HexPly® 913

257°F (125°C) curing epoxy matrix

HEXCEL®

Product Data Sheet

Description

HexPly® 913 is a proven modified epoxy matrix with a low temperature cure cycle which exhibits outstanding environmental resistance, whilst retaining good hot/wet mechanical performance. This versatile matrix system can be processed using a wide range of techniques according to the application and is capable of co-cure with epoxy film adhesives.

Benefits and Features

- Exceptional environmental resistance
- Controlled minimum viscosity giving easy processing
- Capable of being processed by various techniques
- Good tack and drape characteristics
- Long shelf life and out life at room temperature
- Compatible with Redux 312 adhesive film

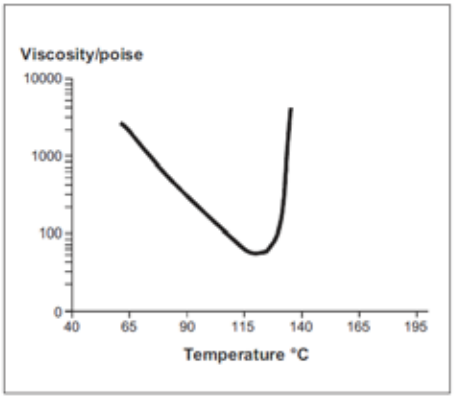
Applications

HexPly® 913 is a highly successful matrix used extensively in the aerospace industry for primary aircraft structures and helicopter blades. In addition 913 prepregs are used in various industrial and recreational products, which include medical equipment and bikes.

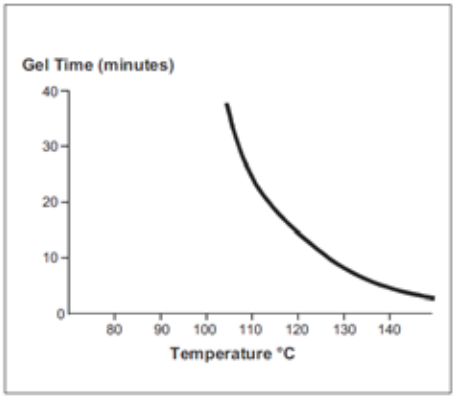
Neat Resin Properties

Property, Units US (SI)	Value	Test Method
Specific Gravity	1.02	ASTM D792
Tg, °F (°C)	314 (157)	DMA
Gel Time at 250F, mins	11.5	BSS7276
Density, lbs/in^3 (g/cc)	0.0444 (1.23)	ASTM D792
G1C, in-lbs/in^2	6.10	ASTM D6671

Rheology



Gel Time



Availability

Available on a wide variety of products:

Form	Hexcel Designation	Fiber	Fiber Areal Wt. g/m²	Weave	Count Warp x Fill	Widths Available, In (cm)	Resin Content, %
Glass Fabric	120GL/R913 120GL/F913S	EDC 450 -1/2	105	4H Satin	60 x 58	38 (96.5)	35 45
	7781GL/R913 7781GL/F913S	ECDE 75 -1/0	300	8H Satin	57 x 54	38 (96.5)	35 39-40
Glass Tape	S2GL/R913	S2GL	111, 222, 284, 295, 2556	Tape: UD; ±45°, ±60° X-ply	n/a	16, 24, 36, 40, 48, 48.5 (41-123)	32.5 - 33
Carbon Fabric	AGP193/R913	AS4 GP 3K	193	Plain	11.5 x 11.5	60 (152)	37
	AGP195CSW/ R913	AS4 GP 3K	195	4H Satin	11.5 x 11.5	60 (152)	38
	XAGP195/ R913	AS4 GP 3K	195	±45° 4H Satin	11.5 x 11.5	50 (127)	36
	XSGP196/ R913	IM7 GP 6K	196	±45° Plain	11 x 11	50 (127)	37
	W3X 286/ R913S	3K 33MSI	197	4H Satin	12 x 12	24 (61)	36
Carbon Tape	AS4GP 12K/ R913	AS4GP 12K	272, 195	Tape	n/a	12, 48 (30.5-122)	34 - 35
	IM2CGS 12K/ R913	IM2CGS-12K	110, 140	Tape	n/a	12, 24 (30.5, 61)	31 - 38
	IM7G 12K/R913	IM7G 12K	148, 296	Tape, ±45° X-ply	n/a	12, 24, 36, 48 (30.5-122)	33
	IM8-GS 12K/ R913	IM8-GS 12K	70	Tape	n/a	24 (61)	38

