3M™ Scotch-Weld™ 3460 HT FST

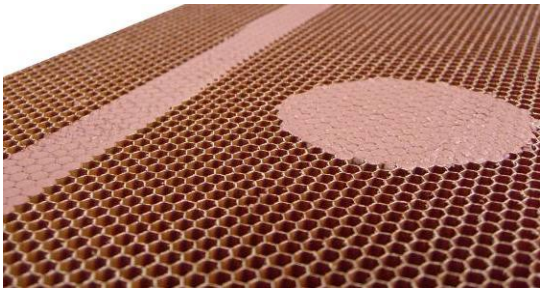
Structural Void Filling Compound

Product Description

3M™ Scotch-Weld™ 3460 HT FST (fire smoke toxicity) is a temperature resistant, one part structural void filling compound based on epoxy chemistry. It is designed for use on honeycomb sandwich structures as edge close-out, corner reinforcement, local reinforcement for mechanical fixation, or complex gap filling. The void filler is compatible with metal and non-metal constructions that are typically found in aircraft interiors. The cured material has excellent fire, smoke and toxicity properties, based on a halogen and antimony free FST System. It offers excellent chemical resistance and has good processing attributes due to its handling, extrusion, filling, grinding, and painting abilities.

Key Features

- Extrudable through both cartridge and dispensing systems
- High compressive strength from -55 °C to 175 °C
- Meets stand-alone FAR / JAR 25.853 and ABD 0031
- 100 % solids and free of shrinkage
- Cures to a rigid, solvent resistant material in one hour at 125 °C or 175 °C



Product Characterization

The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

General Properties	SW 3460 HT FST
Colour	Brown
Base	Modified epoxy
Work life	3 days at 15 – 25 °C
Cured specific gravity	0.74 g/cm³
Viscosity	Low flow, non-sag paste
Extrusion rate	> 100 g / minute
Volatiles loss on cure	Less than 1.5 %

Product Performance

The following product performance data were obtained in the 3M Laboratory under the specified conditions and using material from industrial batches, except for compression strength at temperatures higher than 120 °C, which was tested with material from pilot scale production.
The following cure cycles have been taken into account:
Cure cycle 1: 125 ± 2 °C,
Cure cycle 2: 175 ± 2 °C,
both with a heat-up rate of 3 °C/min from room to curing temperature.

Mechanical Properties	Temperature / Medium	Cure Cycle 1	Cure Cycle 2
Compressive strength ISO 604	-55 ± 2 °C	87 MPa	94 MPa
	23 ± 2 °C	68 MPa	71 MPa
	80 ± 2 °C	52 MPa	60 MPa
	120 ± 2 °C	29 MPa	45 MPa
	135 ± 2 °C	--	31 MPa
	150 ± 2 °C	--	18 MPa
	175 ± 2 °C	--	11 MPa
Compressive modulus ISO 604 (12.5 x 12.5 x 25 mm³ specimens)	23 ± 2 °C	2.2 GPa	--
Resistance to fluids and fluid absorption ISO 604 Samples immersed in the environments for 1000 hours and tested at 23 ± 2 °C (absorption in wt.%)	Dry heat at 80 ± 2 °C	72 MPa	72 MPa
	Hot wet: 70 ± 2 °C, 85 % r. h.	62 MPa (0.33 %)	59 MPa (1.10 %)
	Demineralized water at 23 ± 2 °C	67 MPa (1.10 %)	61 MPa (1.02 %)
	Fuel JP4 at 23 ± 2 °C	68 MPa (0.40 %)	67 MPa (0.55 %)
	Skydrol 500B at 23 ± 2 °C	73 MPa (1.79 %)	67 MPa (2.19 %)

Flammability, Smoke Density and Toxic Gas Emission

All specimens for flammability, smoke density and toxic gas emission tests had a thickness of 4 mm.

Fire properties		Requirements	Cure Cycle 1	Cure cycle 2
Flammability 60 s vertical FAR/JAR/CS 25.853(a) App. F, part I(a)(1)(i)	Burn length	≤ 150 mm	--	1,3 mm
	After flame time	≤ 15 s	--	0 s
	Drips extinguishing time	≤ 3 s	--	0 s
Smoke density FAR/JAR/CS 25.853(d) App. F, part V(b)	DS_{max}[(a)] in 4 min	≤ 200	--	119
Toxic gas emission (flaming mode, stand-alone) Airbus ABD0031 Boeing D6-51377	HF	≤ 100 ppm	--	< 2 ppm
	HCl	≤ 150 ppm	--	2 ppm
	HCN	≤ 150 ppm	--	< 2 ppm
	$SO_2 + H_2S$	≤ 100 ppm	--	< 20 ppm
	CO	≤ 1000 ppm	--	125 ppm
	$NO + NO_2$	≤ 100 ppm	--	7 ppm

[(a)] DS_{max}: maximum optical smoke density

Handling, Application, Storage

Precautionary Information

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/msds.

Instructions for use

Process step	Instruction
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 unfrozen and conditioned to 20 – 25 °C before processing. **Note:** The temperature has an influence on the product viscosity. Higher temperatures will generate lower viscosity. Product viscosity will increase on room temperature storage, which defines the shop life. Do not unfreeze more material than needed within shop life. For reproducible application results keep the product and substrate temperature in a constant range. Do not leave pails open if not used. Apply the product manually per spatula, or by semi- to full automation with an application device. **Caution**: Avoid excessive high application pressures. This may result in a density increase and change in performance.
Curing and processing	Cure the product at either 125 °C or 175 °C. Finish mechanically to desired shape by using e. g. abrasive or milling processes. This product is paintable.
Cleaning	Excess uncured void filler can be cleaned with ketone type solvents. After cure, the adhesive can be removed mechanically. **NOTE:** When using solvents, extinguish all ignition sources, including pilot lights, and follow the manufacturer's precautions and directions for use.
Storage and handling	Store the product at -18 °C temperature or below. Shelf life at -18°C is 3 months from date of shipment in the original unopened containers or cartridges.

For more detailed information contact your local 3M Sales Representative or Technical Service.

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Reference: 144