CYCOM® 5575

CYCOM® 5575 is a 350°F (177°C) curing modified cyanate ester resin with a service temperature range up to 350°F (177°C).

Typical applications include radomes, antenna structures, low observables structures, and low dielectric and loss tangent substrates for military and commercial applications.

Features and Benefits

- Low dielectric constant and loss tangent
- Service temperature up to 350°F (177°C)
- Autoclave or press curable (CYCOM® 5575-3 is also VBO cure capable)
- Excellent hot/wet mechanical performance
- Low moisture absorption, low out-gassing properties

PHYSICAL PROPERTIES

Property	Condition	Value	Test Method
Gel Time	350°F (177°C)	5-10 Minutes	ASTM D 3532
Glass Transition Temperature	No Post- Cure 4 hrs at 350°F (177°) 2 hrs Post-Cure at 440°F (227°C) Alternate Post-Cure 2 hrs at 480°F (249°C)	375°F (190°C) 475°F (246°C) 500°F (260°C)	ASTM D 7028
Out-Gassing	Total Mass Loss (TML) Collected Volatile Condensable Materials (CVCM)	0.25 % 0.001 %	ASTM E 595

STORAGE

Shelf life will depend on storage conditions and frequency of use.

Shelf life	12 months at or below 0°F (-18°C) from date of shipment 12 months at or below 40°F (4°C) from date of shipment
Shop Life	21 days at or below 75°F (24°C)

PRODUCT REINFORCEMENTS AND VARIATIONS

CYCOM® 5575 prepregs are available in two flow variations, CYCOM® 5575-2 and CYCOM® 5575-3. CYCOM® 5575-2 and CYCOM® 5575-3 have equivalent mechanical and electrical properties when tested on the same reinforcements and are available with quartz and glass fabric reinforcements. Contact Syensqo for available options.

Prepreg Products:

- CYCOM® 5575-2
- CYCOM® 5575-3 Equivalent to 5575-2 but with reduced flow for honeycomb sandwich bonding.

Reinforcement: Glass and Astroquartz

Roll Width: 38 in and 50 in (96.5 cm and 127 cm)

Roll Length (nominal): 100 yd (91 m)

PHYSICAL PROPERTIES

Property	Test Temperature	Astroquartz		Glass		Test Method
		581	4581	1581	7781	
Resin Content %	-	33	37	32	39	ASTM D3529
Volatiles %	350°F (177°C)	0.73	0.72	0.6	-	ASTM D3530
Flow %	350°F (177°C)	11	22	16	24	ASTM D3531

ELECTRICAL PROPERTIES

Property	Test Temperature	Carrier	Value	Test Method
Dielectric Constant (10 GHz)	75°F (24°C)	Neat Resin 7781 E-Glass 581, Astroquartz 4581, Astroquartz 4503, Astroquartz	2.8 4.2 3.2 3.2 3.2	ASTM D2520
Loss Tangent (10 GHz)	75°F (24°C)	Neat Resin 7781 E-Glass 581, Astroquartz 4581, Astroquartz 4503, Astroquartz	0.0035 0.0070 0.0035 0.0042 0.0052	ASTM D2520

MECHANICAL PROPERTIES - CYCOM 5575 4581 Astroquartz

Property	Test Temperature	Value	Units	Test Method
Tensile Strength Ultimate	75°F (24°C)	97 (670)	ksi (MPa)	ASTM D638
Tensile Strength Modulus	75°F (24°C)	3.6 (25)	msi (GPa)	ASTM D638
Compression Strength Ultimate	75°F (24°C)	92 (630)	ksi (MPa)	ASTM D695
Compression Strength Modulus	75°F (24°C)	3.9 (27)	msi (GPa)	ASTM D695
Flexural Strength Ultimate	75°F (24°C)	119 (820)	ksi (MPa)	ASTM D790
Flexural Strength Modulus	75°F (24°C)	3.3 (23)	msi (GPa)	ASTM D790

