3M™ Scotch-Weld™ EC-3550 B/A FST

Structural Void Filling Compound

Product Description

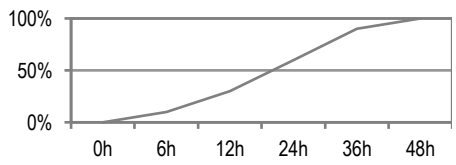
3M™ Scotch-Weld™ EC-3550 B/A FST (Fire, Smoke and Toxicity) is an extrudable, two part, low density, structural void filling compound based on epoxy chemistry. It is designed for use on interior honeycomb sandwich structures as edge close-out and corner reinforcement, as well as local reinforcement for 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 FST properties, based on a halogen and heavy metal free system. It has good processing attributes due to its easy storage, handling, extrudability, filling, grinding, and painting abilities.

Key Features

- Low density material for light weight designs
- Extrudable through both cartridge and dispensing systems
- Fulfils stand alone FAR / JAR 25.853 and ABD 0031
- 100 % solids, sag resistant, shrinkage-free material
- Full room temperature processing

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	Part B	Part A
Colour	Brown with black spots	Off-white
Base	Epoxy	Modified amine
Consistency	Thixotropic paste	Thixotropic paste
Mix ratio by volume (by weight)	100 (100)	50 (52)
Solid content	100 %	100 %
Uncured specific gravity	0.56 g/ccm	0.58 g/ccm
Work life at 23 ± 2 °C	≥ 2 hours in static mixer (18 elements, 13 mm inner diameter)	
Time to form stability	6 hours at 23 ± 2 °C	
Typical strength build-up at 23 ± 2 °C		
Full cure at 23 ± 2 °C	48 h	
Slump (AITM 2-0033)	< 0.5 mm	
Cured specific gravity	0.57 g/ccm	
Packaging	Cartridges and Hobbocks	

Product Performance

The following product performance data were obtained under the conditions specified. All values are based on specimens extruded through a static mixer (18 elements, 13 mm inner diameter). Cure cycle was as follows: 48 hours at 23 ± 2 °C. The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Mechanical properties	Test temperature / medium	Test Results
Compressive strength ISO 604 12.5 x 12.5 x 25 mm³ specimen	-55 ± 2 °C	30 MPa
	23 ± 2 °C	27 MPa
	80 ± 2 °C	5 MPa
Compressive modulus ISO 604 12.5 x 12.5 x 25 mm³ specimen	-55 ± 2 °C	550 MPa
	23 ± 2 °C	1200 MPa
	80 ± 2 °C	75 MPa
Shear Strength (AITM 1-0046)	23 ± 2 °C	2500 N

Flammability, Smoke Density and Toxic Gas Emission

All specimens for flammability, smoke density and toxic gas emission tests had a thickness of 3 mm or 6,35 mm.

Flammability properties (stand alone)		Requirements	Test Results
Flammability 12 s vertical burn FAR/JAR/CS 25.853(a), App F, part I(a)(1)(i) 6.3 x 75 x 305 mm specimen	Burn length	≤ 203 mm	3 mm
	After flame time	≤ 15 s	0 s
	Drips exting. time	≤ 3 s	0 s
Flammability 60 s vertical burn FAR/JAR/CS 25.853(a), App F, part I(a)(1)(i) 3 x 75 x 305 mm specimen	Burn length	≤ 150 mm	12 mm
	After flame time	≤ 15 s	0 s
	Drips exting. time	≤ 3 s	0 s
Smoke emission FAR/JAR/CS 25.853(d) App F, part V(b)	DS_{max}[(a)] in 4 min	≤ 200	162
Toxic gas emission (flaming mode) Airbus ABD 0031 Boeing D6-51377 3 x 75 x 75 mm specimen	HF	≤ 100 ppm	< 1 ppm
	HCl	≤ 150 ppm	< 1 ppm
	HCN	≤ 150 ppm	33 ppm
	$SO_2 + H_2S$	≤ 100 ppm	< 1 ppm
	CO	≤ 1000 ppm	450 ppm
	$NO + NO_2$	≤ 100 ppm	9 ppm

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

All Data were generated in stand alone test mode.

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

While this information is provided as general application guideline based upon typical conditions, it is recognized that no two applications are identical due to, among other things, differing assemblies, methods of heat and pressure application, production equipment and other limitations. It is therefore suggested that experiments be run, within the actual constrains imposed to determine optimum conditions for your specific application and to determine suitability of product for particular intended use.

Process step	Instruction
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).
Void filler application	This product consists of two parts. Mix Part B and Part A thoroughly manually or automatically by weight or volume in the proportions specified on the product. Mix manually approximately 15 seconds after a uniform colour is obtained. For semi- or full-automatic applications it is recommended to use one of the following static mixers: MC 13-12 (for high extrusion rate) or MC 13-18. For repeatable performance keep mixing ratio in a range of ± 5 %. Dual cartridge applications provide maximum accuracy and easy handling. When using a new mixer, scrap the first ccm's until a uniform colour is obtained. The work life in mixed condition is around 2 hours. **Caution:** Work life differs according to pot size and temperature. Larger sizes and higher temperatures create faster reaction times. Use a spatula to form the applied material in custom designed shape.
Curing and processing	Cure the product at room temperature or with mild heat (max. 80 °C). **NOTE:** Higher temperatures generate faster curing times and can expand the product. The following times and temperatures will result in a full cure: ▪ 2 days at 23 ± 2 °C ▪ 1 hours at 80 ± 2 °C **Important:** Be careful when curing larger quantities at elevated temperature, because exothermic reaction may occur. Finish the shape mechanically earliest 12 hours after mixing, e. g. abrasive, or milling. This product is paintable.
Cleaning	Excess uncured void viller 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 instructions for use.
Storage and handling	Store the product at room temperature or below. Shelf life is minimum 12 months from date of shipment in their original unopened containers or used cartridges. The specific expiry date is mentioned on the product label.

For additional information on this product contact your local 3M Aerospace Sales Representative or visit our homepage at www.3m.eu/aerospace.

Automotive and Aerospace Solutions Division
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