

Product Description

DM-UFL-16100 is a high purity underfill for flip chip devices for the semiconductor industry. It is designed for use with <50 µm features with high Tg to ensure compatibility with peak reflow temperatures of lead-free solders. It is a two part epoxy thermoset underfill that is typically deposited from a syringe. Materials can be supplied as either 2 part syringes or pots.

Product Benefits

- High Tg (192°C) providing stable performance at high operating temperatures
- Suitable for use with fine pitch components (<50 µm channels)
- 2 part epoxy system
- Good thermal conductivity (1.8 W/m.K)
- Pot-life >60 minutes

Paste Preparation

DM-UFL-16100 is a two part underfill system. The component parts should be mixed in a ratio by volume of 13.2:1.0 of part A (resin) to part B (hardener). The contents of one container of the Part B, DM-UFL-16100B system can be added completely to a pot of DM-UFL-16100A. The combined pastes should then be mixed slowly. Avoid rapid stirring to prevent air entrapment during the stirring process. As soon as the product is activated, the material should be used immediately.

Properties of the Uncured Paste

Test	Properties
Viscosity after mixing (Pa.s) (Lamy, cone and plate 50s ⁻¹ , 20°C)	1 - 5
Pot-life	75 mins
Specific Gravity	2.04 g/mL(mixed), 2.13 g/mL(Part A), 0.98 g/mL(Part B)

Paste Processing Conditions

Parameter	Typical Properties
Deposition Method	Syringe
Mix Ratio by weight	13.2:1 (partA:partB)
Minimum Gap Sizes	50 µm
Cure Cycle for optimal Tg	20 min (150°C), 25 min (190°C), 15 min (220°C)

Curing of the underfill can be varied for optimal productivity depending on production set-up.

Properties of Cured Underfill

Test	Properties
Dielectric Strength	>15 kV/mm
Shore D hardness	93
Thermal Conductivity (ASTM D5470)	1.8 W/m.K
Glass Transition Temperature (T _g)	192°C
Volume Resistivity	>1 x 10 ¹⁴ Ω.cm
Weight loss (TGA)	0% (200°C), 0% (250°C), 0.5% (300°C)
Water Absorption (ASTM D570-98)	<0.15%

Clean-Up

Equipment can be cleaned using isopropanol alcohol or acetone.

Storage and Shelf-life

Containers should be stored at room temperature (<21°C) or refrigerated (4-7°C) with lids tightly sealed. The shelf-life for part A and part B components is 6 months from date of shipment. Dycotec Materials cannot assume responsibility for component parts that has not been stored in inappropriate conditions or where the component parts that have been contaminated following use.

Safety and Handling

For safe use of this product, please review relevant material safety and datasheet (MSDS).

Packaging

Available for manual use with manual plunger DM-UFL-16100-SYP. Pot packaging 250g and 1Kg (DM-UFL16100-P) available on request.

For more information, please contact:

Dycotec Materials Ltd
Unit 6, Stanier Road
Porte Marsh Industrial Estate
Calne, Wiltshire
SN11 9PX UK
Email: info@dycotecmaterials.com
Tel: +44 (0)1793 422598
www.dycotecmaterials.com

All information reported in the datasheet is for experimental work undertaken in our laboratories and illustrates typical values only. Processing conditions may vary depending on customers' experience and their application requirements and manufacturing process equipment set-up.

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