HexPly® 8552

mid-toughened, high strength, damage-resistant, structural epoxy matrix

HEXCEL®

Product Data Sheet

Description

HexPly® 8552 is an amine cured, toughened epoxy resin system supplied with unidirectional or woven carbon or glass fibers. HexPly® 8552 is recommended for structural applications requiring high strength, stiffness, and damage tolerance. HexPly® 8552 was developed as a low flow system to operate in environments of up to 250°F.

Features

- Service Temperature up to 250°F
- Impact Tolerant
- Low Flow

Applications

HexPly® 8552 is a versatile epoxy matrix system, typical uses include:

Commercial Aerospace	Space and Defense	Industrial
Primary Aircraft Structures	Aircraft Structures	Automotive
Secondary Aircraft Structures	Helicopters	Machinery
Engines	Missiles	Sports & Leisure
Nacelles	Space Launchers	Medical Equipment

Neat Resin Properties

Density	0.0470 lb/in^3
Tg dry - RDS 7700	392°F
Tg wet - RDS 7700	309°F
Tensile strength	17.5 ksi
Tensile modulus	0.677 msi
Tensile strain	1.7%
Fracture toughness, K_{IC}	1.475 ksi $\sqrt{}$ in
Strain energy release rate, G_{1C}	3.88 in-lb/in^2
Gel Time at 350°F	13 minutes

Availability

HexPly® 8552 has variations and is available on a wide range of reinforcement types.

Resin Variations

8552: Standard version, toughened 350°F cure epoxy

8552ATL: Lower tack for automated tape layup

8552S: Solvated tower manufacture

Reinforcement Types	
Glass Fabrics	Aramid Fabric
Glass Tapes	Quartz Fabric
Carbon Fabrics	Polyester Fabric
Carbon Tapes	Ceramic Fabric
Carbon Towpreg	Metal Fabric
HexMC	

Typical Physical Properties

	Material Description	Carbon Tapes	Carbon Fabrics	Glass Tapes
Prepreg	% Resin Content	33-38	32-42	34-36
	% Flow	10-22	8-22	16-21
	% Volatiles	1.0 max	1.5 max	1.0 max
	Gel (min)	12-22	12-22	12-22

Mechanical Properties

Property	Temp°F	Condition	AS4	IM7	A193-PW	A280-5H	SGP196-PW	SGP370-8H	S2GL
0° Tensile strength, ksi	-67	Dry	300	373	111	120	142	140	-
0° Tensile modulus, msi	-67	Dry	19.4	23.7	9.5	10.2	12.3	12.5	-
0° Tensile strength, ksi	77	Dry	310	395	120	127	158	147	251
0° Tensile modulus, msi	77	Dry	19.6	23.8	9.8	9.7	12.3	12.4	6.53
0° Tensile elongation, %	77	Dry	1.55	1.62	-	-	-	-	3.87
0° Tensile strength, ksi	195	Dry	293	**368***	116	131	-	-	-
0° Tensile modulus, msi	195	Dry	19.1	**23.7***	9.6	10	-	-	-
90° Tensile strength, ksi	-67	Dry	9.73	9.60	103	109	125	131	-
90° Tensile modulus, msi	-67	Dry	1.50	1.46	9.6	9.7	11.6	11.7	-
90° Tensile strength, ksi	77	Dry	9.27	9.3	115	116	137	139	-
90° Tensile modulus, msi	77	Dry	1.39	1.70	9.5	9.5	11.6	11.7	-
90° Tensile strength, ksi	200	Dry	-	-	111	112	**142***	**130***	-
90° Tensile modulus, msi	200	Dry	1.22	1.50	9.8	9.4	**11.5***	**11.5***	-
Major Poisson's Ratio, tension	77	Dry	0.302	0.316	-	-	-	-	-
± 45 Inplane shear	77	Dry	16.6	17.4	-	15.9	18.3	1436	-
± 45 Inplane shear	200	Dry	15.2	**15.4***	-	-	**15.5***	**13.1***	-
Major Poisson's Ratio, compression	77	Dry	0.335	0.356	-	-	-	-	-
0° Compression strength, ksi	-67	Dry	253	292	139	-	-	-	-
0° Compression modulus, msi	-67	Dry	18	20.5	8.7	-	-	-	-
0° Compression strength, ksi	77	Dry	222	245	128	134	-	-	217
0° Compression modulus, msi	77	Dry	18.6	21.7	8.7	9.3	-	-	6.6
0° Compression strength, ksi	195	Dry	184	215	110	109	-	-	-
0° Compression modulus, msi	195	Dry	17.7	23.5	8.8	9.7	-	-	-
0° Compression strength, ksi	160	Wet	203	-	102	-	-	-	-
0° Compression modulus, msi	160	Wet	17.0	-	8.6	-	-	-	-
0° Compression strength, ksi	195	Wet	184	**173 ♦**	85	**74**	-	-	-
0° Compression modulus, msi	195	Wet	18.1	**20.7 ♦**	-	**9.9**	-	-	-
Fill compression strength, ksi	-67	Dry	51.4	55.3	127	150	124	132	-
Fill compression modulus, msi	-67	Dry	1.56	1.53	8.7	9.2	-	-	-
Fill compression strength, ksi	77	Dry	38.9	44.2	127	129	116	121	-
Fill compression modulus, msi	77	Dry	1.43	1.82	9	9.1	10.4	10.5	-
Fill compression strength, ksi	195	Dry	-	-	114	-	**103***	**96***	-
Fill compression modulus, msi	195	Dry	-	-	8.9	-	**10.6***	**10.5***	-
Fill compression strength, ksi	77	Wet	-	34.2	116	-	95	94	-
Fill compression strength, ksi	160	Wet	-	**24.6****	101	-	**81****	**88****	-
Fill compression strength, ksi	195	Wet	**19.7 ♦**	**19 ♦**	87	-	**87***	-	-
Compression after impact, ksi									
after 500 in-in-lb/in impact	77	Dry	50	-	-	-	-	-	-
after 1,500 in-in-lb/in impact	77	Dry	32	34	-	-	-	-	-
after 2,000 in-in-lb/in impact	77	Dry	28	-	-	-	-	-	-
after 2,500 in-in-lb/in impact	77	Dry	27	-	-	-	-	-	-

