Technical Data Sheet
February 2024

Aluminum Putty (F)

Description: Aluminum-filled epoxy putty for dependable nonrusting repairs to aluminum castings, machinery, and equipment widely used in HVAC applications

Intended Use: Industrial Use: Patch aluminum castings; make jigs, dies, and holding fixtures

Features:
Can be machined, drilled, or tapped using conventional metalworking tools
Bonds to aluminum, concrete, and many other metals
Fills voids or pores in castings

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 Tensile Lap Shear (GBS)	2,600 psi (17.9 Mpa)	Compressive Strength ASTM D 695
Coeff. of Thermal Expansion x 10-6	29 in/in.^{o}F (52 cm/cm.^{o}C)	Cured Hardness Shore D ASTM D 2240
Compressive Strength	8,420 psi (58.3 Mpa)	Dielectric Constant ASTM D 150
Cured Shrinkage	0.0008 in/in (0.0008 cm/cm)	Modulus of Elasticity ASTM D 638
Dielectric Constant	21.4	Cure Shrinkage ASTM D 2566
Dielectric Strength	100 volts/mil (3.94 Kv/mm)	Adhesive Tensile Shear ASTM D 1002
Hardness	85 Shore D	Dielectric Strength, volts/mil ASTM D 149
Modulus of Elasticity	8.0x10^{5} psi (5.5 GPa)	Coef. of Thermal Expansion ASTM D 696
Solids by Volume	100	Flexural Strength ASTM D 790
Temperature Resistance	Wet: 120°F (49^{o}C); Dry: 250°F (121^{o}C)	Thermal Conductivity ASTM C 177
Thermal Conductivity (x10-3)	1.73 cal/sec.cm.°C	

Uncured Properties @ 72°F (23°C)	
Color	Aluminum
Coverage (1/4" / 6.35mm)	70 in2/lb (996 cm2/Kg)
Flexural Strength	6,760 psi (46.6 Mpa)
Functional Cure	16 hours
Mix Ratio by Volume	4:1
Mix Ratio by Weight	9:1
Mixed Viscosity	Putty
Pot Life @75F (24C)	60 min
Recoat time	2-4 hrs.
Specific Gravity	13.2lb/Gal (1.58 g/cm3)
Specific Volume	17.5 in3/lb (0.632 cm3/g)

Surface Preparation:

1. Thoroughly clean the surface with a solvent such as Isopropanol Alcohol or Acetone 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 a solvent such as Isopropanol Alcohol or Acetone 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 to 32C) . In cold working conditions, directly heat repair area to100 to 110°F (38 to 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, 2 & 3 lb / 0.5, 0.9, & 1.4 Kg) containers. 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.

Application Instructions:

Spread mixed material on repair area and work firmly into substrate to ensure maximum surface contact. Aluminum Putty (F) 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
Aluminum Putty (F) can be troweled up to ¼" 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 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 (24C)

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 Ethyl Ketone	Poor

Methylene Chloride	Poor
Phosphoric 10%	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 **S**afety **D**ata **S**heet prior to using this product.

Warranty: ITW Polymers & Fluids 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: **D10610 1 lb. (0.45 Kg) kit**

Contacts:

ITW Polymers & Fluids
100 Hassall Street
Wetherill Park, NSW 2164, Australia
Phone (02) 9757 8800
www.itwpf.com.au

ITW Polymers & Fluids
Unit 2/38 Trugood Drive
East Tamaki, 2013, Auckland, New Zealand
Phone (09) 272 1945
www.itwpf.co.nz

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