

3M Scotch-Weld™ 3439 HT

Introduction	Scotch-Weld™ 3439 HT is a temperature resistant, one-part, high temperature curing, low density void filling compound. It offers the following advantages :	<ul style="list-style-type: none">• High compressive strength from -55°C to +175°C• Thixotropic for ease of application• Cures to a rigid, solvent resistant material	<ul style="list-style-type: none">• Cured material is flame retardant according to FAR 25.853 (b) requirements• Low volatile loss during cure
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Description	(This is not a specification)		
Colour : Yellow	Volatiles loss on cure : Less than 1.5 % (1 hour at 125 ± 2°C)	Worklife : 4 days at 15-25°C	
Base : Modified epoxy	Cure cycle : 1 hour from 125°C to 175°C with 2-5°C/minute heat-up rate		
Viscosity : Low flow, thixotropic paste			
Cured density : Less than 0.75 g/ml			

Applications	<ul style="list-style-type: none">• Designed for honeycomb sandwich constructions where heat resistance is needed.	<ul style="list-style-type: none">• Honeycomb core reinforcement• Edge finishing of honeycomb sandwich panels	<ul style="list-style-type: none">• Inserts bonding
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Product performance	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 3.0°C/minute heat-up rate. The results reported are average of five individual specimens.
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Test temperatures	Compressive strength 125°C cure	Compressive strength 175°C cure
+ 23 ± 2°C	52.5 MPa	55.4 MPa
+ 135 ± 2°C	37.4 MPa	41.7 MPa
+ 175 ± 2°C	27.1 MPa	32.1 MPa

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

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

After one hour cure 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 aluminium prepared in accordance with the AECMA 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.

Test temperatures	Overlap shear strength 175°C cure
- 55 ± 2°C	9.3 MPa
+ 23 ± 2°C	8.8 MPa
+ 135 ± 2°C	10.0 MPa
+ 175 ± 2°C	9.4 MPa

Fluid resistance :

Overlap shear specimens bonded with Scotch-Weld™ 3439 HT at + 175 ± 2°C were immersed in the following environments for a period of 1000 hours. The specimens were then pulled off at + 23 ± 2°C at a rate of 0.5 mm/minute.

Exposures	Compressive strength at 23 ± 2°C
Dry heat + 150 ± 2°C	7.9 MPa
Hydrocarbon fluid JP4 (MIL-H-5624 K) +23 ± 2°C	10.5 MPa
Deminerlized water at +23 ± 2°C	7.9 MPa
Hydraulic oil (MIL-H-5606C)	8.3 MPa

All specimens show 100 % cohesive failure within the filler.

Flammability :

1- Horizontal mode :

Horizontal samples of (125 x 12.5 x 6.4) mm were cut from a cured test block of Scotch-Weld™ 3439 HT. A sample was clamped in a horizontal position with the 12.5 mm direction making a 45° angle with the vertical. A Bunsen burner was placed with the flame tip at one end of the specimen for 60 seconds. The flame on the sample extinguishes within 5 seconds upon removal of the Bunsen burner.

2- Vertical mode :

Vertical samples of (125 x 12.5 x 12.5) mm were cut from a cured test block of Scotch-Weld™ 3439 HT. The sample was clamped in a vertical position at the top. A Bunsen burner was placed with the flame tip at the bottom end of the sample. The flame was applied for 60 seconds. Upon removal of the Bunsen burner the flame on the specimen extinguishes within 5 seconds.

3- Vertical mode to FAR 25.853 (b) :

Scotch-Weld™ 3439 HT meets the requirements of the FAR 25.853 (b) for self-extinguishing time.

**Product
Application**

Surface preparation :

A thoroughly cleaned, dry, grease-free surface is essential for maximum performance.

Adhesive application :

Scotch-Weld™ 3439 HT should be permitted to warm thoroughly to room temperature before using in order to prevent moisture condensation on the adhesive surface and to permit ease of application. Product may be then applied by spatula, trowel or extruded in place with a manual or automatic

extrusion gun. The most appropriate worktemperature for the workshop and the product is comprised between 20 and 25°C.

Recommended cure cycle :

The test results reported in the product performance section were obtained by using a 60 minute cure at 125°C or 175°C under atmospheric pressure. Autoclave of platen press equipments can also be used.

Cleanup :

Excess adhesive and equipment can be cleaned with a solvent like Methyl-Ethyl-Ketone (M.E.K.)¹⁾

1) When using solvents, extinguish all ignition sources in the area and observe precautionary measures.

Storage stability	Refrigerated storage at -18°C or below is recommended for maximum storage life. Storage life at -18°C is 3 months. Rotate stock on a "first in - first out" basis.
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Precautionary Information	See Material Safety Data Sheet for precautionary information.
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Important notice to purchaser	All statements, technical information and recommendations in this Data Sheet are based on tests 3M believes to be reliable, but the accuracy or completeness of those tests is not guaranteed. The following is made in lieu of all warranties, express or implied.	The seller's and manufacturer's only obligation will be to replace the quantity of the product proved to be defective. Neither the seller nor 3M will be liable for any injury, loss or damage, direct or consequential, arising out of the use of or the inability	to use the product. Before using, the user must determine the suitability of the product for his or her intended use. The user assumes all risk and liability in connection with the use of the product.
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Product Information source	3M Specialties, Tapes & Adhesives EBU European Adhesives Laboratory, Aerospace Materials, France Phone 33 / 1 30 40 26 51
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Reasons for change	New revision	
Issued by :	L. LAGARENNE	Approved by : W. LEWIS

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