TECHNICAL DATA SHEET

QSil Beyond X1
Two-part Self-Bonding Transparent Liquid Silicone Elastomer

Description

The product is a transparent and colorless silicone formulation and is ideal for optical applications. The viscosity profile enables excellent flow around components and is excellent for potting complex parts. The chemical composition results in a cured product that is hydrolytically stable as well as reversion resistant. The silicone elastomer provides electrical insulation and physical shock resistance of components and enables environmental protection.

Key Features

- Low linear shrinkage
- Non-yellowing catalyst system
- Self-bonding without primer, requires cure at elevated temperature to build adhesion and develop full physical properties
- Meets Mil-I-81550C (type II) standard

Application

Solar panel encapsulating layer

Use and Cure Information

IMPORTANT:

In order to achieve optimum performance, the same lot number of the A and B components should be used. Mixed lots may not obtain the performance criteria listed on the TDS or Certificate of Analysis.

The 'A' part of the product contains the platinum catalyst; great care should be taken when using automatic dispensing equipment. Please ensure that it is not contaminated by residual hydride containing rubber (Part B) in the dispensing equipment, as curing will result. If in doubt, it is advised to thoroughly purge the equipment with a suitable hydrocarbon solvent or silicone fluid.

Mixing

Both the ‘A’ and ‘B’ parts should be well stirred to ensure the material is uniform. If utilizing machine-dispense, ensure the mixing device has sufficient elements to fully homogenize the components of the formulation.

Place the required amount of ‘A’ and ‘B’ parts by weight at the mix ratio shown opposite, in a clean plastic or metal container of approximately 3 times their volume, and mix until the color of the mixture is uniform. For best results, we recommend vacuum degassing. Degas by intermittent evacuation, the larger volume of the mixing vessel helps prevent overflow during this operation. In the case of automatic dispensing with static mixing head, the two components should be degassed before processing. Recommended vacuum conditions are 30-50 mbar intermittently over 5-10 minutes.

Inhibition of Cure

Great care must be taken when handling and mixing all addition cured silicone elastomer systems, ensuring that all the mixing tools (vessels and spatulas) are clean and constructed in materials which do not interfere with the curing mechanism. The cure of the silicone can be inhibited by the presence of compounds of nitrogen, sulfur, phosphorus and arsenic; organotin catalysts and PVC stabilizers; epoxy resin catalysts and even contact with materials containing certain of these substances e.g. molding clays, sulfur vulcanized rubbers, condensation-cure silicone rubbers, onion and garlic.

Property	Test Method	Value
Uncured Product		
Color A		**Transparent and colorless**
Color B		**Transparent and colorless**
Cure Profile		**60 min at 150°C**
Cure Type		**Addition**
Gel Time at 25°C/77°F		**>24 hr**
Mix Ratio By Weight		**10:1**
Rheology		**Liquid, Newtonian**
Self Bonding		**Yes**
Specific Gravity A		**1.01**
Specific Gravity B		**0.99**
Viscosity A	Brookfield	**4,000 cP**
Viscosity B	Brookfield	**650 cP**
Viscosity Mixed	Brookfield	**3,400 cP**
Cured Product		
Color		**Transparent and Colorless**
Elongation at Break	ISO 37	**100 %**
Hardness Shore A	ASTM D 2240-95	**45**
Linear Coefficient of Thermal Expansion (ppm/°C)		**275 ppm/°C**
Linear Shrinkage (%)		**<0.1 %**
Max Working Temp		**204 °C / 399 °F**
Min Working Temp		**-55 °C / -67 °F**
Refractive Index at 589 nm		**1.406**
Specific Heat (cal/g-°C)		**0.3**
Tensile Strength	ISO 37	**5.2 N/mm2 / 754 psi**
Thermal Conductivity		**0.18 W/mK**
Electrical Properties		
Dielectric Constant	ASTM D-150	**2.69**
Dielectric Strength (V/mil)		**500 V/mil**
Dissipation Factor	ASTM D-150	**0.0006**
Volume Resistivity (Ohms cm)	ASTM D-257	**1.7E+15 ohms cm**
Storage		
Max Storage Temperature		**38 °C / 100 °F**
Shelf Life		**12 mths**

Curing Conditions

The data offers a guide to the rate of cure at various temperatures, mixing of the components at temperatures between 15 and 25 °C is recommended to ensure adequate pot life for degassing and handling. The pot life can be extended to several hours by chilling the components before mixing.

It is important to check the compatibility in preliminary tests if unknown substrates are used.

Some formulations are not designed to cure at room temperature and may not develop full physical properties if cured below the minimum listed temperature. The recommended cure temperatures and times are provided for guidance only. The end user must test in their

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application and process as the quantity of material, size of part, and method of applying heat will influence time and temperature requirements.

Health & Safety

Safety Data Sheets available on request.

Packaging

CHT silicone elastomers are available in a variety packaging including bulk containers. Please contact our sales department for more information.

Revision Date	20 Oct 2021
Revision No	1
Download Date	04 May 2024

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