

**Advanced Materials****EPOCAST® 1645 FR A/B Ultra-Low Density Epoxy Void and Edge Filler**

- Meets BMS 5-28 Type 9 Requirements
- 1 Year Shelf Life
- 1-to-1 Mix Ratio by Weight and Volume
- Excellent Tolerance with Off Ratio
- Flame Retardant: Meets FAR 25.853a Requirements
- 0.48g/cc Density
- High Strength and High Modulus
- Easy to Process with Color Mix Indicator and Rapid Sanding
- “Wet-Finger” Smoothable (with Glove)
- Service Temperature up to 350°F
- No SVHC as Defined by REACH\*

**PRODUCT DESCRIPTION:**

EPOCAST® 1645 FR A/B is a two-component, ultra-low density, flame-retardant epoxy void filler designed for edge filling/reinforcing of honeycomb structures used in aerospace interior applications. Both EPOCAST® 1645 FR A and B are non-sticky, very soft pastes which can be easily mixed and applied manually and are water cleanable after application. EPOCAST® 1645 FR A/B sets quickly at room temperature and is sandable shortly after application. It is well suited for aerospace applications requiring low density, high strength, and a rapid component assembly.

**TYPICAL PROPERTIES AS RECEIVED:**

Property	1645 FR A	1645 FR B	A/B	Test Method
Color	Brown	Off-white	Brown	Visual
Specific gravity	0.45 - 0.48	0.45 - 0.48	0.45 - 0.48	ASTM D-1622
Viscosity, @77°F	Paste	Paste	Paste	--
Gel time, 100g @77°F, min	--	--	65	ASTM D-2471
Shelf life, month	12	12	--	--

\* Does not intentionally contain any Substances of Very High Concern (SVHC) for authorization as published by the European Chemicals Agency (ECHA) pursuant to Article 59 REACH as of December, 2013

**MIX RATIO:**

To 100 parts by weight or volume of EPOCAST® 1645 FR A resin, add 100 parts by weight or volume of EPOCAST® 1645 FR B hardener. Mix both components thoroughly for several minutes to ensure complete mixing.

**GEL TIME:**

**CAUTION!** Gel time and work life varies greatly with the mass of the material being mixed at one time. Too large a quantity of mixed material will reduce the work life/gel time and produce a significant and undesirable heat release unless it is spread rapidly.

1645 FR A	1645 FR B	Gel Time @73°F/23°C, min	Peak Exotherm Temperature, °F (°C)
5g	5g	185	Not measured
10g	10g	150	Not measured
25g	25g	85	Not measured
50g	50g	65	121 (49)
100g	100g	45	130 (54)
200g	200g	40	160 (71)
55g	50g (10% off ratio)	85	Not measured
60g	50g (20% off ratio)	90	Not measured
65g	50g (30% off ratio)	95	Not measured
70g	50g (40% off ratio)	95	Not measured
50g	55g(10% off ratio)	75	Not measured
50g	60g(20% off ratio)	80	Not measured
50g	65g(30% off ratio)	80	Not measured
50g	70g(40% off ratio)	80	Not measured

**CURE SCHEDULE:**

1 to 3 days at 73°F/23°C or gel at room temperature plus 1 to 3 hours at 125°F (52°C).

**SANDABILITY:**

EPOCAST® 1645 FR A/B provides an excellent sandability once hardened. The minimum cure time prior to sanding will depend on the mass of Epocast® 1645 FR A/B being used and on the actual ambient temperature. The table below provides some general guidelines for various mass of EPOCAST® 1645 FR A/B cured at 73°F (23°C). At elevated temperature (e.g. with hot air) the minimum sandable time can be significantly reduced in order to save processing time.

EPOCAST® 1645 FR A/B	Sandable time
10g	4 - 5 hours
30g	3 - 4 hours
50g	2 - 2.5 hours
100g	70 - 80 minutes

**RECOATABILITY:**

Cured EPOCAST<sup>®</sup> 1645 FR A/B has a high surface tension of > 72dyne/cm. It can be coated with various types of organic and water-borne adhesives, paints, inks, etc. with excellent results.

**TYPICAL CURED PROPERTIES** (Not for specification purposes)**General performance at 73°F (23°C) (cured 3 hours at 125°F/52°C)**

Properties	Results	Test method
Compressive strength, psi (MPa)	2850 (19.7)	ASTM D-695
Compressive modulus, Ksi (KPa)	190 (1.31)	ASTM D-695
Lap shear strength, Al/Al, psi (MPa)	1100 (7.6)	ASTM D-1002
Shore D hardness	58	ASTM D-2240
Glass Transition temperature, °C (°F)	50 (122)	ASTM E-1824
CTE, µm/m×°C	41.5	ASTM E-831
Flammability (12-second vertical burn)		FAR 25.853a
Extinguishing time, second	<2	
Burn length, inch	<2	

**Compressive strength at 73°F (23°C) (cured at 73°F/23°C)**

Cure time, day	Compressive strength, psi (MPa)	Test method
1	2600 (17.9)	ASTM D-695
2	2700 (18.6)	ASTM D-695
3	2800 (19.3)	ASTM D-695
7	2850 (19.7)	ASTM D-695

