

Advanced Materials**Aerospace Structural Adhesives**

Epibond® 1590 FST A/B - Provisional Two Component Flame Retarded Adhesive

Key properties

- **Excellent FST properties**
- **Good lap shear performance to 80°C**
- **Good mechanical performance on metal and thermoplastic substrates**
- **Good environmental durability**
- **Available in three different colours**
- **Flexible Cure Cycle**

Description

Epibond® 1590-FST A/B is a two component adhesive system designed for interior aerospace applications and offers a good balance of FST and mechanical properties.

Design to cure at either room or elevated temperatures it exhibits good mechanical properties on both metal and thermoplastic substrates. It is particularly good in environmental resistance and shows excellent stress crack resistance on typical aerospace interior thermoplastic substrates.

Epibond® 1590-FST A/B is qualified to DAN 11-99-01, DAN 1187-01 and FAR 25.853.

Typical product data

Property	Epibond 1590 FST A	Epibond 1590 FST B	Mixed Adhesive	Test Method
Colour	Off white White Off white	Amber White Black	Neutral White Grey	Visual
Density (g/cc)	1.32	1.14	1.26	ISO 2811
Viscosity at 25°C	Ca. 120	Ca. 100	Ca. 115	ISO 2555
Gel time (mins)	-	-	Ca. 100	ASTM D-24
Volatiles (%)	-	-	<0.2	EN2558

Processing**Pre-treatment**

The strength and durability of a bonded joint are dependent on proper treatment of the surfaces to be bonded. At the very least, metal surfaces should be cleaned with a good degreasing agent such as acetone or proprietary degreasing agent in order to remove all traces of oil, grease and dirt. Alcohol, gasoline (petrol) or paint thinners should never be used. The strongest and most durable joints are obtained by either mechanically abrading, chemically etching ("pickling") or anodising the degreased surfaces. Abrading should be followed by a second degreasing treatment. Thermoplastic surfaces should be pre-treated accordingly.

Mix ratio

Component	Part by Weight	Part by Volume
Epibond 1590 FST A	264	200
Epibond 1590 FST B	116	100

The two components should be blended until they form a homogeneous mix.

Application of adhesive

The resin/hardener mix is applied with a spatula to the pre-treated and dry joint surfaces. A layer of adhesive 0.05 to 0.1mm thick will normally provide the maximum lap shear strength. The joint components should be assembled and clamped as soon as possible after the adhesive has been applied. An even contact pressure throughout the joint area during cure will ensure optimum performance.

Mechanical processing

Specialist firms have developed metering, mixing and spreading equipment that enables the bulk processing of adhesive. Huntsman Advanced Materials will be pleased to advise customers on the choice of equipment for their particular needs.

Equipment maintenance

All tools should be cleaned before adhesives residues have had time to cure. The removal of cured residues is a difficult and time-consuming operation. If solvents such as acetone are used for cleaning, operatives should take the appropriate precautions and, in addition, avoid skin and eye contact.

Cure schedules

The recommended cure cycles are as follows :

- 7 days at room temperature
- 4 hours at 60°C (140°F)

Typical cured properties

These figures are provided solely as technical information and do not constitute a specification. They are determined with typical batches using standard test methods and cured for 7 days at room temperature.

Lap shear strength

Determined on de-greased/pickled 2024T3 aluminium according to ISO4587.

Test Temperature		Lap Shear Strength	
°C	°F	Mpa	psi
-55	-67	16	2350
23	73	22	3200
80	176	11	1600
135	275	6	850

Metal/metal peel strength

Determined on de-greased/pickled 2024T3 aluminium according to ISO4577.

Test Temperature		Lap Shear Strength	
°C	°F	N/25mm	N/in
23	73	100	3.94

FST Characteristics

Parameters		Standards	Units	Results
Flammability, vertical 12s	Burn length	AITM 2.0002B	mm	90
Heat release	Heat release	AITM 2.0006	Kw.min/ m ²	33
	Heat release rate		kW/m ²	95
Max. optical smoke density		AITM 2.0007	-	22
Concentration of smoke gas components	HCN	AITM 3.0005	ppm	1
	CO			36
	NO _x			9
	SO ₂			1

Environmental resistance

These figures are provided solely as technical information and do not constitute a specification. They are determined with typical batches using standard test methods and cured for 7 days at room temperature.

Lap shear strength

Determined on de-greased/pickled 2024T3 aluminium according to ISO4587.

Conditioning	Ageing		Test Temperature		Lap Shear Strength	
	°C (°F)	Hours	°C	°F	MPa	psi
70°C / 70% RH	70 (158)	336	23	73	23	3300

Storage

Epibond 1590-FST A/B may be stored for up to 18 months from the date of production at 2 – 8°C (35.6-46.4°F) in original sealed containers. The product can be stored for 12 months at 6 – 28°C (42.8-82.4°F), after removal from cool storage, provided that the expiry date indicated on the packaging is not exceeded. Prior to shipment from Huntsman the product will be stored at 0 – 8°C (32 – 46°F).

Handling Precautions**Caution**

Our products are generally quite harmless to handle provided that certain precautions normally taken when handling chemicals are observed. The uncured materials must not, for instance, be allowed to come into contact with foodstuffs or food utensils, and measures should be taken to prevent the uncured materials from coming in contact with the skin, since people with particularly sensitive skin may be affected. The wearing of impervious rubber or plastic gloves will normally be necessary; likewise the use of eye protection. The skin should be thoroughly cleansed at the end of each working period by washing with soap and warm water. The use of solvents is to be avoided. Disposable paper - not cloth towels - should be used to dry the skin. Adequate ventilation of the working area is recommended. These precautions are described in greater detail in the Material Safety Data sheets for the individual products and should be referred to for fuller information.

Huntsman advanced materials

All recommendations for the use of our products, whether given by us in writing, verbally, or to be implied from the results of tests carried out by us, are based on the current state of our knowledge. Notwithstanding any such recommendations the Buyer shall remain responsible for satisfying himself that the products as supplied by us are suitable for his intended process or purpose. Since we cannot control the application, use or processing of the products, we cannot accept responsibility therefor. The Buyer shall ensure that the intended use of the products will not infringe any third party's intellectual property rights. We warrant that our products are free from defects in accordance with and subject to our general conditions of supply.

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