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3M™ Scotch-Weld™
Low Density Void Filler EC-3439 HT
Technical Data Sheet

Introduction

Scotch-Weld 3439 HT is a temperature resistant, one-part, high temperature curing, low density void filling compound.
It is designed for honeycomb sandwich panels core reinforcement; edge finishing and inserts bonding. It is specially designed where heat resistance is needed.

Key advantages are:

- High compressive strength from -55°C to +175°C
- Thixotropic for ease of application
- Cures to a rigid, solvent resistant material
- Cured material is flame retardant according to FAR 25.853 (b) requirements
- Low volatile loss during cure

Product Characteristics

NOTE: All technical data and information in this data sheet should be considered representative or typical only and should not be used for specification purposes.

General Properties	**SW EC-3439 HT**
Colour	Beige
Base	Modified Epoxy
Cured Density	< 0,75
Press Flow viscosity at 26 ± 1°C, 4 bars, Ø 2.6m	≈90s for 20g extruded
Volatiles loss on cure :	< 1.5 % (1 hour at 125 ± 2°C)
Shop life [(a)]	4 days at 15-25°C
Full Cure cycle	1 hour from 125°C to 175°C with 2-5°C/minute heat-up rate

(a) shop life is depending on application approach

Product Performance

The surface preparation of the aluminium substrates is described in the "Instructions for use" section on page 3.

Compressive strength:

(25.0 x 25.0 x 50.0) mm samples were cut from a cured test block of Scotch-Weld 3439 HT.
Compression was run with the force applied to the 25.0 mm square surface at a rate of 0.5 mm/minute.
Cure cycle: 125 ± 5°C or 175 ± 5°C, 60 minutes, atmospheric pressure, with a 3-5°C/minute heat-up rate.
The results reported are average of five individual specimens.

Mechanical properties	Test temperature	125°C cure	175°C cure
Compressive strength Initial testing per ISO 604	23 ± 2°C	52,5 MPa	65,4 MPa(1)
	135 ± 2°C	37,4 MPa	-
	175 ± 2°C	27,1 MPa	38,1 MPa(1)
After 1000h at 70± 3°C and 85± 5% Relative Humidity ageing. Testing per ISO 604	120 ± 2°C	-	29,7 MPa(1)

(1) The specimens size was 12.5 x 12.5 x 25 mm.

Compressive modulus of elasticity at 23°C : (ASTM D 695)

Determination was made on six compressive specimens (25 x 25 x 50 mm).
Compression was run at 1.3 mm/minute and the average compressive modulus hereafter reported:

Cure cycle: 1H at 175 ± 5°C 5500 MPa

Overlap shear strength:

Overlap shear strengths were measured on 25 mm wide, 12.5 mm overlap specimens cut from a bonded panel of etched 2024-T3 Clad aluminum prepared in accordance with the EN 2243-1 test method. Specimens were pulled off at a 0.5 mm/minute speed rate.
Cure cycle: 175 ± 5°C, 60 minutes, 100 kPa pressure, with a 3.0 °C/minute heat-up rate. The results reported are average of five individual specimens.

Mechanical properties	Test temperature	175°C cure
Overlap shear strength EN 2243-1	- 55 ± 2°C	9,3 MPa
	23 ± 2°C	8,8 MPa
	135 ± 2°C	10 MPa
	175 ± 2°C	9,4 MPa
Resistance to Fluids	**Medium and temperature**	**175°C cure**
Overlap shear strength EN 2243-1, measured at 23 ± 2 °C	1000 H Dry heat at 150 ± 2°C	7,9 MPa
	1000H Hydrocarbon fluid JP4 (MIL-H-5624 K) at 23 ± 2°C	10,5 MPa
	1000H Demineralized water at +23 ± 2°C	7,9 MPa
	1000H Hydraulic oil (MIL-H-5606C) at 23 ± 2°C	8,3 MPa

All specimens show 100 % cohesive failure within the filler.

Flammability:

Vertical mode to FAR 25.853 (b) :
Scotch-Weld 3439 HT meets the requirements of the FAR 25.853 (b) for self-extinguishing time.

Fire properties		Requirements	Results
Flammability - 12s vertical Bunsen burner FAR/JAR/CS 25.853(a), App. F Part. I §(a)(1)(ii) Sample size: 6,35 x 76 x 305 mm³	Flame extinguishing time	≤ 15 s	0 s
	Burn length	≤ 203 mm	24 mm
	Drip flame time	≤ 3 s	0 s

Handling
Refer to product label and Material Safety Data Sheet (MSDS) for health and safety information before using this product. For MSDS visit our website www.3m.com/sds

Surface Preparation
A thoroughly cleaned, dry, grease-free surface is essential for maximum performance. For repeatable results the material and the substrates should be in the range of 20 - 25 °C object temperature.

Application

This product consists of one part. The material has to be defreezed to 20 – 25 °C before processing. **Note**: The temperature has an influence on the product viscosity. Higher temperatures will generate lower viscosity. For repeatable application results keep the product and substrate temperature in a constant range. Do not leave pails open if not used. Apply the product manual per spatula, or semi- to full automatic with an application device. Caution: Avoid high application pressures. It might result in a density increase and performance change. Note: Product viscosity will increase while room temperature storage. That influences the shop life. Do not defreeze more material than needed within shop life.

Curing
Cure the product at 125°C or 175°C during 60min in heat press or autoclave with a 3-5°C/minute heat-up rate.

Cleaning
Excess uncured adhesive can be cleaned with ketone type solvents. After cure, the adhesive can be removed mechanically only. NOTE: When using solvents, extinguish all ignition sources, including pilot lights, and follow the manufacturer's precautions and instructions for use.

Storage
Store the product at -18 °C or below. Storage life at -18°C is 3 months from date of shipment in their original unopened containers or cartridges. The specific expiry date is mentioned on the product label.

Available packaging sizes and Dispensing Equipment
This product is available in 750mL cartridges. These cartridges are compatible with the 3M pneumatic dispenser 7100197462.

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