**Compressive strength at 73°F/23°C (cured at 125°F (52°C))**

Cure time, hour	Compressive strength, psi (MPa)	Test method
1	2700 (18.6)	ASTM D-695
3	2850 (19.7)	ASTM D-695
5	2850 (19.7)	ASTM D-695

**Compressive strength at elevated temperatures (cured 3 days at 73°F/23°C)**

Test temperature, °F (°C)	Compressive strength, psi (MPa)	Test method
73 (23)	2800 (19.3)	ASTM D-695
250 (121)	560 (3.9)	ASTM D-695
300 (149)	500 (3.4)	ASTM D-695
350 (177)	350 (2.4)	ASTM D-695

**Compressive strength with off ratio (cured 3 hours at 125°F/52°C)**

Off ratio (resin or hardener), %	Compressive strength, psi (MPa)	Test method
0	2850 (19.7)	ASTM D-695
10	2700 (18.6)	ASTM D-695
20	2700 (18.6)	ASTM D-695
30	2700 (18.6)	ASTM D-695
40	2600 (17.9)	ASTM D-695

**Flammability (12-second vertical burn) with off ratio (cured 3 hours at 125°F/52°C)**

1645 A/1645 B (wt/wt)	Extinguishing time, second	Test method
120/100	<2	FAR 25.853a
130/100	<2	FAR 25.853a
140/100	<2	FAR 25.853a
100/120	14	FAR 25.853a
100/130	30	FAR 25.853a

---

**STORAGE:** EPOCAST<sup>®</sup> 1645 FR A/B epoxy syntactic adhesive should be stored in a dry place, in its sealed original container, at temperatures between +2°C to +40°C (+35.6°F and 104°F). Under these storage conditions the shelf life is 12 months. The product should not be exposed to direct sunlight.

Material temperatures should be above 65°F (18°C) when mixing. After use, tightly reseal containers.

---

**PRECAUTIONARY STATEMENT:**

Huntsman Advanced Materials Americas LLC maintains up-to-date Material Safety Data Sheets (MSDS) on all of its products. These sheets contain pertinent information that you may need to protect your employees and customers against any known health or safety hazards associated with our products. Users should review the latest MSDS to determine possible health hazards and appropriate precautions to implement prior to using this material.

**First Aid!**

Refer to MSDS as mentioned above.

---

**KEEP OUT OF REACH OF CHILDREN**  
**FOR PROFESSIONAL AND INDUSTRIAL USE ONLY**

---

**IMPORTANT LEGAL NOTICE**

Sales of the product described herein ("Product") are subject to the general terms and conditions of sale of either Huntsman Advanced Materials LLC, or its appropriate affiliate including without limitation Huntsman Advanced Materials (Europe) BVBA, Huntsman Advanced Materials Americas Inc., or Huntsman Advanced Materials (Hong Kong) Ltd. ("Huntsman"). The following supercedes Buyer's documents.

Huntsman warrants that at the time and place of delivery all Products sold to Buyer shall conform to the specifications provided to Buyer by Huntsman.

While the information and recommendations included in this publication are, to the best of Huntsman's knowledge, accurate as of the date of publication, NOTHING CONTAINED HEREIN (EXCEPT AS SET FORTH ABOVE REGARDING CONFORMANCE WITH SPECIFICATIONS PROVIDED TO BUYER BY HUNTSMAN) IS TO BE CONSTRUED AS A REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHTS, OR WARRANTIES AS TO QUALITY OR CORRESPONDENCE WITH PRIOR DESCRIPTION OR SAMPLE, AND THE BUYER ASSUMES ALL RISK AND LIABILITY WHATSOEVER RESULTING FROM THE USE OF SUCH PRODUCT, WHETHER USED SINGLY OR IN COMBINATION WITH OTHER SUBSTANCES.

No statements or recommendations made herein are to be construed as a representation about the suitability of any Product for the particular application of Buyer or user or as an inducement to infringe any patent or other intellectual property right. Buyer is responsible to determine the applicability of such information and recommendations and the suitability of any Product for its own particular purpose, and to ensure that its intended use of the Product does not infringe any intellectual property rights.

The Product may be or become hazardous. The Buyer should obtain Material Safety Data Sheets and Technical Data Sheets from Huntsman containing detailed information on Product hazards and toxicity, together with proper shipping, handling and storage procedures for the Product, and should comply with all applicable governmental laws, regulations and standards relating to the handling, use, storage, distribution and disposal of, and exposure to the Product. Buyer shall also take all steps necessary to adequately inform, warn and familiarize its employees, agents, direct and indirect customers and contractors who may handle or be exposed to the Product of all hazards pertaining to and proper procedures for safe handling, use, storage, transportation and disposal of and exposure to the Product, and the containers or equipment in which the Product may be handled, shipped or stored.

Epocast is a registered trademark of Huntsman LLC or an affiliate thereof in one or more, but not all countries.

© 2014 Huntsman Advanced Materials Americas Inc.

Main Offices :  
**Huntsman Corporation**  
10003 Woodloch Forest Dr.  
The Woodlands  
Texas 77380  
(281) 719-6000

**Huntsman Advanced Technology  
Center**  
8600 Gosling Rd.  
The Woodlands  
Texas 77381  
(281) 719-7400