

Technical Datasheet

SM-CS-101 Adhesive

SM-CS-101

Polyurethane High-Strength Elastic Cryogenic Adhesive

Key Properties

- **Fast-Curing Polyurethane System**
 - **Exceptional Cryogenic Shear Strength**
 - **High-Toughness Elastomeric Protection**
-

Product Description

SM-CS-101 is capable of bonding various metallic and non-metallic materials, it operates within the temperature range of -269°C to +40°C. Therefore, it is used for bonding and encapsulation of cryogenic pipelines and insulation materials for liquid oxygen, liquid hydrogen, liquid nitrogen, liquid helium, and liquefied natural gas (LNG). It is also used for bonding and sealing applications such as rectification columns in the oxygen production industry, Dewar flasks, and low-temperature sections of refrigerators, and can also function as an elastic material.

Applications

- Cryogenic pipeline and insulation encapsulation (LNG, liquid oxygen, hydrogen, nitrogen, helium).
- Rectification columns and Dewar flask bonding in the air separation industry.
- Exterior coatings and joint sealing for low-temperature refrigeration pipelines
- Cryogenic insulation panel structural bonding.

Product Data

Property	Value
Main Resin	Isocyanate-terminated polyurethane prepolymer
Mix Ratio	Part A : Part B = 5:1 (by weight)
Appearance (Part A)	Pale yellow transparent viscous colloid
Appearance (Part B)	White to slightly yellow powder
Cured Appearance	translucent viscous

Processing

- **Surface Preparation:**

Degrease and clean the substrate surface using acetone or gasoline. Mechanically abrade the surface (strictly avoid cross-hatch abrasion) and allow it to air-dry before use.

- **Adhesive Application:**

Accurately weigh the components according to the specified ratio and mix thoroughly until uniform. Apply the adhesive to the substrate surface using a spatula or brush. Mate the substrates immediately and proceed to oven curing or room-temperature setting.

- **Curing Profile:**

Cure at room temperature for 1–7 days, or at 60°C for 4 hours, or at 100°C for 2 hours.

Storage & Handling

- **Storage Conditions:** Components should be stored in a dry, cool, and sealed environment. Component A contains isocyanate groups and reacts readily with moisture; therefore, containers must be sealed immediately after use to prevent deterioration.
- **Shelf Life:** The shelf life is 6 months at room temperature.

Typical Cured Properties

Property	Value	Test Method
Curing Time (25°C,min)	30	
Viscosity (25±1°C, mPa.s)	4500	GB/T 2794-2013
Tensile Shear Strength (23°C, MPa)	>13	GB/T 7124-2008
Tensile Shear Strength (-196°C, MPa)	>20	GB/T 7124-2008
Hardness	80-90 Shore A	GB/T 2411-2008
Operation Temperature	-196~40°C	Min: Lowest tested strength limit; Max: Approx. 50% strength loss
Tack-free time	6h	1 mm to reach a non-sticky surface state.