MECHANICAL PROPERTIES - CYCOM 5575 581 Astroquartz

Property	Test Temperature	Value	Units	Test Method
Tensile Strength Ultimate	75°F (24°C)	85 (586)	ksi (MPa)	ASTM D638
Tensile Strength Modulus	75°F (24°C)	3.8 (26)	msi (GPa)	ASTM D638
Compression Strength Ultimate	75°F (24°C)	83 (572)	ksi (MPa)	ASTM D695
Compression Strength Modulus	75°F (24°C)	3.6 (25)	msi (GPa)	ASTM D695
Flexural Strength Ultimate	75°F (24°C)	115 (790)	ksi (MPa)	ASTM D790
Flexural Strength Modulus	75°F (24°C)	3.9 (27)	msi (GPa)	ASTM D790
Short Beam Shear Strength Ultimate	75°F (24°C)	10 (69)	ksi (MPa)	ASTM D2344

MECHANICAL PROPERTIES - 5575 7781 E-Glass Fiber

Property	Test Temperature Condition °F (°C)	Value	Units	Test Method
Tensile Strength Ultimate	-67 (-55) 75 (24) 75 (24)/W 350 (177) 350 (177)/W 450 (232)	63 (434) 52 (358) 49 (338) 47 (324) 40 (276) 42 (289)	ksi (MPa)	ASTM D638
Tensile Modulus	-67 (-55) 75 (24) 75 (24)/W 350 (177) 350 (177)/W	3.4 (23.4) 3.3 (22.7) 3.2 (22.0) 3.0 (20.7) 3.0 (20.7)	msi (GPa)	ASTM D638
Compression Strength Ultimate	-67 (-55) 75 (24) 75 (24)/W 250 (121)	70.4 (485) 70.8 (488) 48.3 (333) 47.9 (330)	ksi (MPa)	ASTM D695
Compression Strength Modulus	-67 (-55) 75 (24) 75 (24)/W 250 (121)	3.4 (23.4) 3.0 (20.7) 3.0 (20.7) 3.2 (22.0)	msi (GPa)	ASTM D695
Short Beam Shear Strength	-67 (-55) 75 (24) 75 (24)/W 350 (177) 350 (177)/W	10.0 (69) 8.1 (56) 7.7 (53) 6.9 (48) 4.8 (33)	ksi (MPa)	ASTM D2344

