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## Technical Data Sheet

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# Plastic Steel® 5-Minute® Putty (SF)

<b>Description:</b>	A steel-filled, fast-setting epoxy putty for filling, rebuilding, and bonding metal surfaces.
<b>Intended Use:</b>	Restores worn or fatigued metals; patches castings; makes jigs and fixtures; rebuilds pump and valve bodies; restores bearing journals and races
<b>Product features:</b>	<b>Bonds to aluminum, concrete, and many other metals</b> <b>Resistant to chemicals and most acids, bases, solvents, and alkalis</b> <b>Applies easily to vertical surfaces</b> <b>Machinable to metallic finish</b>
<b>Limitations:</b>	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>2,026 psi</b>
<b>Coefficient of Thermal Expansion</b>	<b>34 [(in.)/(in. x °F)] x 10(-6)</b>
<b>Color</b>	<b>Dark Grey</b>
<b>Compressive Strength</b>	<b>10,400 psi</b>
<b>Coverage/lb</b>	<b>49 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>35</b>
<b>Dielectric Strength</b>	<b>30 volts/mil</b>
<b>Flexural Strength</b>	<b>7,680 psi</b>
<b>Functional Cure</b>	<b>1 hr</b>
<b>Mix Ratio by Volume</b>	<b>1:1</b>
<b>Mix Ratio by Weight</b>	<b>1.7:1</b>
<b>Mixed Viscosity</b>	<b>Putty</b>
<b>Modulus of Elasticity</b>	<b>7.5 psi x 10(5)</b>
<b>Pot Life @ 75F</b>	<b>5 min.</b>
<b>Recoat Time</b>	<b>15-30 min.</b>
<b>Solids by Volume</b>	<b>100</b>
<b>Specific Gravity</b>	<b>2.2</b>
<b>Specific Volume</b>	<b>12.2 in.(3)/lb.</b>
<b>Temperature Resistance</b>	<b>Dry: 200°F</b>
<b>Thermal Conductivity</b>	<b>2.65[cal/(SecxCmx°C)]x10(-3)</b>

#### TESTS CONDUCTED

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

### 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.

**INTERMEDIATE SIZES** (1,2,3 lb. units): Place resin and hardener on a flat, disposable surface such as cardboard, plywood or plastic sheet. Use a trowel or wide-blade tool to mix the material as in Step 2 above.

**LARGE SIZES:** (25 lb., 30 lb., 50 lb. buckets): Use a T-shaped mixing paddle or a propeller-type Jiffy Mixer Model ES on an electric drill. Thoroughly fold putty by vigorously moving paddle/propeller up and down until a homogenous mix of resin and hardener is attained.

**Application Instructions:**

Spread mixed material on repair area and work firmly into substrate to ensure maximum surface contact. Plastic Steel® 5 Minute® Putty (SF) sufficiently cures in 1 hour such that it can be machined, drilled, or painted.

**FOR BRIDGING LARGE GAPS OR HOLES**

Place fiberglass sheet, expanded metal, or mechanical fasteners between repair area and Plastic Steel® 5 Minute® Putty (SF) prior to application.

**FOR VERTICAL SURFACE APPLICATIONS**

Plastic Steel® 5 Minute® Putty (SF) can be troweled up to ¼" thick without sagging.

**FOR MAXIMUM PHYSICAL PROPERTIES**

Cure at room temperature for 2.5 hours, then heat cure for 4 hours @ 200°F.

**FOR ± 70°F APPLICATIONS**

Applying epoxy at temperatures below 70°F lengthens functional cure and pot life times. Conversely, applying above 70°F shortens functional cure and pot life.

**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:**

Store at room temperature, 70 °F.

**Compliances:**

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	Fair	Phosphoric 10%	Fair
Ammonium Hydroxide 20%	Fair	Potassium Hydroxide 40%	Fair
Cutting Oil	Very good	Sodium Chloride Brine	Fair
Gasoline (Unleaded)	Very good	Sodium Hypochlorite	Fair
Hydrochloric 10%	Fair	Sulfuric 10%	Fair
Methyl Ethyl Ketone	Poor	Sulfuric 50%	Poor
Methylene Chloride	Poor	Trisodium Phosphate	Fair
Mineral Spirits	Very good	Xylene	Poor

**Precautions:**

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

**For technical assistance, please call 1-855-489-7262**

**FOR INDUSTRIAL USE ONLY**

**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.

**Disclaimer:**

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

**Order Information:**

**10240 1 lb. kit**