



# Bronze Putty

- Description:** Metal-filled epoxy for repairing, rebuilding, and maintaining bronze parts and equipment
- Intended Use:** Industrial Use: Repair, rebuild, and maintain marine propellers, shafts, trays, chutes, gate valves, and pump wear rings
- Features:**
  - Resistant to chemicals and most acids, bases, solvents, and alkalis**
  - Machinable to metallic finish**
  - Bonds to ferrous and non-ferrous metals**
- Limitations:** Not recommended for long-term exposure to concentrated acids and organic solvents

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

### Typical Physical Properties:

#### Cured 7 Days @ 75°F (24°C)

	Typical Values
Adhesive Lap Shear (GBS)	2,680 psi (18.0 Mpa)
Coeff. of Thermal Expansion x 10-6	33 in/in.°F (61.2 cm/cm.°C)
Compressive Strength	8,540 psi (58.3 Mpa)
Cured Shrinkage	0.001 in/in (cm/cm)
Dielectric Strength	75 volts/mil (2.95 Kv/mm)
Dielectric Constant	25
Flexural Strength	6,180 psi (42.6 Mpa)
Hardness	85 Shore D
Modulus of Elasticity	8.0x10 <sup>5</sup> psi (5.5 GPa)
Solids by Volume	100
Temperature Resistance	Wet: 120°F (49°C); Dry: 250°F (121°C )
Thermal Conductivity (x10-3)	1.57 cal/sec.cm.°C
Volume	12.4 in <sup>3</sup> /lb (0.448 cm <sup>3</sup> /g)

#### Standard Tests

- Coeff. of Thermal Exp. ASTM D696
- Compressive Strength ASTM D 695
- Coef. of Thermal Expan. ASTM D 696
- Cured Hardness Shore D ASTM D 2240
- Cure Shrinkage ASTM D 2566
- Dielectric Strength ASTM D149
- Dielectric Constant ASTM D150
- Flexural ASTM D 790
- Hardness, Shore D ASTM D2240
- Tensile Lap Shear ASTM D1002
- Thermal Conductivity ASTM C 177
- Modulus of Elasticity ASTM D 638

#### Uncured Properties @ 72°F (23°C)

Color	Bronze
Coverage (1/4" / 6.35mm)	50 in <sup>2</sup> /lb (711 cm <sup>2</sup> /Kg)
Functional Cure	16 hours
Pot Life	35 min
Recoat time	2-4 hrs.
Mix Ratio by Volume	3:1
Mix Ratio by Weight	9:1
Specific Gravity	2.23 g/cm <sup>3</sup>
Mixed Viscosity	Putty

### 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 (13C -32C) . In cold working conditions, directly heat the repair area to 100-110°F (38-43C) 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 to 3 lb. / 0.5 to 1.4 Kg 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 to 50 lb / 11 to 22 Kg 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. Bronze Putty will fully cure 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 Aluminum Putty (F) prior to application.

**FOR VERTICAL SURFACE APPLICATIONS**

Bronze Putty can be troweled up to 1/4" (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 (21°C) APPLICATIONS**

Applying epoxy at temperatures below 70°F (21°C) lengthens functional cure and pot life times. Conversely, applying above 70°F (21°C) shortens functional cure and pot life.

**MACHINING:**

Allow material to cure for at least four hours before machining.

- Lathe speed: 150 ft/min (46 m/min)

- Cut: Dry

- Tools: Carbide Top Rake 6° (+/-2°) – Side/Front 8°F (+/-2°) 14 C (+/-1), -13 C (+/- 1)

- Feed Rate (rough): Travel speed 0.020 Rough cut 0.020 - 0.060

- Feed Rate (finishing): Travel speed 0.010 Finish cut 0.010

- 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:**

None

**Chemical Resistance:**

Chemical resistance is calculated with a 7 day, room temp. cure (30 days immersion) @ 75°F (24°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
Methanol	Fair
Methy Ethy Ketone	Poor

Phosphoric 10%	Very good
Potassium Hydroxide 20%	Very good
Sodium Chloride Brine	Very good
Sodium Hydroxide 10%	Fair
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:**

**10260 - 1 lb. (0.45 Kg) kit**

**Contacts:**

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