Bold - 200° **Bold* - 220°** **Bold** - 180°** **Bold ♦ - 250°**

Mechanical Properties

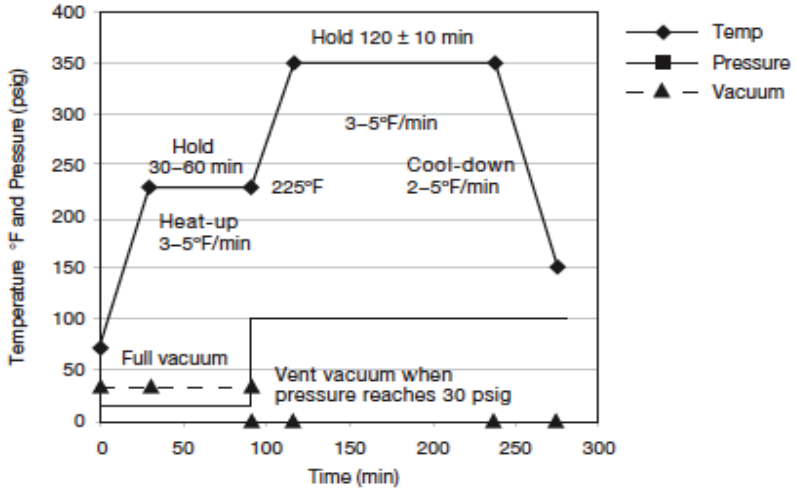
Property	Temp°F	Condition	AS4	IM7	A193-PW	A280-5H	SGP196-PW	SGP370-8H	S2GL
0° Short beam shear, ksi	-67	Dry	23.8	21	14.6	-	-	-	-
0° Short beam shear, ksi	77	Dry	18.5	19.9	12.2	11.4	12.7	13	14.1
0° Short beam shear, ksi	195	Dry	**14.7 ♦**	**13.6***	10.2	10	**10***	**10.8***	-
0° Short beam shear, ksi	77	Wet	16.9	16.7	10.9	10	11.6	12.1	-
0° Short beam shear, ksi	160	Wet	12.2	**11.6****	10.4	-	**8.8****	**9.1****	-
0° Short beam shear, ksi	195	Wet	**8.25 ♦**	**8.25 ♦**	8.5	-	-	-	-
Fill short beam shear, ksi	-67	Dry	-	-	10.8	13.7	-	-	-
Fill short beam shear, ksi	77	Dry	-	-	11.8	11.7	-	-	-
Fill short beam shear, ksi	195	Dry	-	-	10.2	-	-	-	-
Fill short beam shear, ksi	77	Wet	-	-	11.4	-	-	-	-
Fill short beam shear, ksi	195	Wet	-	-	8.5	-	-	-	-
0° Flexural strength, ksi	77	Dry	274	270	-	150	165	164	233
0° Flexural modulus, msi	77	Dry	18.4	22	-	8.5	11.1	10.8	6.38
Quasi-Isotropic 25/50/25									
Tensile strength, ksi	77	Dry	107	104	-	-	-	-	-
OHT strength, ksi	77	Dry	63.5	62.1	-	51	56.7	58.3	-
OHC strength, ksi	77	Dry	47.8	48.9	-	53.7	52.1	49.2	-
CAI strength, ksi	77	Dry	34.6	31	-	40.8	42.5	40	-
CBI strength, ksi	77	Dry	91.2	-	-	76.3	-	-	-

Bold - 200° **Bold* - 220°** **Bold** - 180°** **Bold ♦ - 250°**

Cure Cycle

Autoclave

1. Apply full vacuum and 15 psig pressure.
2. Heat at 3–5°F/minute to 225°F.



Cure Procedure

3. Hold at 225°F for 30–60 minutes.
4. Raise pressure to 85–100 psig;
5. Vent vacuum when pressure reaches 30 psig.
6. Hold at 350°F for 120 ± 10 minutes.
7. Cool at 2–5°F to 150°F and vent pressure.

Note: Alternative cure cycles available upon request.

Handling and Safety Precautions
Hexcel recommends that customers observe established precautions for handling resins and fine fibrous materials. Operators working with this product should wear clean, impervious gloves to reduce the possibility of skin contact and to prevent contamination of the material. Material Safety Data Sheets (MSDS) have been prepared for all Hexcel products and are available to company safety officers on request from the nearest Hexcel Sales Office.

Prepreg Storage Life
Tack Life: 10 days at RT (23°C/73°F)

Out Life: 30 days at RT (23°C/73°F)

Shelf Life: 12 months at -18°C/0°F *(maximum, from date of manufacture)*

Definitions:
Tack Life: The time, at room temperature, during which prepreg retains enough tack for easy component lay-up.

Out Life: The maximum accumulated time allowed at room temperature between removal from the freezer and cure.

Shelf Life: The maximum storage life for HexPly prepreg, when stored continuously, in a closed moisture proof bag at -18°C/0°F. To accurately establish the exact expiration date, consult the box label.

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

For U.S. quotes, orders and product information call toll-free 1-800-688-7734. For other worldwide sales office telephone numbers and a full address list, please go to:

https://www.hexcel.com/contact

FTA-072-2-MY20