



## Plastic Steel Putty (A)

|               |                                                                                                                                                                                                                               |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description:  | A steel-filled epoxy putty that cures at room temperature and is designed for filling, rebuilding, and bonding metal surfaces.                                                                                                |
| Intended Use: | Industrial Use: Patching and repairing areas where welding or brazing would be undesirable or impossible flowable epoxy is needed; duplicating or tracing masters; short run dies and molds                                   |
| Features:     | <b>Applies easily to vertical surfaces</b><br><b>Machinable to metallic finish</b><br><b>Bonds to aluminum, concrete, and many other metals</b><br><b>Resistant to chemicals and most acids, bases, solvents, and alkalis</b> |
| Limitations:  | 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                                                |

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

|                              |                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Typical Physical Properties: | <b>Cured 7 Days @ 75°F (24°C)</b><br>Adhesive Tensile Shear<br>Coefficient of Thermal Expansion (x10-6)<br>Compression Strength<br>Cured Shrinkage<br>Dielectric Constant<br>Dielectric Strength<br>Flexural Strength<br>Hardness<br>Modulus of Elasticity<br>Solids by Volume<br>Temperature Resistance<br>Thermal Conductivity (x10-3) | <b>Typical Values</b><br>2,800 psi (19.3 MPa)<br>48 in/in.°F (86.4 cm/cm.°C)<br>8260 psi (57 MPa)<br>0.0006 in/in (cm/cm)<br>67.5<br>30 volts/mil (1.2 kV/mm)<br>5600 psi (38.6 MPa)<br>85 Shore D<br>8.5 x10 <sup>5</sup> psi (5.9 GPa)<br>100<br>Wet: 120°F (49°C); Dry: 250°F (121°C)<br>1.37 cal/sec.cm.°C | <b>Standard Tests</b><br>Dielectric Constant ASTM D 150<br>Compressive Strength ASTM D 695<br>Cured Hardness Shore D ASTM D 2240<br><br>Cure Shrinkage ASTM D 2566<br>Modulus of Elasticity ASTM D 638<br>Coef. of Thermal Expansion ASTM D 696<br>Adhesive Tensile Shear ASTM D 1002<br>Dielectric Strength, volts/mil ASTM D 149<br>Flexural Strength ASTM D 790<br>Thermal Conductivity ASTM C 177 |
|                              | <b>Uncured Properties @ 72°F (23°C)</b><br>Color<br>Coverage (1/4" / 6.35 mm)<br>Functional Cure<br>Mix Ratio by Volume<br>Mix Ratio by Weight<br>Mixed Viscosity<br>Pot Life @ 75F<br>Recoat Time<br>Specific Gravity<br>Specific Volume                                                                                                | <br>Grey<br>48 in2/lb (310 cm2/Kg)<br>16 hrs<br>2.5:1<br>09:01<br>Putty<br>45 min.<br>2-4 hrs.<br>19.45 lb/Gal (2.33 g/cm3)<br>11.9 in3/lb (0.43 cm3/g)                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                       |

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surface Preparation: | <p>1. Thoroughly clean the surface with Devcon® Cleaner Blend 300 or any appropriate non residual solvent cleaner eg. Acetone, MEK to remove all oil, grease and dirt.</p> <p>2. Grit blast surface area following at least ISO 8501 SA 2 ½ (Very Thorough Blast Cleaning) and or SSPC-SP 10 (Near White Metal). When grit blasting is not possible the surface may be prepared following SSPC-SP 3 until at least "Condition A" is achieved. <b>The required surface profile depth is 3-5 mils (75-125µm).</b></p> <p><b>Note:</b> 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. The salt contamination level is recommended to not exceed 20mg/m² (2µg/cm²).</p> <p>3. Clean surface again with Devcon® Cleaner Blend 300 or any appropriate non residual solvent cleaner eg. Acetone, MEK. To remove all traces of oil, grease, dust or other foreign substances from the substrate. Dust contamination level should not exceed Level 2 prior coating applications in accordance to ISO 8502-3.</p> <p>4. Repair surface as soon as possible to eliminate any changes or surface contaminants.</p> <p>WORKING CONDITIONS: Ideal application temperature is 55°F to 90°F (13- 32°C). In cold working conditions, directly repair area to 100-110°F (38-43°C) 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.</p> <p><b>It's not recommended to apply the product when the temperature of the substrate is less than 5°F (3°C) above the Dewpoint, or the Relative Humidity is higher than 85%.</b></p> |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mixing Instructions: | <p>---- It is strongly recommended that full units be mixed, as ratios are pre-measured. ----</p> <p>1. Add hardener to resin.</p> <p>2. Mix thoroughly with spatula or similar tool (continuously scrape material away from sides and bottom of container) until a uniform, streak-free consistency is obtained.</p> <p>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.</p> <p>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.</p> |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Application Instructions:**

Spread mixed material on repair area and work firmly into substrate to ensure maximum surface contact. Plastic Steel Putty 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 Putty prior to application.

**FOR VERTICAL SURFACE APPLICATIONS**

Titanium Putty can be troweled up to ½" thick without sagging. Chemical immersion is possible after 24 hours.

**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 (21°C) APPLICATIONS**

Applying epoxy at temperatures below 70°F (21 °C) 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 four hours before machining, but wait no longer than 24 hours as the material will wear the tools. Machine using these guidelines:

- 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.

**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 (25°C)

|                       |           |
|-----------------------|-----------|
| 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 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:**

**EMEA**  
**10112 - 500g**  
**10115 - 1Kg**

**US**  
**10110 - 1lb**  
**10120 - 4lb**

**Contacts:**

[www.itwpp.com](http://www.itwpp.com)  
ITW Performance Polymers (EMEA)  
Bay 150, Shannon Industrial Estate  
Shannon, County Clare, Ireland V14 DF82  
TEL: +353 61 771 500  
FAX: +353 61 471 285  
Email: [customerservice.shannon@itwpp.com](mailto:customerservice.shannon@itwpp.com)

ITW Performance Polymers (US)  
30 Endicott Street  
Danvers, MA 01923 USA  
TEL: 855 489 7262  
FAX: 978 774 0516  
Email: [info@itwpp.com](mailto:info@itwpp.com)

**Disclaimer:**

**Product Use:** The information herein is based upon good faith testing that ITW PP believes are reliable, but the accuracy or completeness of such information is not guaranteed. Many factors beyond ITW PP control and uniquely within user's knowledge and control can affect the use and performance of an ITW PP product in a particular application. Given the variety of influencers on performance, the data here is not intended to substitute end user testing. It is the end users sole responsible for evaluating any ITW PP product and determining whether it is fit for a particular purpose and suitable for user's design, production, and final application.

**Exclusion of Warranties:** As to the herein described materials and test results, there are no warranties which extend beyond the description on the face hereof. ITW PP makes no other warranties, express or implied, including, but not limited to, any implied warranty of merchantability or fitness for a particular purpose. Since the use of the herein described involves many variables in methods of application, design, handling and/or use, the user, in accepting and using these materials, assumes all responsibility for the end result. ITW PP shall not otherwise be liable for loss of damages, whether direct, indirect, special, incidental, or consequential, regardless of the legal theory asserted, including negligence, warranty, or strict liability.