

EP21TDCN Master Bond Polymer System

Durable, two component epoxy for high performance bonding and sealing

Key Features

- ✓ Convenient handling
- ✓ Withstands thermal cycling
- ✓ Good electrical conductivity
- ✓ Bonds well to many substrates

Product Description

Master Bond EP21TDCN is a two component, nickel filled, electrically conductive, adhesive for high performance bonding and sealing. Both Part A and Part B have smooth paste consistencies. The mix ratio is a forgiving one to one by either weight or volume. It cures readily at room temperature in 3-4 days, or, alternatively, at 150-200°F for 2-3 hours. The optimum cure is overnight at room temperature, followed by 2-3 hours at 150-200°F. The volume resistivity of the cured system is 5-10 ohm-cm. It is 100% reactive and does not contain any diluents or solvents.

Considering that it is an electrically conductive adhesive, EP21TDCN has a reasonably good physical strength profile. It bonds well to metals, composites, ceramics and many plastics. Both Parts A and B are colored nickel. Most importantly, it is a toughened system, formulated to withstand relatively rigorous thermal cycling as well as mechanical vibration and shock. The service temperature

range is -100°F to +275°F. It has good resistance to fuels, oils and water. EP21TDCN is particularly effective for grounding and shielding applications. It is a good fit for a number of applications involving the aerospace, electronic, automotive and specialty OEM industries, where modest conductivity for shielding and grounding along with reasonably good physical properties are desirable.

Product Advantages

- Convenient mixing: one to one mix ratio by weight or volume
- Cures at ambient or elevated temperatures
- Good electrical and thermal conductivity, especially for grounding, shielding and static dissipation
- Very good toughness; can hold up to thermal cycling
- High bond strength to similar and dissimilar substrates
- Contains no solvents or diluents

Typical Properties

Tensile lap shear strength, aluminum to aluminum, 75°F	1,400-1,600 psi
Tensile strength, 75°F	3,000-4,000 psi
Tensile modulus	450,000-500,000 psi
T-peel strength, 75°F	15-20 pli
Hardness, 75°F	80-90 Shore D
Volume resistivity, 75°F	5-10 ohm-cm
Thermal conductivity, 75°F	11 BTU•in/ft² •hr•°F [1.59 W/(m•K)]
Service temperature range	-100°F to +275°F [-73°C to +135°C]

Mixing and Curing

Mixing ratio, Parts A to B	1:1 by weight or volume
Viscosity, mixed, 75°F	smooth paste
Working life after mixing, 75°F	
100 gram mass	60-90 minutes
Cure schedule options	
75°F	3-4 days
150-200°F	2-3 hours
Optimum	overnight at 75°F, plus 2-3 hours at 150-200°F
Shelf life at 75°F, in original, unopened containers	6 months

Preparation of Adhesive

Master Bond EP21TDCN is prepared by thoroughly mixing Part A with Part B in a one to one mix ratio, weight or volume



Each component must be stirred individually prior to mixing. Mixing should be done slowly to avoid entrapping air. Part A is colored nickel, Part B is colored nickel. Simply mix equal amounts of Parts A and B by weight or volume and stir until color is uniform. The working life of a 100 gram batch is approximately 60-90 minutes. It can be substantially lengthened by using shallower mixing vessels or mixing smaller size batches.

Preparation of Bonding Surfaces

All bonding surfaces should be carefully cleaned, degreased and dried for obtaining the maximum bond strengths. Also, when bonding to metal and other surfaces, chemical etching or mechanical abrasion should be employed when the bonded joints are to exhibit optimum environmental durability. Non-porous surfaces should be roughened with sandpaper or emery paper for hard, smooth materials.

Adhesive Application

EP21TDCN is a paste materials and is most often applied with a spatula, knife, or something similar. Enough mixed adhesive should be applied to obtain a final adhesive bond line thickness of 2-4 mils. Porous surfaces may require somewhat more adhesive to fill the voids than non-porous ones. Thicker glue lines do not increase the strength of

a joint but do not necessarily give inferior results as the EP21TDCN adhesive system does not contain any volatiles. The system is a paste and can be made more flowable by adding 5 to 10% by weight of an appropriate solvent such as acetone, xylene, or toluene. The parts to be bonded should then be pressed together with just enough pressure to maintain intimate contact during cure.

Cure

EP21TDCN can be cured at room temperature or at elevated temperatures as desired. It cures readily at room temperature in 3-4 days, or, alternatively, at 150-200°F for 2-3 hours. The optimum cure is overnight at room temperature, followed by 2-3 hours at 150-200°F. Remove excess adhesive promptly before it hardens with a spatula. Then wipe with rag and solvent such as acetone, xylene, or toluene. The thinner the layer of epoxy, the slower the rate of cure. EP21TDCN does not reach its ultimate electrical properties, nor its full strength, until it is completely cured.

Packaging

Product is available in:

- 1/2 Pint kits
- Pint kits
- Quart kits
- Gallon kits
- 5 Gallon kits



Handling and Storage

All epoxies should be used with good ventilation and skin contact should be avoided. For safe handling details, please consult the product SDS. Optimum storage is at or below 75°F in closed containers. No special storage conditions are necessary. Containers should, however, be kept closed

when not in use to avoid contamination. Cleanup of spills and equipment is readily achieved with aromatic or ketone solvents employing proper precautions of ventilation and flammability.

Certifications



Not to Be Used for Specification Purposes

The values contained herein are considered typical properties only and are not intended to be used as specification limits. For assistance in preparing specifications, please contact Master Bond technical support for further details.

Notice

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