



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

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 Lap Shear (GBS)
Coeff. of Thermal Expansion x 10-6
Compressive Strength
Cured Shrinkage
Dielectric Strength
Dielectric Constant
Flexural Strength
Hardness
Modulus of Elasticity
Solids by Volume
Temperature Resistance
Thermal Conductivity (x10-3)
Volume

Typical Values

2,680 psi (18.0 Mpa)
33 in/in.°F (61.2 cm/cm.°C)
8,540 psi (58.3 Mpa)
0.001 in/in (cm/cm)
75 volts/mil (2.95 Kv/mm)
25
6,180 psi (42.6 Mpa)
85 Shore D
8.0x10⁵ psi (5.5 GPa)
100
Wet: 120°F (49°C); Dry: 250°F (121°C)
1.57 cal/sec.cm.°C
12.4 in³/lb (0.448 cm³/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
Coverage (1/4" / 6.35mm)
Functional Cure
Pot Life
Recoat time
Mix Ratio by Volume
Mix Ratio by Weight
Specific Gravity
Mixed Viscosity

Bronze
50 in²/lb (711 cm²/Kg)
16 hours
35 min
2-4 hrs.
3:1
9:1
2.23 g/cm³
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).
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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.
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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 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 (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

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