3M™ Scotch-Weld™ 3524 B/A AF

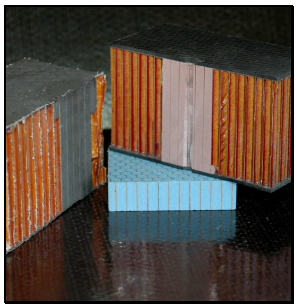
Two Part Void Filling Compound

Product Description

3M™ Scotch-Weld™ 3524 B/A AF is a two part, room temperature curing, low density void filling compound. It has been formulated without antimony trioxide and is designed for use in honeycomb sandwich structures for edge close-out and corner reinforcement, as well as local reinforcement for mechanical fixation or complex gap filling. The void filler is compatible with both metallic and non-metallic constructions typically found in aircraft interiors.

Key Features

- Low density
- 100 % solids
- Service temperature of -55 °C to 80 °C
- Cured material is flame retardant according to FAR 25.853 (a) and (b) requirements
- Excellent water and chemical resistance



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	Base (B)	Hardener (A)
Colour	Light blue	Off-white
Base	Epoxy	Modified Amine
Mix ratio by weight	100	100
Consistency	Thixotropic paste	Thixotropic paste
Uncured density	0.49 g/cm^3	0.40 g/cm^3
Worklife	90 – 120 minutes at 15 – 25 °C	
Flow (Boeing jig)	Less than 0.5 mm	
Volatiles loss on cure	Less than 0.01 % after 48 hours cure at 15 – 25 °C	
Cured specific gravity	0.44 ± 0.04 g/cm^3	

Product Performance

The following product performance data were obtained under the specified conditions.

Compressive strength and shear strength

Compressive strength: 12.5 x 12.5 x 25 mm^3 samples were cut from a test block of Scotch-Weld™ 3524 FST B/A, cured for 48 h at 23 ± 2 °C. Compression was calculated with the force applied to the 12.5 mm square.
Shear strength: a 40 mm length of 10 mm diameter optimized FPL etched aluminium rod is bonded into a (30 x 30x 10) mm cylindrical block of void filler such that 20 mm and 10 mm of the rod protrude on respective sides. After curing for 48 hours at 23 +/-2°C, the force necessary to push out the rod is measured.

Mechanical Properties	Test temperature	Typical results (average of 5 lots)
Compressive strength ISO 604 12.5 x 12.5 x 25 mm³ specimens 0.5 mm/min load rate	+ 23 ± 2 °C	15.9 MPa
	+ 55 ± 2 °C	5.9 MPa
	+ 80 ± 2 °C	2.6 MPa
	+ 100 ± 2 °C	2.1 MPa
Compressive modulus ISO 604 12.5 x 12.5 x 25 mm³ specimens 1.3 mm/min load rate	+ 23 ± 2 °C	2200 MPa
	+ 23 ± 2 °C	2190 MPa [a]
Shear strength	+ 23 ± 2 °C	1915 N
	+ 100 ± 2 °C	405 N
	+ 100 ± 2 °C	510 N [c]

[a] Cure cycle: 5 h at 50 ± 2 °C

Fluid resistance

Compressive and filler strength specimens of cured Scotch-Weld™ 3524 B/A AF were prepared in accordance with the above described conditions. Compressive specimens with all faces and filler strength specimens were immersed or exposed to the following environments. The specimens were then tested at room temperature at 0.5 mm/minute. The results reported are average values of three lots.

Environment	Time, temperature	% weight absorption	Average compressive strength [a]	Average filler strength	Shore D hardness
Control		-	15.9 MPa	1915 N	54
Boiling water	2 h at 100 ± 2 °C	0.7 % / 1.1 %	8.5 MPa	-	-
50 °C / 95 % R.H.	30 d	2.6 % / 3.2 %	8.4 MPa	-	-
Distilled Water	30 d at 23 ± 2 °C	1.5 %	10.8 MPa	1596 N [a]	50 [a]
Skydrol 500B	48 h at 23 ± 2 °C	2.4 %	15.8 MPa	-	-
	1000 h at 23 ± 2 °C	3.2 %	16.9 MPa	1780 N	53
Hydraulic Oil MIL-H-5606 C	30 d	2.3 %	17.8 MPa	2125 N [b]	53 [b]
Engine Oil MIL-L 7808	30 d	2.8 %	18.0 MPa	-	-
Fuel JP4	48 h	2.5 %	13.5 MPa	-	-
	30 d	10.8 %	3.9 MPa	655 N [c]	20 [c]

[a] 1000 hours immersion [b] 1000 hours in EATO 35 [c] 1000 hours in NATO F34

Flammability

Flammability properties (stand alone)		Requirements	Typical value
Flammability 12 s vertical [a] FAR/JAR/CS 25.853 (a) (b)	After flame time	≤ 15 s	2 s
	After flame time	≤ 15 s	Pass

(a) Vertical mode:

Vertical samples of (12.5 x 12.5 x 12.5) mm were cut from a cured test block of Scotch-Weld™ 3524 B/A AF. Each sample is then clamped in a vertical position at the top. A Bunsen burner is 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. Typical self-extinguishing is 2 seconds.

Handling, Application, Storage

Precautionary Information

See material data sheet for precautionary information (www.3M.com/msds).

Instructions for use

The product performance data were obtained using the following suggested procedures.

Process step	Instruction
Surface preparation	A clean, dry and grease free surface is essential for maximum performance.
Mixing	Scotch-Weld™ 3524 B/A AF may be mixed by hand or machine until a uniform light blue colour is obtained. A 200 g mix has a work life of approximately 2 hours. Larger mix quantities will give a shorter work life. For industrial mixing applications, use a mixer that will not crush the glass microspheres contained in the compound.
Application	Scotch-Weld™ 3524 B/A AF can be applied by spatula or trowel. The most appropriate work temperature is between 20 and 25 °C.
Suggested cure cycle	A minimum room temperature cure time of 48 hours at 15 – 25 °C is recommended to obtain the optimum mechanical properties of the product. Scotch-Weld™ 3524 B/A AF can be worked out after 6 hours at room temperature. The test results reported in the product performance section were obtained by using a 48 hours cure at 15 – 25 °C unless otherwise stated. The application of heat can also be used to accelerate the cure cycle (e.g. 5 hours at 50 – 55 °C or 30 minutes at 120 – 125 °C.
Cleanup	Excess adhesive and equipment can be cleaned with solvents like methyl ethyl ketone (MEK) [a].
Storage	Store the product at room temperature or below. Storage life at 15 – 25 °C is 6 months for the two components in their original unopened containers. Rotate stock on a “first-in-first out” basis.
Shelf life	3M standard shelf life for Scotch-Weld™ 3524 B/A AF is 6 months from date of shipment from 3M when stored at 15-25°C.
[a] When using solvents, extinguish all ignition sources and follow precautionary measures.	

Further Information

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

Aerospace and Aircraft Maintenance Department
European Aerospace Laboratory
www.3m.eu/aerospace

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