



## 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> | Industrial Use: Restores worn or fatigued metals; patches castings; makes jigs and fixtures; rebuilds pump and valve bodies; restores bearing journals and races                                                              |
| <b>Features:</b>     | <b>Bonds to aluminum, concrete, and many other metals</b><br><b>Resistant to chemicals and most acids, bases, solvents, and alkalis</b><br><b>Applies easily to vertical surfaces</b><br><b>Machinable to metallic finish</b> |
| <b>Limitations:</b>  | Suitability of product is determined by the end user for their application and process.<br>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)

Adhesive Tensile Shear  
Coefficient of Thermal Expansion (x10-6)  
Compression Strength  
Cured Shrinkage  
Dielectric Constant  
Dielectric Strength  
Flexural Strength  
Hardness  
Modulus of Elasticity  
Solids by Volume  
Temperature Resistance  
Thermal Conductivity (x10-3)

### Typical Values

2,026 psi (14.0 MPa)  
34 in/in.°F (61.2 cm/cm.°C)  
10,400 psi (71.7 MPa)  
0.0006 in/in (cm/cm)  
35  
30 volts/mil (1.2 kV/mm)  
7,680 psi (52.9 MPa)  
85 Shore D  
7.5 psi x10<sup>5</sup> (5.2 GPa)  
100%  
Dry: 200°F (93°C)  
2.65 cal/s.cm.°C

### Standard Tests

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

### Uncured Properties @ 72°F (23°C)

Color  
Coverage (1/4" / 6.35mm)  
Functional Cure  
Mix Ratio by Volume  
Mix Ratio by Weight  
Mixed Viscosity  
Pot Life @ 75F  
Recoat Time  
Specific Gravity  
Specific Volume

Dark Grey  
49 in2/lb (697 cm2/Kg)  
1 hr  
1:01  
1.7:1  
Putty  
5 min.  
15-30 min.  
2.2  
12.2 in3/lb (0.44 cm3/g)

**Surface**

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 (13°C to 32°C). In cold working conditions, directly heat repair area to 100 - 110°F (38°C - 43°C) prior to applying epoxy and maintain at this temperature during any moisture, product cure to dry off 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:**

1. Spread mixed material on repair area and work firmly into substrate to ensure maximum surface contact.
2. Assemble with mating part within recommended working time.
3. Apply firm pressure between mating parts to minimize any gap and ensure good contact (a small fillet of epoxy should flow out the edges to display adequate gap fill.) Plastic Steel® 5-Minute® Putty (SF) fully cures in 16 hours, at which time 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" (6.4 mm) thick without sagging.

**FOR MAXIMUM PHYSICAL PROPERTIES**

Cure at room temperature for 2.5 hours, then heat cure for 4 hours @ 200°F (93°C)

**FOR ± 70°F APPLICATIONS**

Applying epoxy at temperatures below 70°F (21°C) lengthens functional cure and pot lifetimes. Conversely, applying above 70°F (21°C) 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:**

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

**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 (24°C)

|                        |           |
|------------------------|-----------|
| 1,1,1-Trichloroethane  | Fair      |
| Ammonium Hydroxide 20% | Fair      |
| Cutting Oil            | Very good |
| Gasoline (Unleaded)    | Very good |
| Hydrochloric 10%       | Fair      |
| Methyl Ethyl Ketone    | Poor      |
| Methylene Chloride     | Poor      |
| Mineral Spirits        | Very good |

|                         |      |
|-------------------------|------|
| Phosphoric 10%          | Fair |
| Potassium Hydroxide 40% | Fair |
| Sodium Chloride Brine   | Fair |
| Sodium Hypochlorite     | Fair |
| Sulfuric 10%            | Fair |
| Sulfuric 50%            | Poor |
| Trisodium Phosphate     | Fair |
| Xylene                  | Fair |

**Precautions:**

**FOR INDUSTRIAL USE ONLY:** Please refer to the appropriate Safety Data Sheet 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.** 10240  
**Package Size** 1 lb. kit (0.45 Kg)

**Contacts:**

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