Technical Data Sheet
Version 3. 04/2023

Plastic Steel® Liquid (B)

Description: A steel-filled, liquid epoxy designed for maintaining and/or repairing tooling, mold-making, and leveling equipment.

Intended Use: Industrial Use: Holding fixtures for intricate parts; filling and leveling equipment; repairing hard-to-reach areas where a flowable epoxy is needed; duplicating or tracing masters; short run dies and molds

Features:
Low viscosity, self-leveling liquid
Castable
Low shrinkage
Machinable to metallic finish

Limitations: Suitability of product is determined by the end user for their application and process.
Not recommended for long term exposure to concentrated acids or to organic solvents

Typical Physical Properties:

Technical data should be considered representative or typical only and should not be used for specification purposes.

Cured 7 Days @ 75°F (24°C)	Typical Values	Standard Tests
Adhesive Tensile Shear	2,800 psi (19.3 MPa)	Dielectric Constant ASTM D 150
Coefficient of Thermal Expansion (x10-6)	38 in/in.°F (68.42 cm/cm.°C)	Compressive Strength ASTM D 695
Compression Strength	10,200 psi (70.3 MPa)	Cured Hardness Shore D ASTM D 2240
Cured Shrinkage	0.0006 in/in (cm/cm)	Cure Shrinkage ASTM D 2566
Dielectric Constant	67.5	Modulus of Elasticity ASTM D 638
Dielectric Strength	30 volts/mil (1.2 kV/mm)	Coef. of Thermal Expansion ASTM D 696
Flexural Strength	7480 psi (51.6 MPa)	Adhesive Tensile Shear ASTM D 1002
Functional Cure	16 hrs	Dielectric Strength, volts/mil ASTM D 149
Hardness	85 Shore D	Flexural Strength ASTM D 790
Modulus of Elasticity	8.5 psi x10^5 (5.9 GPa)	Thermal Conductivity ASTM C 177
Solids by Volume	100	
Temperature Resistance	Wet: 120°F (49°C); Dry: 250°F (121°C)	
Thermal Conductivity (x10-3)	1.39 cal/s.cm.°C	

Uncured Properties @ 72°F (23°C)	
Color	Dark Grey
Coverage (1/4" / 6.35mm)	52 in2/lb (740 cm2/Kg)
Mix Ratio by Volume	3:01
Mix Ratio by Weight	9:01
Mixed Viscosity	15,000 - 25,000 cP
Pot Life @ 75F	45 min.
Recoat Time	2-4 hrs
Specific Gravity	17.53 lb/Gal (2.1 g/cm3)
Specific Volume	13.1 in3/lb (0.47 cm3/g)

Surface Preparation:

1. Thoroughly clean the surface with Devcon® Cleaner Blend 300 to remove all oil, grease and dirt.

2. Grit blast surface area with 8-40 mesh grit, or grind with a coarse wheel or abrasive disc pad, to create increased surface area for better adhesion (Caution: An abrasive disc pad can only be used provided white metal is revealed). Desired profile is 3-5mil, 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. Clean surface again with Devcon® Cleaner Blend 300 to remove all traces of oil, grease, dust or other foreign substances from the grit blasting.

4. Repair surface as soon as possible to eliminate any changes or surface contaminants.

WORKING CONDITIONS: Ideal application temperature is 55°F to 90°F (13ºC - 32ºC). In cold working conditions, directly heat repair area to 100 - 110°F (38ºC - 43ºC) prior to applying epoxy and maintain at this temperature during product cure to dry off any moisture, contamination, or solvents, as well as to achieve maximum performance properties.

Mixing Instructions:

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

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

LARGE SIZES (3 lb. 4 lb. 25 lb.): Use a propeller-type Jiffy Mixer on an electric drill. Use model HS-1 for 3 lb. and 4 lb. kits. Use model ES for 25 lb. kit. Mix until color is uniform and consistent.

Note: Keep propeller below liquid line, as additional air can be added to mixture, resulting in air bubbles on the surface of the finished product.

Application Instructions:

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

TO AVOID AIR ENTRAPMENT
Pour Plastic Steel® Liquid (B) in a fine stream no greater than 1" thick to evacuate any trapped air. Let material set up and cool before pouring additional thicknesses.

MACHINING:
Allow material to cure for at least one hour before machining.

- Lathe speed: 150 ft/min
- Cut: Dry
- Tools: Carbide Top Rake 6° (+/-2°) – Side/Front 8°F (+/-2°)
- Feed Rate (rough): Travel speed .020 Rough cut .020 - .060
- Feed Rate (finishing): Travel speed .010 Finish cut .010
- Polishing: Use 400-650 grit emery paper wet. Material should polish to a 25-50 micro inch.

Storage:

Shelf life 3 yrs from manufacture. See package label. Store at room temperature, 70 °F (21ºC).

Compliances:

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

Chemical Resistance:

Chemical resistance is calculated with a 7 day, room temp. cure (30 days immersion) @ 75°F (24ºC))

1,1,1-Trichloroethane	Very good
Ammonia	Very good
Cutting Oil	Very good
Gasoline (Unleaded)	Very good
Hydrochloric 10%	Very good
Kerosene	Very good
Methylene Chloride	Poor
Methyl Ethyl Ketone	Poor

Phosphoric 10%	Very good
Potassium Hydroxide 20%	Very good
Sodium Chloride Brine	Very good
Sodium Hydroxide 10%	Very good
Sulfuric 10%	Very good
Sulfuric 50%	Poor
Trisodium Phosphate	Very good
Xylene	Fair

Precautions:

FOR INDUSTRIAL USE ONLY: Please refer to the appropriate **S**afety **D**ata **S**heet prior to using this product.

Warranty:

ITW Performance Polymers will replace any material found to be defective. Because the storage, handling and application of this material is beyond our control, we can accept no liability for the results obtained.

Order Information:

Item No.	Package Size
10220	4 lb. kit
10210	1 lb. kit
10230	25 lb. - slower hardener (90 min. pot life)

Contacts:

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