Epoxy Potting Compound multicomp PRO

RoHS Compliant

Description

This potting and encapsulating compound is a general-purpose, hard, black, two-part epoxy that offers extreme
environmental, mechanical, and physical protection for printed circuit boards and electronic assemblies.

Due to its low mixed viscosity, it can easily penetrate small gaps and cavities. It also provides excellent electrical insulation and protects components from static discharges, vibration, abrasion, thermal shock, environmental humidity, salt water, fungus, and many harsh chemicals.

This epoxy has a convenient 1:1 volume mix ratio, making it compatible with most dispensing equipment. This can be cured at room temperature or higher.

Features and Benefits

- Convenient 1A:1B volume mix ratio
- Low mixed viscosity of 4 100 cP
- Extremely high compressive and tensile strength
- Excellent adhesion to a wide variety of substrates including metals, composites, glass, ceramics, and many plastics
- Excellent electrical insulating characteristics
- Broad service temperature range -40°C to 150°C (-40°F to 302°F)
- Extreme resistance to water and humidity (allows for submersion where needed)
- • Solvent-fre

Cured Properties

Colour	: Black
Density @25°C [77°F]	: 1.07 g/mL
Hardness	: 80D
Tensile strength	: 32 N/mm² [4 600 lb/in²]
Young's Modulus	: 2 100 N/mm² [300 000 lb/in²]
Compressive strength	: 75 N/mm² [11 000 lb/in²]
Lap shear strength (stainless steel)	: 21 N/mm² [3 100 lb/in²]
Lap shear strength (aluminum)	: 14 N/mm² [2 000 lb/in²]
Lap shear strength (copper)	: 15 N/mm² [2 200 lb/in²]
Lap shear strength (brass)	: 11 N/mm² [1 600 lb/in²]
Lap shear strength (ABS)	: 3.9 N/mm² [560 lb/in²]
Lap shear strength (polycarbonate)	: 2.1 N/mm² [300 lb/in²

Note: Specifications are for epoxy samples cured at 80°C for 1 hour and conditioned at ambient temperature and humidity.

a) N/mm² = mPa; lb/in² = psi

Usage Parameters

Working life @22°C [72°F]	: 45 min
Shelf life	: 5 y
Full cure @22°C [72°F]	: 24 h
Full cure @65°C [149°F]	: 2 h
Full cure @80°C [176°F]	: 1 h
Full cure @100°C [212°F]	: 20 min

Temperature Ranges

Constant service temperature	: -40 to 150°C [-40 to 302°F]
Intermittent temperature limit a)	: -50 to 175°C [-58 to 347°F]
Storage temperature of unmixed parts	: 16 to 27°C [61 to 81 °F]

a) Temperature range that can be withstood for short periods without sustaining damage.

Cured Properties

Breakdown voltage @2.5 mm	: 41 700 V [41.7 kV]
Dielectric strength @2.5 mm	: 400 V/mil [15.8 kV/mm]
Breakdown voltage @3.175 mm [1/8”]	: 45 700 V [45.7 kV]
Dielectric strength @3.175 mm [1/8”]	: 365 V/mil [14.4 kV/mm]
Volume resistivity @2.4 mm	: 1.4×10^{13} Ω·cm
Volume conductivity @2.4 mm	: 7.1×10^{-14} S/cm
Dielectric dissipation, D @1 MHz	: 0.041
Dielectric constant, k´ @1 MHz	: 2.53

Thermal Properties	Value
Glass transition temperature (Tg)	: 41°C [106°F]
CTE b) prior Tg	: 73 ppm/°C [41 ppm/°F]
after Tg	: 207 ppm/°C [115 ppm/°F]
Thermal conductivity @25°C [77°F]	: 0.27 W/(m·K).
Thermal diffusivity @25°C [77°F]	: 0.12 mm^2/s
Specific heat capacity @25°C [77°F]	; 2.0 J/(g·K)

Note: Specifications are for epoxy samples cured at 80 °C for 1 hour and conditioned at ambient temperature and humidity.

a) To allow comparison between products, the dielectric strength was recalculated with the Tautscher equation fitted to 5 experimental values and extrapolated to a standard thickness of 1/8” (3.175 mm).

b) Coefficient of Thermal Expansion (CTE) units are in ppm/°C = in/in/°C × 10-6 = unit/unit/°C × 10-6

Uncured Properties

Physical Properties	**Mixture (A:B)**	
Colour	Black	
Viscosity @25 °C [77 °F]	4 100 cP [4.1 Pa·s] a)	
Density	1.04 g/mL	
Mix ratio by volume	1:1	
Mix ratio by weight	1.22:1	
Physical Properties	**Part A**	**Part B**
Colour	Black	Clear, amber
Viscosity @25°C [77°F]	5 900 cP [5.9 Pa·s] a)	2 300 cP [2.3 Pa·s] b)
Density	1.15 g/mL	0.95 g/mL
Odor	Odor	Ammonia-like

a) Brookfield viscometer at 100 rpm with spindle LV S64

b) Brookfield viscometer at 50 rpm with spindle LV S63

Storage

Store between 16 and 27 °C [61 and 81 °F] in a dry area, away from sunlight. Storage below 16°C [61°F] can result in crystallization.

If crystallization occurs, reconstitute the product to its original state by temporarily warming it to between 50 and 60 °C [122 and 140 °F]. To ensure full homogeneity, stir the warm product thoroughly. Make sure to reincorporate all settled material, close the lid, and then let cool before use.

Application Instructions

For best results, follow the procedure below.

Manual mixing:

1. Scrape settled material free from the bottom and sides of the part A container; stir contents until homogenous.
2. Scrape settled material free from the bottom and sides of the part B container; stir contents until homogenous.
3. Measure 1 part by volume of the pre-stirred part A, and pour into the mixing container. Ensure all contents are transferred by scraping the container.
4. Measure 1 part by volume of the pre-stirred part B, and pour slowly into the mixing container while stirring. Ensure all contents are transferred by scraping the container.
5. Thoroughly mix parts A and B together.
6. Let sit for 15 minutes to de-air. —OR— Put in a vacuum chamber at 25 inHg for 2 minutes to de-air.
7. If bubbles are present at the top, break and stir them gently with the mixing paddle.
8. Pour the mixture into a container holding the components to be protected.
9. Close the part A and B containers tightly between uses to prevent skinning.

Syringe or cartridge:

To insert the cartridge in the gun, see the Application Guide section for dispensing accessories.

1. Twist and remove the cap from the cartridge or syringe. Do not discard cap.
2. Dispense a small amount to ensure even flow of both parts.
3. (Optional) Attach a static mixer.
   a. Dispense and discard 5 to 10 mL of the product to ensure a homogeneous mixture.
   b. After use, dispose of static mixer.
4. Without a static mixer, dispense material on a mixing surface or container, and thoroughly mix parts A and B together.
5. To stop the flow, pull back on the plunger.
6. Clean nozzle to prevent contamination and material buildup.
7. Replace the cap on the cartridge or syringe.

Cure Instructions

Room temperature cure:

- Let cure at room temperature for 24 hours.

Heat cure:

- Put in oven at 65°C [149°F] for 2 hours.
- —OR—
- Put in oven at 80°C [176°F] for 1 hour.
- —OR—
- Put in oven at 100°C [212°F] for 20 minutes.

Part Number Table

Description	Part Number
Epoxy potting Compound, Black, 25mL	MP014029