CYCOM® 7668 EPOXY RESIN

TECHNICAL DATA SHEET

DESCRIPTION

CYCOM® 7668 resin is a 350°F (177°C) curing flame retardant epoxy formulated for use with fiberglass in structural laminates and sandwich panels for aircraft exteriors. Woven fabric impregnated with 7668 resin will maintain good tack and drape for at least 15 days at 75°F (24°C) and once cured, exhibits excellent resistance to thermal aging.

FEATURES & BENEFITS

- Four tailored tack levels
- Excellent flammability
- Resistant to thermal aging
- Outstanding tension, compression and sandwich properties
- Suitable for laminates and sandwich panels
- Low flow and core movement
- Meets BMS-8-139 and MIL-R-9300, type 2
- 350°F (177°C) cure
- 350°F (177°C) dry service temperature
- Shelf life 270 days at 10°F (-12°C) or below
- Handling life 15 days at 75°F (24°C)
- Mechanical life 30 days at 75°F (24°C)

SUGGESTED APPLICATIONS

- Structural laminates and honeycomb core sandwich panels for aircraft exteriors

CHARACTERISTICS

CYCOM 7668 is available in four different tack levels ranging from high tack to very low tack. Tack is primarily controlled via resin formulation, therefore manufacturing conditions and tolerances are identical across all four tack levels. Also, there are no differences in mechanical and flammability characteristics between materials with different tack levels.

Table 1 | Typical Prepreg Properties

Property	Style 7781	Style 120
Resin Content, %	36 ± 2	42 ± 3
Volatile Content, %	1.5 max.	1.5 max.
Flow, %	17 ± 5	17 ± 5

