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**Low Dielectric Constant and Loss**

**High Moisture Resistance**

**Electrically Insulating**

**Underfill Film Adhesive**

**IDEAL FOR:**

- Direct flip-chip contact bonding and underfilling
- Traditional flip-chip film underfill for MSL Level 1 devices
- Outstanding high temperature stability to >175°C
- Micro-bumps chip size to C4 bumps for components

**DESCRIPTION:**

UFF-ESP7770 is a high-bond strength film reworkable underfill adhesive. It is designed for bonding bumped chip directly onto contact configured substrate with or without soldering. UFF-ESP7770 has good thermal and moisture stability. The dry, tack-free handling of the film makes it suitable for an automated assembly.

Outstanding moisture-heat resistance to pass HAST and other stringent testing and operating condition. For flip-chip underfill application, please make sure that curing temperature is at least 10°C above the application and testing temperatures.

**AVAILABILITY:**

UFF-ESP7770 is available in sheet sizes or as custom preforms. Standard thicknesses are 30-200 micron. Special thicknesses are available.

**APPLICATION PROCEDURES:**

- ( 1 ) Keep product at room temperature for 15 minutes before using.
- ( 2 ) Before using, remove protective liner from film.
- ( 3 ) Cut to desired size or pre-laminate onto wafer or substrate panel before dicing at temperature 90-100°C.
- ( 4 ) Place on substrate and cure according with pressure to one of the recommended schedules. Make sure that melt-bonding temperature is at least 160°C above the application and testing temperatures.

**CAUTION:** This product may cause skin irritation. Avoid skin contact. If contact does occur, wash immediately with soap and water. Please refer SDS for more details. The information contained herein is believed to be reliable. All recommendations or suggestions are made without guarantee inasmuch as conditions and methods of commercial use are beyond our control. Properties given are typical values and not intended for use in preparing specifications. The user is advised to evaluate the product in the manner the product is to be used in manufacturing and in the final product. Under no circumstance shall AI Technology be liable for accidental, consequential or other damages arising from the use or handling of this product.

While AI Technology owns all proprietary rights of material formulations of its products, specific usage in the manufacturing of certain products may involve patent rights of other companies.

**FLIP-CHIP UNDERFILL FILM**  
**UFF-ESP7770**

**TYPICAL PROPERTIES\***

Electrical Resistivity ( 150 °C/ 30-60 min )	>1x10 <sup>14</sup> ohm-cm
Dielectric Strength (Volts/mil)	> 1000
Glass Transition Temp.(°C)	180
Lap-Shear Strength	N/A
Device Push-off Strength	>3600 psi >25 N/mm <sup>2</sup>
Hardness (Type)	85 (D)
Cured Density (gm/cc)	1.2
Thermal Conductivity	2 Btu-in/hr-ft <sup>2</sup> -°F 0.3 W/m-°C
Linear Thermal Expansion Coeff. (ppm/°C)	50
Maximum Continuous Operation Temp. (°C)	>175

\* Properties given are typical values and not intended for use in preparing specifications. The user is advised to evaluate the product in the manner the product is intended to be used in manufacturing and in the final product.

**BONDING SCHEDULES:**

Temperature	Time	Pressure
160°C	30Min	5-15 psi
175°C	5Min	5-15 psi
200°C	<30sec	5-15 psi

**SHELF LIFE:**

Storage temperature	Shelf Life
25°C	1 yr in sealed package