Technical Data Sheet
Version 2. 04/2023

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)	Typical Values	Standard Tests
Adhesive Lap Shear (GBS)	2,680 psi (18.0 Mpa)	Coeff. of Thermal Exp. ASTM D696
Coeff. of Thermal Expansion x 10-6	33 in/in.^{o}F (61.2 cm/cm.^{o}C)	Compressive StrengthASTM D 695
Compressive Strength	8,540 psi (58.3 Mpa)	Coef. of Thermal Expan. ASTM D 696
Cured Shrinkage	0.001 in/in (cm/cm)	Cured Hardness Shore D ASTM D 2240
Dielectric Strength	75 volts/mil (2.95 Kv/mm)	Cure Shrinkage ASTM D 2566
Dielectric Constant	25	Dielectric Strength ASTM D149
Flexural Strength	6,180 psi (42.6 Mpa)	Dielectric Constant ASTM D150
Hardness	85 Shore D	Flexural ASTM D 790
Modulus of Elasticity	8.0x10^{5} psi (5.5 GPa)	Hardness, Shore D ASTM D2240
Solids by Volume	100	Tensile Lap Shear ASTM D1002
Temperature Resistance	Wet: 120°F (49^{o}C); Dry: 250°F (121^{o}C)	Thermal Conductivity ASTM C 177
Thermal Conductivity (x10-3)	1.57 cal/sec.cm.°C	Modulus of Elasticity ASTM D 638
Volume	12.4 in3/lb (0.448 cm3/g)	

Uncured Properties @ 72°F (23°C)	
Color	Bronze
Coverage (1/4" / 6.35mm)	50 in2/lb (711 cm2/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/cm3
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 to100-110°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 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	Phosphoric 10%	Very good
Ammonia	Very good	Potassium Hydroxide 20%	Very good
Cutting Oil	Very good	Sodium Chloride Brine	Very good
Gasoline (Unleaded)	Very good	Sodium Hydroxide 10%	Fair
Hydrochloric 10%	Very good	Sulfuric 10%	Very good
Kerosene	Very good	Sulfuric 50%	Poor
Methanol	Fair	Trisodium Phosphate	Very good
Methy Ethy Ketone	Poor	Xylene	Fair

Precautions: **FOR INDUSTRIAL USE ONLY:** Please refer to the appropriate **S**afety **D**ata **S**heet 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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