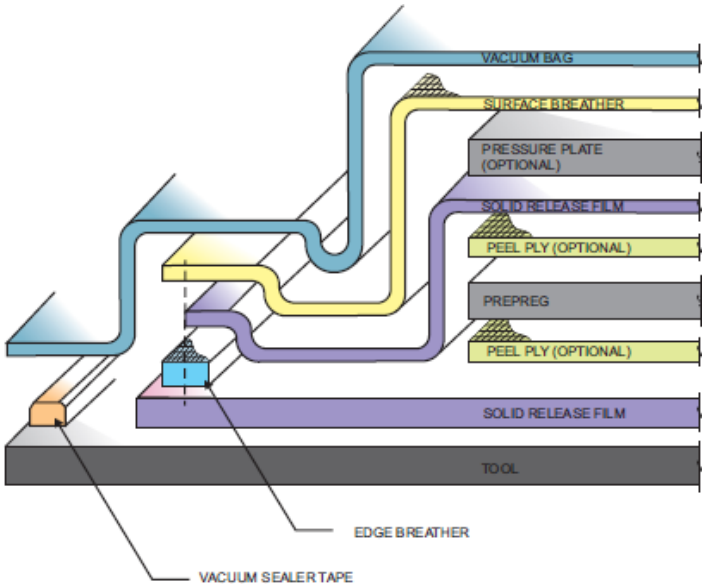
W = 72 Hour water boil

MECHANICAL PROPERTIES - ENVIRONMENTAL AND FLUID RESISTANCE - 5575 7781 E-Glass Fiber

Property	Test Condition	Test Temperature °F (°C)	Value	Units	Test Method
Tensile Strength Ultimate	Hydraulic Oil, 30 Days Immersion/RT	75 (24) 250 (121) 350 (177)	49 (338) 47 (323) 45 (310)	ksi (MPa)	ASTM D638
	Jet Fuel, JP5, 30 Days Immersion/RT	75 (24) 250 (121)	47 (232.8) 45 (310.0)		
	5% Salt Spray 95°F, 30 Day Exposure	75 (24) 250 (121)	50 (344) 46 (317)		
	Moisture 95% RH, 160°F, 1.0% Wt Gain, 30 Day Exposure	75 (24) 250 (121)	46 (316) 41 (282)		
Tensile Modulus	Hydraulic Oil, 30 Days Immersion/RT	75 (24) 250 (121) 350 (177)	3.2 (22.0) 3.1 (21.3) 3.0 (20.6)	msi (GPa)	ASTM D638
	Jet Fuel, JP5, 30 Days Immersion/RT	75 (24) 250 (121)	3.2 (22.0) 3.3 (22.7)		
	5% Salt Spray 95°F, 30 Day Exposure	75 (24) 250 (121)	3.1 (21.3) 3.0 (20.7)		
	Moisture 95% RH, 160°F, 1.0% Wt Gain, 30 Day Exposure	75 (24) 250 (121)	3.1 (21.3) 2.9 (19.9)		
Compression Strength Ultimate	Hydraulic Oil, 30 Days Immersion	75 (24)	67 (461)	ksi (MPa)	ASTM D695
	Jet Fuel, JP5, 30 Days Immersion	75 (24)	68 (468)		
	Moisture 95% RH, 160°F, 1.0% Wt Gain, 30 Day Exposure	75 (24)	60 (413)		
Compression Strength Modulus	Hydraulic Oil, 30 Days Immersion	75 (24)	3.2 (20.6)	msi (GPa)	ASTM D695
	Jet Fuel, JP5, 30 Days Immersion	75 (24)	3.1 (21.3)		
	Moisture 95% RH, 160°F, 1.0% Wt Gain, 30 Day Exposure	75 (24)	2.8 (19.2)		

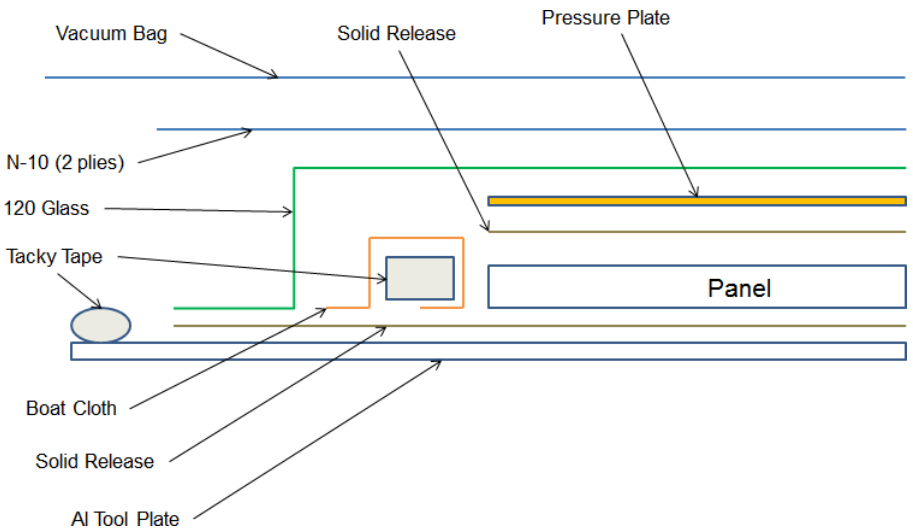
PROCESSING - BAGGING SCHEMATICS:

AUTOCLAVE:



VACUUM BAG ONLY (VBO):

(For CYCOM 5575-3)



GUIDELINES FOR THAWING MATERIAL

On removal of sealed prepreg from 0°F (-18°C) storage, ensure that the material is allowed to thaw fully to room temperature prior to unsealing. This avoids condensation contacting the prepreg. Typically, a roll of prepreg requires a minimum of 8-12 hours thawing.

RECOMMENDED CURE CYCLE

AUTOCLAVE:

Segment	Recommendation
Cure Cycle	Apply vacuum, 22 in Hg (74 KPa) minimum. Apply 85 psi (580 KPa) positive pressure, vent vacuum at 15 psi (0.14 MPa). Heat from 75°F (24°C) to 350°F ± 5°F (177°C ± 3°C) at 2 - 5°F (1 - 3°C)/minute. Hold at 350°F ± 5°F (177°C ± 3°C) for 4 hours. Cool down under pressure to < 140°F (60°C)
Post-Cure	Free standing in an air circulating oven. Heat from 75°F (24°C) to 440°F (227°C) at 1 - 5°F (0.5 - 3°C)/minute. Hold at 440°F (227°C) for 2 hours. Cool below 120°F (49°C) at 1 - 5°F (0.5 - 3°C)/minute.

HEALTH & SAFETY

Please refer to the product SDS for safe handling, personal protective equipment recommendations and disposal considerations.