Physical & Mechanical Properties

Form			Carbon Fabric		Carbon Tape	
Category	**Property**	**Parameter, Units US (SI)**	**AGP195CSW/ R913;38%; 195AW**	**XSGP196/ R913LM;37; 196AW**	**IM7G/R913; 33%; 148AW**	**AS4GP 12K/ R913; 35%; 272AW**
Physical Properties	Prepreg	Resin Content (dry), %	38	37	33	35
		Area Weight, g/m²	195	196	148	272
		Volatile Content, %	< 0.5	< 0.4	–	< 0.2
	Laminate	Cured Thickness per ply, inch (cm)	0.0070 (0.0178)	0.0084 (0.0214)	0.0056 (0.0142)	0.0101 (0.0257)
		Fiber Volume, %	62	–	–	60
		Density, g/cc	1.58	–	–	1.61
Mechanical Properties	0° Tensile	Strength, ksi (MPa)	141 (970)	–	216 (1490)	331 (2280)
		Modulus, Msi (GPa)	10.1 (69.8)	–	12.2 (83.9) 19.5	19.5 (134)
		Strain,%	1.40	–	1.68	1.51
	90° Tensile	Strength, ksi (MPa)	145 (998)	152 (1048)	–	–
		Modulus, Msi (GPa)	10.3 (71.0)	10.9 (75.5)	–	–
		Strain, %	1.38	1.34	–	–
	0° Compression	Strength, ksi (MPa)	121 (832)	–	–	224 (1540)
		Modulus, Msi (GPa)	9.5 (65.2)	–	–	17.9 (123)
	90° Compression	Strength, ksi (MPa)	116 (799)	–	–	–
		Modulus, Msi (GPa)	9.7 (66.5)	–	–	–
	0° Short Beam Shear	Strength, ksi (MPa)	10.6 (73.3)	10.4 (71.8)	–	15.3 (105)
	0° Flexure	Strength, ksi (MPa)	–	131 (902)	–	–
		Modulus, Msi (GPa)	–	10.2 (70.2)	–	–

**Dry/Room Temperature Average Values*

Form			Glass Fabric		Glass Tape
Category	**Property**	**Parameter, Units US (SI)**	**120GL/R913; 37%;105AW**	**7781GL/R913; 37%;300AW**	**S2GL/R913;33%; 280AW**
Physical Properties	Prepreg	Resin Content (dry), %	37	37	33
		Area Weight, g/m2	105	300	280
	Laminate	Density, g/cc	1.83	1.83	1.80
Mechanical Properties	0° Tensile	Strength, ksi (MPa)	70.9 (489)	65.3 (450)	203 (1400)
		Modulus, Msi (GPa)	3.1 (21.0)	3.2 (22.0)	6.4 (44.0)
	0° Compression	Strength, ksi (MPa)	85.3 (588)	66.7 (460)	160 (1100)
		Modulus, Msi (GPa)	–	4.1 (28.0)	6.7 (46.0)
	0° Short Beam Shear	Strength, ksi (MPa)	10.7 (74.0)	9.4 (65.0)	11.9 (82)
	0° Flexure	Strength, ksi (MPa)	104 (714)	88.5 (610)	–
		Modulus, Msi (GPa)	–	3.3 (23.0)	–

