

AS1745G (ESP521) High strength, high temperature adhesive

Introduction

AS1745G is part of the AS1740 range that comprises of:
AS1740 – Liquid adhesive for shallow potting and coating
AS1745T – High strength translucent, adhesive paste
AS1745G – High strength, high temperature adhesive paste

This is a specially formulated neutral cure silicone sealant specifically designed to meet the physical, chemical and temperature resistant requirements of MIL-A-46146B. It features exceptional physical properties and is compatible with many sensitive substrates including copper, brass, steel, aluminium and FR4, making this an ideal option for many electronic applications where high performance is paramount.
It is described as an Alkoxy 1-part room temperature vulcanising (RTV) silicone sealant. The Alkoxy cure system produces a silicone sealant with excellent adhesion to most common substrates

Key Features

- Meets the physical and chemical requirements of MIL A-46146B
- High temperature resistance
- Non corrosive
- Adhesion to many substrates

Use and Cure Information

Typical Applications

- Assembly of electrical and electronic equipment
- Sealing and bonding of corrosion sensitive devices
- Shallow encapsulation of small circuits and connectors

Application and Cure

After removal of the package seal the product is ready for use. It can be applied manually or using a pneumatic caulking gun. Following exposure to atmospheric moisture the product begins to cure to a resilient, durable silicone elastomer. Full cure will depend on the relative humidity and ambient temperature. At 20 to 30°C and 40 to 70% Relative Humidity a 3mm section will normally cure in less than 24 hours.

The volatile by-products of the curing mechanism are relatively inoffensive alcohols.

(See Health and Safety Data)

Full bond strength and physical properties will be achieved in 7 days. Cure time depends on the thickness of sealant applied and the area exposed to the atmosphere.

It is recommended that a minimum thickness of 1 mm is achieved between parts to obtain best adhesion to substrates.

Storage and Shelf Life – Expected to be 12 months in 310 ml cartridges and 20 kg pails and 18 months in 90 ml tubes when stored in unopened containers below 40 °C.

Health and Safety – Material Safety Data Sheets available on request.

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Property	Test Method	Value
Uncured Product		
Colour:		Grey
Appearance:		Thixotropic paste
Tack Free Time:		45 minutes *
3mm Cure Through:		72 hours *
Extrusion Rate:		94 g / minute
* measured at 23+/-2°C and 65% relative humidity.		

Cured Elastomer

(after 7 days cure at 23+/-2°C and 65% relative humidity)

Tensile Strength:	BS903 Part A2	7.75 MPa
Elongation at Break:	BS903 Part A2	830 %
Tear Strength:	BS903 Part A3	42 kN/m
Hardness:	ASTM D 2240-95	35 ° Shore A
Specific Gravity:	BS 903 Part A1	1.16
Thermal Conductivity:		0.2 W/mK
Coefficient of Thermal Expansion:		
Volumetric		800 ppm / °C
Linear		267 ppm / °C
Min. Service Temperature:		-62 °C
Max. Service Temperature:	AFS 1540B	316 °C

Electrical Properties

Volume Resistivity:	ASTM D-257	8.8E+14 Ω.cm
Dielectric Strength:	ASTM D-149	18 kV/mm
Dielectric Constant at 1MHz:	ASTM D-150	2.47
Dissipation Factor at 1MHz:	ASTM D-150	0.0035

Adhesion Testing

Adhesion to most substrates is possible with out the use of a primer but due to the high physical strength, the bond between substrate and silicone will be weaker than the cohesive strength of the silicone. To utilise the full potential of the product, it is recommended that Silcoset Primer is applied to substrates as detailed in the Technical Data Sheet. This will allow a strong covalent bond to form and result in an improved performance in adhesive strength.

Customers are advised to carry out their own tests on clean, degreased substrates to ensure satisfactory adhesion is achieved

All values are typical and should not be accepted as a specification.

Packages – 90 ml and 310 ml cartridges, 20 kg pails

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