

## 3M™ Scotch-Weld™ EC-3500-2 PMF

### Low Density Void Filling Compound

#### Product Description

3M™ Scotch-Weld™ EC-3500-2 PMF (pre-mixed and frozen) is a heat curing, low density, structural void filling compound based on epoxy chemistry. This is the one part version of Scotch-Weld™ EC-3500-2 B/A. The product is designed for use on honeycomb sandwich structures, e.g. 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 designs. The cured material offers high mechanical performance on a wide temperature range with excellent chemical resistance.

#### Key Features

- High performance from -55 °C to 175 °C for structural applications
- Low density material for light weight designs
- Available in cartridges for efficient productivity
- Deaerated product for enhanced structural durability
- Non sag behaviour, suitable for vertical application



#### 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	Description
Colour	Dark grey
Base	Epoxy
Consistency	Thixotropic, high viscous paste
Uncured specific gravity	0,75 g / ccm
Volatile content	Very low, less than 1,5 %
Recommended Heat Rate	2 – 5 K / min
Minimum Cure Cycle <sup>1</sup>	60 minutes at 125 °C
In-Service Temperature	From - 55 °C to 175 °C
Shop Life <sup>2</sup>	≥ 3 days at 23 ± 2 °C
Packaging	Cartridges

<sup>1</sup> for more detailed information see chapter "handling, application, storage" on page 3.

<sup>2</sup> shop life is depending on application approach.

## Product Performance

The following product performance data was obtained in the 3M Laboratory under the conditions specified. The data should be considered as typical or representative only and should not be used for specification purpose. The values represent typical average product performance. The following cure cycles have been taken into account:

Cure Cycle A: 60 minutes at  $175 \pm 5$  °C at atmospheric pressure (heat rate 3 °C / minute)

Cure Cycle B: 60 minutes at  $125 \pm 5$  °C at atmospheric pressure (heat rate 3 °C / minute)

Mechanical Properties	Temperature / Medium	Cure Cycle A <sup>3</sup>	Cure Cycle B <sup>3</sup>
<b>Compressive Strength</b> ISO 604 ; Sample size : 12,5 x 12,5 x 25 mm <sup>3</sup>	23 ± 2 °C	76 MPa	81 MPa
	120 ± 2 °C	44 MPa	50 MPa
	135 ± 2 °C	36 MPa	45 MPa
	180 ± 2 °C	19 MPa	
<b>Resistance to Fluids &amp; Fluid Absorption</b> ISO 604 Sample size : 12,5 x 12,5 x 25 mm <sup>3</sup> The samples have standardized been immersed in the environments for 1000 hours.	Reference compression strength value at 23 ± 2 °C	78 MPa	-
	2000 h, 70 ± 2 °C, 85 % RH tested at 23 ± 2 °C	55 MPa (1,1 %)	-
	2000 h, 70 ± 2 °C, 85 % RH tested at 120 ± 2 °C	19 MPa (1,0 %)	-
	Demineralised water at 23 ± 2 °C	43 MPa (1,4 %)	-
	Fuel JP4, F40 at 23 ± 2 °C	61 MPa (0,5 %)	-
	Skydrol 500B at 23 ± 2 °C	62 MPa (0,9 %)	-

<sup>3</sup> Average cured density of above specimens at 23 ± 2 °C: 0.73 g / ccm

# 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](http://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 constraints 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 and ease of application Scotch-Weld™ EC-3500-2 PMF should be permitted thoroughly to room temperature 20 – 25 °C before using. In order to prevent moisture condensation on the adhesive keep the material in original closed packaging while acclimatisation.
Application	<p>This product consists of one part. <b>Note:</b> 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. Apply the product manual per spatula, or semi- to full automatic with an application device. <b>Caution:</b> Avoid high application pressures. It might result in a density increase and performance change. <b>Note:</b> Product viscosity will increase while room temperature storage, which influences the shop life. Do not defreeze more material than needed within shop life.</p> <p>Excess product and equipment can be cleaned with a solvent like methyl ethyl ketone (MEK). When using solvents, extinguish all ignition sources in the area and observe precautionary measures.</p>
Suggested cure cycle	<p>Cure the product between 125 °C to 180 °C in heat press or autoclave. Keep heat rate in a range of 2 – 5 °C / minute. Higher temperatures generate faster curing times. The following times and temperatures will result in a full cure:</p> <ul style="list-style-type: none"><li>▪ 60 minutes at 125 ± 2 °C; heat rate 2-5°C / minute</li><li>▪ 60 minutes at 175 ± 2 °C; heat rate 2-5 °C / minute</li></ul> <p><b>Note:</b> For honeycomb with size over 50 mm and potting diameter over 100 mm, it is recommended to cure one hour at 175 °C with a hold of at least 30 minutes at 100 °C during the heat-up phase to reduce exothermicity.</p> <p>Finish the shape mechanically after curing by using e.g. abrasive- or milling- processes. This product is paintable.</p>
Storage	Store the product at -18 °C or below. Shelf life below -18 °C is 3 months from date of shipment in their original unopened containers or cartridges.

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

**Important notice:** 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. All technical data and information should be considered typical or representative only and should not be used for specification purposes. Given the variety of factors that affect the use and performance of a 3M product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product before use to determine the suitability of the 3M product for the intended use and method of application. All questions of liability relating to the 3M product are governed by the terms of the sale subject to, where applicable, the prevailing law.



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