



# Aluminum Liquid (F-2)

**Description:** Aluminum-filled, pourable epoxy for making molds, patterns, and holding fixtures that can be machined, drilled, or tapped.

**Intended Use:** Mold-making, patterns, holding fixtures, leveling equipment.

**Features:** Machinable to metallic finish. Low viscosity, self-leveling liquid. Castable with low shrinkage.

**Limitations:** Suitability of product is determined by the end user for their application and process.

**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)

Property	Typical Values
Adhesive Tensile Shear	2,700 psi (18.6 Mpa)
Coefficient of Thermal Expansion (x10-6)	50 in/in.°F (90 cm/cm.°C)
Compressive Strength	9,820 psi (67.7 Mpa)
Cured Shrinkage	0.0009 in/in (0.0009 cm/cm)
Dielectric Constant	8.6
Dielectric Strength	100 volts/mil (3.94 Kv/mm)
Flexural Strength	7,180 psi (49.5 Mpa)
Hardness	85 Shore D
Modulus of Elasticity	7.5 psi x10 <sup>5</sup> (5.2 GPa)
Solids by Volume	100
Temperature Resistance	Wet: 120°F, Dry: 250°F
Thermal Conductivity (x10-3)	1.58 cal/sec.cm.°C

### Standard Tests

Adhesive Tensile Shear	ASTM D 1002
Cure Shrinkage	ASTM D 2566
Dielectric Strength, volts/mil	ASTM D 149
Coef. of Thermal Expansion	ASTM D 696
Flexural Strength	ASTM D 790
Thermal Conductivity	ASTM C 177
Compressive Strength	ASTM D 695
Cured Hardness Shore D	ASTM D 2240
Dielectric Constant	ASTM D 150
Modulus of Elasticity	ASTM D 638

### Uncured Properties @ 72°F (23°C)

Color	Aluminum
Coverage (1/4" / 6.35mm)	70 in <sup>2</sup> /lb (996 cm <sup>2</sup> /Kg)
Functional Cure	16 hrs.
Mix Ratio by Volume	5:01
Mix Ratio by Weight	9:01
Mixed Viscosity	15,000 - 25,000 cP
Pot Life @ 75F	75 min
Recoat Time	2-4 hrs.
Specific Gravity	13.2 lb/Gal (1.58 g/cm <sup>3</sup> )
Specific Volume	17.5 in <sup>3</sup> /lb (0.632 cm <sup>3</sup> /g)

**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 (13°C - 32°C). In cold working conditions, directly heat repair area to 100-110°F (38°C - 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.

---- It is strongly recommended that full units be mixed, as ratios are pre-measured. ----

**Mixing Instructions:**

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.

**CONTAINER SIZES** (3 lb, 4 lb, 25 lb / 0.5 Kg, 1.8 Kg, 11.4 Kg): To mix, use a propeller-type Jiffy Mixer on an electric drill. Use model HS-1 for the (3 and 4 lb / 0.5 & 1.8 Kg) kits and e model ES for 25 lb / 11.4 Kg kits. Mix until color is uniform.

Note: Keep propeller below liquid line, as additional air can be added to mixture, resulting in air bubbles on the surface of the finished product.

**Application Instructions:**

Brush a thin coat of epoxy onto the substrate to be duplicated, then pour Aluminum Liquid (F-2). Aluminum Liquid (F-2) cures in 16 hours, at which time it can be machined, drilled, or painted.

**TO AVOID AIR ENTRAPMENT**

Pour Aluminum Liquid (F-2) in a fine stream no greater than 1" thick to evacuate any trapped air. Let material set up and cool before pouring additional thicknesses.

**Storage:**

Shelf life 3 yrs from manufacture. See package label. Store at room temperature, 70 °F (21°C)

**Compliances:**

Qualifies under MMM-A-1754

**Chemical Resistance:**

Chemical resistance is calculated with a 7 day, room temp. cure (30 days immersion) @ 75°F (23°C)

1,1,1-Trichloroethane	Very good	Methylene Chloride	Poor
Ammonia	Very good	Phosphoric 10%	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
Methyl Ethyl Ketone	Poor	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:**

<u>Item No.</u>	<u>Package Size</u>
10710	1 lb. (0.45 Kg) kit
10720	3 lb. (1.36 Kg) kit

**Contacts:**

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