CYCOM® 6070 Phenolic Resin

DESCRIPTION

CYCOM® 6070 is a 280 to 320°F (138 to 160°C) curing phenolic resin. It has a service temperature up to 500°F (260°C) when step-wise post cured at 450°F (232°C). It can be processed by vacuum bag, press or autoclave methods. It is available on fiberglass, graphite or aramid woven broadgoods.

CYCOM 6070 is a self-extinguishing, low smoke, low heat release resin that is offered as both a tacky, drapeable prepreg for the fabrication of complex vacuum bag or autoclave cure parts and as a tack- free prepreg for press cured parts. It was developed specifically for use in aircraft interior laminates and crushed-core panels.

FEATURES & BENEFITS

- 280 to 320°F (138 to 160°C) cure
- 500°F (260°C) service temperature when post cured
- Vacuum bag, press and autoclave cure cycles
- Developed specifically for aircraft interior laminates and crushed-core panels
- Self-extinguishing
- Low smoke
- Shelf life of 6 months at 0°F (-18°C) or 10 days at 72°F (22°C)

SUGGESTED APPLICATIONS

- Interior aircraft applications

CHARACTERISTICS

Table 1 | Typical Prepreg Properties

Property	7781 E-Glass	1200 E-Glass	3K70PW Graphite	285 Aramid
Resin solids, %	36 ± 3	40 ± 4	41 ± 3	50 – 54
Volatiles[1], %	3.0 – 5.0	3.0 – 5.0	3.0 – 5.0	5.0 – 10.0
Flow[2], %	10 – 20	10 – 20	8 – 24	20 – 40
Gel time[3], minutes	0.5 – 1.5	0.5 – 1.5	0.5 – 1.5	1 – 3

[1] Tested at 320°F (160°C), 10 minutes
[2] Tested at 320°F (160°C), 10 psi
[3] Tested at 320°F

PROPERTIES

Table 2 | Typical Properties of CYCOM 6070 Phenolic Sandwich Panels

1 ply/1ply Nomex honeycomb sandwich panels
Typical Cytec Engineered Materials product codes: MXB 6070/7781, MXG 6070/5-322, MXG 6070/2646

Property	7781 Fiberglass 8HS	W5-K-322 Graphite Plain Weave	W-2648 Graphite Crowsfoot
Climbing drum peel,			
Honeycomb, in-lb/3 in width	8.0 – 12.0	5.0 – 10.0	6.0 – 10.0
Long beam flexural			
Strength, ksi	18 – 22	27 – 34	27 – 34
P/Y, lbs/in	90 – 100	170 – 190	170 – 190
OSU heat release			
Total, kW-min/m^2	27 – 34	30 – 45	30 – 45
Peak, kW/m^2	170 – 190	40 – 55	40 – 55
NBS smoke			
Ds @ 4 minutes	0 – 10	0 – 10	0 – 10
Flammability 60 second vertical burn			
Self-extinguish time, sec	< 2	< 2	< 2
Burn length, inches	< 1.5	< 1.5	< 1.5
Drip	None	None	None

Property values listed are typical for 1 ply/1 ply Nomex honeycomb sandwich panels

Table 3 | Typical properties of CYCOM 6070 phenolic composite laminates

E-glass fiber reinforced 8 harness satin fabric
Typical Cytec Engineered Materials product code: MXB 6070/7781, MXB 6070/1581

Property	-67°F (-55°C)	Room Temp	180°F (82°C)
0° Tensile properties			
Strength, ksi	70 – 77	59 – 61	50 – 52
Strength, MPa	483 – 531	407 – 421	345 – 359
0° Compressive properties			
Strength, ksi	55 – 63	46 – 52	37 – 42
Strength, MPa	379 – 434	317 – 359	255 – 290
0° Flexural properties			
Strength, ksi	70 – 73	67 – 74	61 – 68
Modulus, msi	3.7 – 4.0	3.5 – 3.8	3.5 – 3.9
Strength, MPa	483 – 503	462 – 510	421 – 469
Modulus, CPa	26 – 28	24 – 26	24 – 27
Interlaminar shear properties			
Strength, ksi	1.9 – 2.0	2.1 – 2.2	1.6 – 1.8
Strength, MPa	13 – 14	14 – 15	11 – 12

Property values listed are typical for laminates with 50 to 55% fiber volume

Table 3 | Typical properties of CYCOM 6070 phenolic composite laminates, continued

E-glass fiber reinforced crowfoot satin fabric
Typical Cytec Engineered Materials product code: MXB 6070/120

Property	-67°F (-55°C)	Room Temp	180°F (82°C)
0° Tensile properties			
Strength, ksi	70 – 77	59 – 61	50 – 52
Strength, MPa	483 – 531	407 – 421	345 – 359
0° Compressive properties			
Strength, ksi	55 – 63	46 – 52	37 – 42
Strength, MPa	379 – 434	317 – 359	255 – 290
0° Flexural properties			
Strength, ksi	70 – 73	67 – 74	61 – 68
Modulus, msi	3.7 – 4.0	3.5 – 3.8	3.5 – 3.9
Strength, MPa	483 – 503	462 – 510	421 – 469
Modulus, CPa	26 – 28	24 – 26	24 – 27
Interlaminar shear properties			

Property values listed are typical for laminates with 50 to 55% fiber volume

Table 4 | Typical properties of CYCOM 6070 phenolic composite laminates

Kevlar® 49 reinforced plain weave fabric
Typical Cytec Engineered Materials product code: MXM 6070/281K

Property	Room Temp
0° Tensile properties	
Strength, ksi	78 – 82
Modulus, msi	4.2 – 4.4
Poisson's Ratio	0.09
Strength, MPa	538 – 565
Modulus, GPa	29 – 30
0° Compressive properties	
Strength, ksi	13 – 16
Modulus, msi	4.3 – 4.6
Strength, MPa	90 – 110
Modulus, GPa	30 – 32
0° Flexural properties	
Strength, ksi	41 – 45
Modulus, msi	3.2 – 3.5
Strength, MPa	283 – 310
Modulus, CPa	22 – 24
Interlaminar shear properties	
Strength, ksi	2.6 – 2.8
Strength, MPa	18 – 19

Property values listed are typical for laminates with 50 to 55% fiber volume

APPLICATION NOTES

Suggested Cure

Press:	8 – 16 minutes at 100 psi and 280 – 320°F (138 – 160°C). Crushed core requires higher pressure.
Vacuum Bag:	15 – 45 minutes at 22" Hg mm. and 280°F (138°C)
Autoclave:	1 hour at 45 psi and 280°F (138°C)

PRODUCT HANDLING AND SAFETY

Cytec Engineered Materials recommends wearing clean, impervious gloves when working with phenolic 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.

CONTACT INFORMATION

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