AECM-00021
REV: 00
9 AUGUST 2010

Viscosity Curve

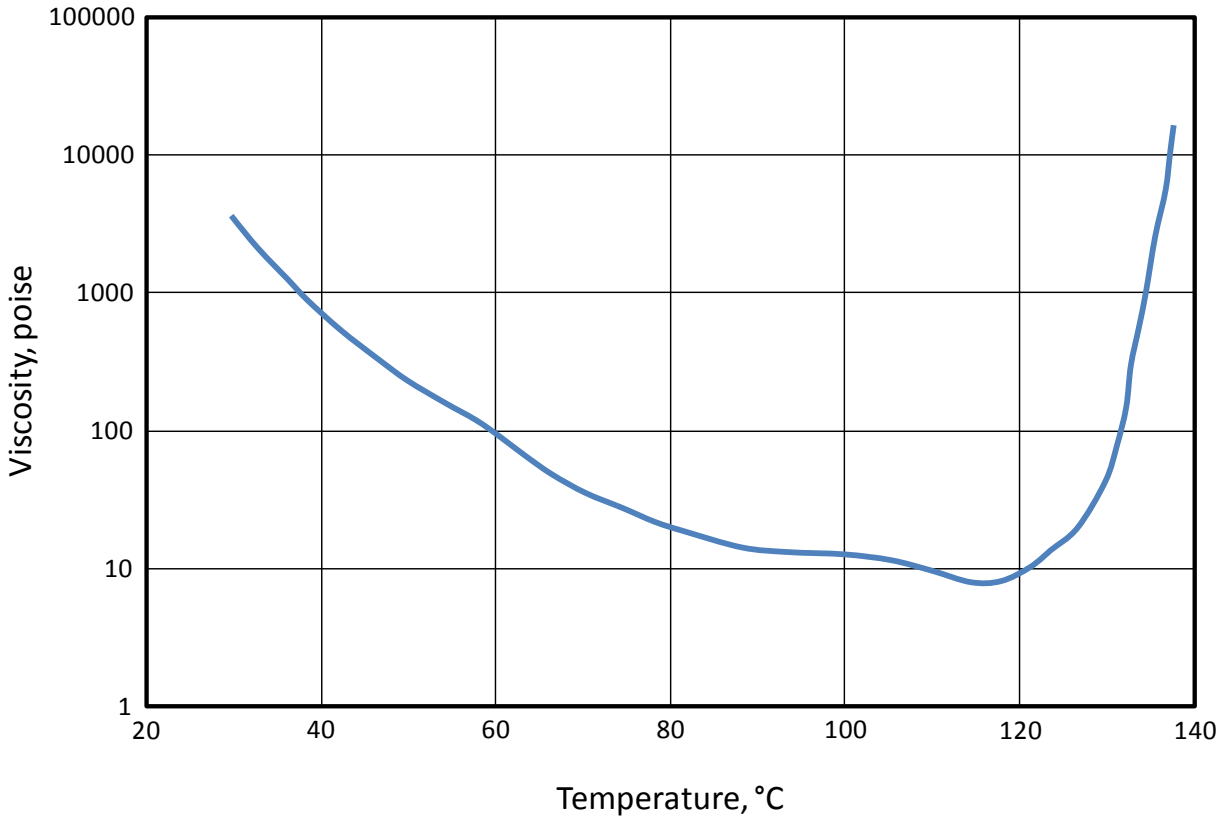

Figure 1 | Viscosity Curve of CYCOM 7668; Viscosity versus Temperature

PROPERTIES

Table 2 | Mechanical Properties: CYCOM 7668, Style 120

Property	Medium Tack
Tensile Strength, ksi (MPa)	
Room Temperature	60 (414)
350°F (177°C)	52 (358)
100 hours aging at 350°F (177°C)	54 (372)
Tensile Modulus, Msi (GPa)	
Room Temperature	3.2 (22.1)
350°F (177°C)	2.8 (19.3)
100 hours aging at 350°F (177°C)	2.9 (20.0)
Compression Strength, ksi (MPa)	
Room Temperature	79 (545)
350°F (177°C)	52 (358)
100 hours aging at 350°F (177°C)	48 (331)
Compression Modulus, Msi (GPa)	
Room Temperature	3.4 (23.4)
350°F (177°C)	3.3 (22.8)
100 hours aging at 350°F (177°C)	3.1 (21.4)
Long Beam Flex, FM® 355 Adhesive	
Ultimate Load , lb (N)	207 (921)
P/Y, lb/in (N/mm)	172 (30)
Long Beam Flex, AF 131 Adhesive	
Ultimate Load , lb (N)	212 (943)
P/Y, lb/in (N/mm)	187 (33)
Climbing Drum Peel, FM 355 Adhesive, in-lb/ 3in width (Nm/m)	25.6 (38.0)
Climbing Drum Peel, AF 131 Adhesive, in-lb/3 in width (Nm/m)	12.4 (18.4)
Flammability, 60 second vertical Extinguishing Time, sec/ Burn Length, in (mm) /Drip Extinguishing, sec.	0 / 1.1 (28) / 0
Flammability, 30 second 45° Extinguishing Time, sec. /Afterglow, sec/Flame Penetration	0 / 0 / 0
Monsanto Aviation Hydraulic Fluid Immersion	Pass

