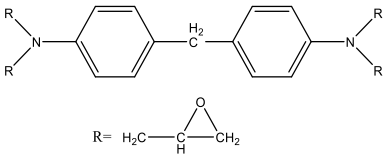
Technical Datasheet

SM-ER-80D Electronic-grade Resin

Product Description

SM-ER-80D is a premium tetrafunctional amine-based epoxy resin (TGDDM type). Engineered for ultra-high crosslink density, providing exceptional hot/wet performance and radiation resistance.

CAS NO. 28768-32-3



Applications

- Primary aerospace composite structures (carbon fiber prepregs).
- High-performance laminates and radiation-resistant components.
- Primary resin for adhesives requiring 200–260°C continuous endurance.
- Low-halogen electronic-grade adhesives, die-attach adhesives, and conductive adhesive matrices.
- Primary matrix or modifying resin for chip encapsulation materials.

Typical Physical Properties

Property	Value	Test Method
Appearance	Amber to red-brown viscous liquid	
Epoxy Value ,eq/100g	≥ 0.80	GB/T 1677-2008
Viscosity @ 50±1°C (mPa·s)	3,000 - 7,000	GB/T 2794-2013
Total Chlorine (ppm)	≤1,500	MSDS
Inorganic Chlorine (ppm)	≤5	Q/HYSZ-75-2022
Non-volatile Matter (%)	≥ 98.5	GB/T 2793-95

SOPHON MATRIX

Physical Properties （Typical Composites）

Property	DDS	DDM	METHPA	MNA	Test Method
Glass Transition Temp (Tg), °C	250-260	220-230	200-210	235-240	GB/T 194667.2-2004
Tensile Strength (MPa)	75	50	50	45	GB/T 2567-2008
Tensile Modulus (GPa)	3.5	3.3	3.2	3.6	
Flexural Strength (MPa)	130	120	100	97	
Flexural Modulus (GPa)	3.3	3.4	4.0	3.8	
Elongation at Break (%)	2.8	1.6	1.9	1.1	
Impact Strength (kJ/m²)	15	10	9	8	
Mixing Ratio (Resin:Hardener)	100:52	100:42	100： 140	100:150	-

*Processing condition: 100°C2h + 130°C2h + 160°C2h + 180°C2h + 200°C2h.**

Processing & Usage

- **Hardener Compatibility:** Formulate with curing agents and coupling agents such as amines, anhydrides, and imidazoles to prepare adhesives, casting materials, and compounding systems for high-temperature resistant applications. Commonly used hardeners include 4,4'-Diaminodiphenyl sulfone (4,4-DDS), 4,4'-Diaminodiphenylmethane (DDM), Methyltetrahydrophthalic anhydride (METHPA), Methyl nadic anhydride (MNA), and 2-Ethyl-4-methylimidazole (2,4-EMI).
- **Viscosity Adjustment:** If the resin viscosity is too high for specific application requirements, it may be heated to an appropriate temperature to improve flowability.
- **Toughening:** Add materials such as polysulfide rubber or liquid nitrile rubber to improve toughness.

Storage & Handling

- Due to high functionality and high epoxy value, significant heat is released during curing; monitor closely to prevent thermal runaway. To reduce high viscosity, heat to 100 to 120 °C for 1 hour with the container cap open.
- Resistant to alkalis, but not to strong acids.
- Shelf life is 12 months at 25 °C; storage at lower temperatures can further extend the shelf life. Store in a cool, dry, and tightly sealed area.