



A brand of ITW Polymers Adhesives North America

# Plastic Steel® Liquid (B)

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

**Intended 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

**Product features:** **Low viscosity, self-leveling liquid**  
**Castable**  
**Low shrinkage**  
**Machinable to metallic finish**

**Limitations:** 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**

<b>Adhesive Tensile Shear</b>	<b>2,800 psi</b>
<b>Coefficient of Thermal Expansion</b>	<b>38[(in.)/(in x °F)] x 10(-6)</b>
<b>Color</b>	<b>Dark Grey</b>
<b>Compressive Strength</b>	<b>10,200 psi</b>
<b>Coverage/lb</b>	<b>52 sq.in./lb. @ 1/4"</b>
<b>Cured Hardness</b>	<b>85D</b>
<b>Cured Shrinkage</b>	<b>0.0006 in./in.</b>
<b>Dielectric Constant</b>	<b>67.5</b>
<b>Dielectric Strength</b>	<b>30 volts/mil</b>
<b>Flexural Strength</b>	<b>7480 psi</b>
<b>Functional Cure</b>	<b>16 hrs</b>
<b>Mix Ratio by Volume</b>	<b>3:1</b>
<b>Mix Ratio by Weight</b>	<b>9:1</b>
<b>Mixed Viscosity</b>	<b>15,000-25,000 cps</b>
<b>Modulus of Elasticity</b>	<b>8.5 psi x 10(5)</b>
<b>Pot Life @ 75F</b>	<b>45 min.</b>
<b>Recoat Time</b>	<b>2-4 hrs</b>
<b>Solids by Volume</b>	<b>100</b>
<b>Specific Gravity</b>	<b>2.1 gm/cc</b>
<b>Specific Volume</b>	<b>13.1 in.(3)/lb.</b>
<b>Temperature Resistance</b>	<b>Wet: 120°F; Dry: 250°F</b>
<b>Thermal Conductivity</b>	<b>1.39[cal/(secx Cm x °C)]x10(-3)</b>

**TESTS CONDUCTED**

Dielectric Constant ASTM D 150  
 Compressive Strength ASTM D 695  
 Cured Hardness Shore D ASTM D 2240  
 Cure Shrinkage ASTM D 2566  
 Modulus of Elasticity ASTM D 638  
 Coef. of Thermal Expansion ASTM D 696  
 Adhesive Tensile Shear ASTM D 1002  
 Dielectric Strength, volts/mil ASTM D 149  
 Flexural Strength ASTM D 790  
 Thermal Conductivity ASTM C 177

**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. In cold working conditions, directly heat repair area to 100-110°F 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, drilled, or painted.

**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 12 hours 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:**

Store at room temperature, 70 °F.

**Compliances:**

Qualifies under MMM-A-1754  
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)*

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
Gasoline (Unleaded)	Very good	Sodium Hydroxide 10%	Very good
Hydrochloric 10%	Very good	Sulfuric 10%	Very good
Kerosene	Very good	Sulfuric 50%	Poor
Methyl Ethyl Ketone	Poor	Trisodium Phosphate	Very good
Methylene Chloride	Poor	Xylene	Fair

**Precautions:**

Please refer to the appropriate material safety data sheet (MSDS) prior to using this product.

**For technical assistance, please call 1-800-933-8266**

**FOR INDUSTRIAL USE ONLY**

**Warranty:**

Devcon 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.

**Disclaimer:**

All information on this data sheet is based on laboratory testing and is not intended for design purposes. ITW Devcon makes no representations or warranties of any kind concerning this data.

**Order Information:**

- 10220 4 lb.
- 10210 1 lb. kit
- 10230 25 lb. - slower hardener (90 min. pot life)