Average test value reported based on actual specimen thickness

Table 3 | Mechanical Properties: CYCOCM 7668/7781

Property	High Tack	Medium Tack	Low Tack	Very Low Tack
Tensile Strength, ksi (MPa)				
Room Temperature	74 (510)	75 (517)	74 (510)	73 (503)
350°F (177°C)	61 (421)	64 (441)	62 (428)	60 (414)
100 hours aging at 350°F (177°C)	63 (434)	67 (462)	62 (428)	63 (434)
Tensile Modulus, Msi (MPa)				
Room Temperature	3.8 (26.2)	3.9 (26.9)	3.8 (26.2)	3.8 (26.2)
350°F (177°C)	3.5 (24.1)	3.6 (24.8)	3.5 (24.1)	3.4 (23.4)
100 hours aging at 350°F (177°C)	3.5 (24.1)	3.8 (26.2)	3.5 (24.1)	3.4 (23.4)
Compression Strength, ksi (MPa)				
Room Temperature	75 (517)	83 (572)	80 (552)	83 (572)
350°F (177°C)	53 (365)	57 (393)	51 (352)	53 (365)
100 hours aging at 350°F (177°C)	57 (393)	52 (358)	52 (358)	59 (407)
Compression Modulus, Msi (MPa)				
Room Temperature	4.0 (27.6)	4.2 (29.0)	4.3 (29.6)	4.1 (28.3)
350°F (177°C)	3.7 (25.5)	3.8 (26.2)	3.8 (26.2)	3.7 (25.5)
100 hours aging at 350°F (177°C)	3.8 (26.2)	4.2 (29.0)	3.9 (26.9)	3.8 (26.2)
Long Beam Flex, FM® 355 Adhesive				
Ultimate Load , lb (N)	350 (1557)	320 (1423)	359 (1597)	298 (1326)
P/Y, lb/in (N/mm)	253 (44)	250 (44)	246 (43)	245 (43)
Long Beam Flex, AF 131 Adhesive				
Ultimate Load , lb (N)	364 (1619)	344 (1530)	361 (1606)	345 (1535)
P/Y, lb/in (N/mm)	265 (46)	269 (47.1)	270 (47)	270 (47.2)
Long Beam Flex, FM 61 Adhesive				
Ultimate Load , lb (N)	334 (1486)	335 (1490)	346 (1539)	336 (1495)
P/Y, lb/in (N/mm)	235 (41)	235 (41)	245 (43)	250 (44)
Climbing Drum Peel, FM 355 Adhesive, in-lb/ 3in width (N-m/m)	14.3 (21.2)	16.6 (24.6)	15.6 (23.1)	14.1 (20.9)
Climbing Drum Peel, AF 131 Adhesive, in-lb/3 in width (N-m/m)	13.7 (20.3)	13.4 (19.9)	13.9 (20.6)	13.4 (19.9)
Climbing Drum Peel, FM 61 Adhesive, in-lb/3 in width (N-m/m)	35.3 (52.3)	36.5 (54.1)	36.3 (53.8)	41.0 (60.8)
Flammability, 60 second vertical Extinguishing Time, sec /Burn Length, in (mm) /Drip Extinguishing, sec	0 / 0 / 0	0 / 1.0 (25.4) / 0	Not tested	0 / 1.3 (33.0) / 0
Flammability, 30 second 45° Extinguishing Time, sec / Afterglow, sec /Flame Penetration	0 / 0 / 0	0 / 0 / 0	Not tested	0 / 0.3 / 0
Monsanto Aviation Hydraulic Fluid Immersion	Pass	Pass	Pass	Pass

Average test value reported based on actual specimen thickness

Testing per Boeing BMS 8-139 rev. H

APPLICATION NOTES

Lay-up and Cure

For recommended lay-up/bagging refer to procedure L-6 for laminates and L-9 for sandwich panels. Film adhesive is required when fabricating sandwich panels. The recommended cure cycle is as follows:

1. Heat at 2 – 5°F/min up to 190°F (1 – 3 °C/min up to 88°C) under vacuum and 15 psi (103 kPa) autoclave pressure
2. Hold at 190°F (88°C) for 30 minutes
3. Increase autoclave pressure to 45 psi (310 kPa) and ramp to 350°F at 2 – 5°F/min (1 - 3°C/min)
4. Hold at 350°F (177°C) for 90 minutes
5. Cool under pressure to 140°F (60°C) at 5°F/min (3°C/min) maximum

PRODUCT HANDLING AND SAFETY

Cytec Engineered Materials recommends wearing clean, impervious gloves when working with epoxy resins to reduce skin contact and to avoid contamination of the product.

Materials Safety Data Sheets (MSDS) and product labels are available upon request and can be obtained from any Cytec Engineered Materials Office.

DISPOSAL OF SCRAP MATERIAL

Disposal of scrap material should be in accordance with local, state, and federal regulations.

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