 mpa)	ASTM D4541
Abrasion cs-17 wheels	49.5 (mg/cycle)	ASTM D4060
Compressive strength	15955 psi(110 mpa)	ASTM D695
Tensile strength	4790 psi(33 mpa)	ASTM D638
Flexural strength	8410 psi(58 mpa)	ASTM D790
Hardness		
Shore D	85.1	ASTM D2240
Barcol hard	40	ASTM D2583
Heat resistance	-40 C-200 C	ISO11357
Impact resistance	32 j/m	ASTM D256

chemical properties

Type of chemical	Product resistance	Type of chemical	Product resistance
engine oil	Excellent	30% sodium hydroxide	Excellent
50% sulfuric acid	Excellent	50%Calcium hydroxide	Excellent
30% sulfuric acid	Excellent	20%Potassium hydroxide	Excellent
37% hydrochloric acid	Excellent	20% sodium hydroxide	Excellent
20% citric acid	Excellent	30% sodium hydroxide	Excellent
Lactic acid 10%	Excellent	Crude oil	Excellent
Sodium hydroxide 10%	Excellent	Petrol	Excellent
Calcium hydroxide 50%	Excellent	Toluene	Excellent

Test conditions: temperature 25 ° C and humidity 50% immersion in chemical solutions according to standard D 896 – 04

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health and safety

The adhesive should be stored in closed containers at a temperature of 25 degrees.

After using the material, close the lid of the remaining material tightly.

Before using the material on the surface, make sure that there is no dust, damp or moisture on the surface.

Before using the material, clean the surface from any grease and dirt.

Wear industrial gloves and a mask when using materials.