



TECHNICAL DATA

PLASTIC STEEL LIQUID (B)

Steel-Filled Epoxy Liquid

Description

Plastic Steel Liquid (B) is a steel-filled epoxy liquid designed for maintaining and/or repairing tooling, mould-making and levelling equipment.

Areas of application

- Holding fixtures for intricate parts
- Filling and levelling equipment
- Repairing hard to reach areas where a flowable epoxy is needed
- Duplicating or tracing masters
- Short run dies and moulds

Features

- Low viscosity, self-levelling liquid
- Castable
- Machinable to metallic finish
- Low shrinkage
- Resistant to chemicals and most acids, bases, solvents and alkalis

Chemical Resistance

(Chemical resistance is calculated with a 7 day, room temperature cure (30 days immersion) @ 24°C)

1,1,1 Trichloroethane	Very good	Phosphoric 10%	Very good
Ammonia	Very good	Potassium Hydroxide 20%	Very good
Cutting Oil	Very good	Sodium Chloride Brine	Very good
Petrol (Unleaded)	Very good	Sodium Hydroxide 10%	Very good
Hydrochloric 10%	Very good	Sulphuric 10%	Very good
Kerosene	Very good	Sulphuric 50%	Poor
Methyl Ethyl Ketone	Poor	Trisodium Phosphate	Very Good
Methylene Chloride	Poor	Xylene	Fair

The information contained in this Technical Bulletin is as up to date and correct as possible as at the time of issue. The data provided should be used as a guide only as the performance of the product will vary depending on differing operating conditions and application methods.

The sale of any product described in this Technical Bulletin will be in accordance with ITW Polymers & Fluids Conditions Of Sale, a copy of which is available on request. To the extent permitted by law, ITW Polymers & Fluids excludes all other warranties in relation to this product.

Limitations

Not recommended for long term exposure to concentrated acids or to organic solvents.

Technical Data

Typical Physical Properties: Cured 7 days @ 24°C

		Test Method
Colour	Dark Grey	
Mix Ratio (Resin to Hardener)	Weight 9:1 Volume 3:1	
Mixed Viscosity	15,000-25,000 cps	
Work Time of 500gms minutes @ 24°C	45	
Cure Time	16 hours	
Recoat Time	10-12 hours	
% Solids by Volume	100	
Specific Volume	473cm ³ /kg	
Specific Gravity	2.1 gm/cm ³	
Cure Shrinkage	0.0006 cm/cm	ASTM D2566
Hardness Shore D	85	ASTM D2240
Adhesive Tensile Shear	19.3 MPa	ASTM D1002
Tensile Strength	22.2 MPa	ASTM D638
Compressive Strength	70.3 MPa	ASTM D695
Modulus of Elasticity	1896 MPa	ASTM D695
Co-efficient of Thermal Expansion	68 x 10 ⁻⁶ °C ⁻¹	AS TM D696
Thermal Conductivity	1.39 x 10 ⁻³ cal.cm/sec/cm ² .°C	ASTM C177
Dielectric Strength	1181 volts/mm	ASTM D149
Dielectric Constant	67.5	ASTM D150
Flexural Strength	38.6 MPa	ASTM D790
Maximum Operating Temperature	Wet: 49°C, Dry: 120°C	
Coverage (per coat)	932 cm ² /kg @ 5mm	

Directions for use

Surface Preparation

Proper surface preparation is essential to the success of any epoxy application. In all cases the surface should be clean, dry, free from oils, and rough.

1. Remove all oils, dirt and grease by means of a strong cleaner/degreaser (Devcon® Surface Cleaner is suitable for this process).
2. Roughen the surface by grit blasting (8-40 mesh grit) or grinding. A 75-125 micron profile is desired for most applications, including defined edges (do not 'feather edge' epoxy).

Note: For metals exposed to sea water or other salt solution, grit blast and high pressure water blast the area, then leave overnight to allow any salts in the metal to 'sweat' to the surface. Repeat blasting to 'sweat out' all soluble salts. Perform chloride contamination test to determine soluble salt content (should be no more than 40ppm)

3. All abrasive preparation should be followed by another cleaning to remove any remnants from that process.
4. Repair surface as soon as possible to eliminate any changes or surface contaminants.

Mixing

Ideal application temperature is 13°C - 32°C. Under cold conditions, heating the repair area to 38°C - 43°C is recommended to dry off any moisture, contamination, or solvents, as well as to assist epoxy in achieving maximum adhesion properties.

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Mix Ratio – Resin to hardener: Weight 9:1, Volume 3:1

----- It is strongly recommended that full units be mixed, as ratios are pre-measured. -----

1. Add hardener to resin.
2. Mix thoroughly with a putty knife or similar tool (continuously scrape material away from sides and bottom of container) until a uniform, streak free consistency is obtained.

Application

Brush a thin coat of epoxy onto the substrate to be duplicated, and then pour Plastic Steel Liquid (B). Plastic Steel Liquid (B) fully cures in 16 hours, at which time it can be machined, drilled, or painted.

To Avoid Air Entrapment

Pour Plastic Steel Liquid (B) in a fine stream no greater than 25mm thick to evacuate any trapped air. Let material set up and cool before pouring additional thicknesses.

For Maximum Physical Properties

Cure at room temperature for 2 ½ hours, then heat cure for 4 hours @ 100°C.

For ±24°C Applications

Applying epoxy at temperatures below 24°C lengthens functional cure and pot life times. Conversely, applying above 24°C shortens functional cure and pot life.

Machining

Allow material to cure for at least 12 hours before machining

- Lathe speed 46 m/minute
- Cut: Dry
- Tools: Carbide top rake 6° (+/- 2°) – Side/front 8° (+/- 2°)
- Feed rate (rough): Travel speed 0.50 mm Rough cut 0.50 mm – 1.5 mm/rev
- Feed rate (finishing): Travel speed 0.25 mm Finish cut 0.25 mm/rev
- Polishing: Use 400 to 650 emery paper wet. Material should polish to a 25-50 micron finish

Compliances

Qualifies under MMM-A-1754, Accepted for use in U.S. meat and poultry plants.

Storage and Shelf Life

Store in dry conditions between 10°C and 40°C, away from sources of heat and naked flames. Protect from frost. When stored in original sealed containers, the minimum shelf life is five (5) years.

Packaging

Plastic Steel Putty (A) is available in a 500gm kits.

Ordering Information:

500 gm Kit

#D10210

Health & Safety Information

The product is non-hazardous. A Material Safety Data Sheet is available from the ITW Polymers & Fluids Technical Department upon request or available on our website www.itw-devcon.com.au.

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