**Dry/Room Temperature Average Values*

Cure Cycle

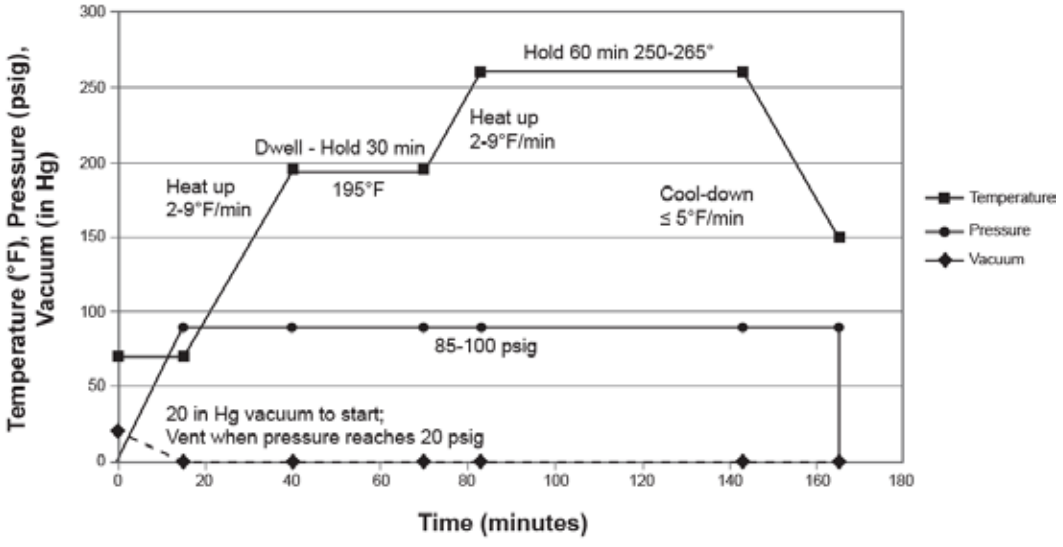
Recommended Cure:

60 minutes at 257°F (125°C) and 102 psi (700kPa) pressure. Heat up rate 3.6°F (2°C) to 14.4°F (8°C) per minute.

Alternative Cures:

Temperature °F (°C)	*Time (Min)*
284°F (140°C)	40
302°F (150°C)	20
320°F (160°C)	10

Components up to 0.118 inches (3 mm) thick can be cured without a dwell in the schedule provided that the heat-up rate is not more than 9°F (5°C)/minute. For thicker parts a dwell period is necessary in the heat-up to avoid the occurrence of a resin exotherm, but the dwell period will depend on the mass and type of tool. The standard dwell period is 30 minutes at 195°F during heat-up.



Storage

Out Life:	30 days @ 73°F (23°C)
Guaranteed Shelf Life:	12 months @ 0°F (-18°C) (maximum from date of manufacture)

Storage Conditions

HexPly® 913 prepregs should be stored as received in a cool dry place or in a refrigerator. After removal from refrigerator storage, prepreg should be allowed to reach room temperature before opening the polythene bag, thus preventing condensation. (A full creel in its packaging can take up to 48 hours).

Precautions for Use

The usual precautions when handling uncured synthetic resins and fine fibrous materials should be observed, and a Safety Data Sheet is available for this product. The use of clean disposable inert gloves provides protection for the operator and avoids contamination of material and components.

Shipping

Prepreg is generally shipped in a sealed polyethylene bag in refrigerated transportation or in containers with dry ice.

Disposal of Scrap

Disposal of this material should be in a secure landfill in accordance with state and federal regulations.

For more information

Hexcel is a leading worldwide supplier of composite materials to aerospace and industrial markets.
Our comprehensive range includes:

- HexTow® carbon fibers
- HexForce® reinforcements
- HiMax® multiaxial reinforcements
- HexPly® prepregs
- HexMC®-i molding compounds
- HexFlow® RTM resins
- HexBond™ adhesives
- HexTool® tooling materials
- HexWeb® honeycombs
- Acousti-Cap® sound attenuating honeycomb
- Engineered core
- Engineered products
- Polyspeed® laminates & pultruded profiles
- HexAM® additive manufacturing

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