HEXCEL®

Material and Aerostructure Solutions

for Unmanned Aerial Vehicles

What Makes Hexcel Composites

your ideal material solution?

Benefits of Hexcel Advanced Composites:

- Complex designs
- Advanced manufacturing methods
- Fast cure and out-of-autoclave solutions
- Infusion and aerostructures
- Superior strength and lifespan
- Non-corrosive
- Impact resistant
- Lightweight and temperature tolerant
- Scalability and agility
- Tooling and compression molding
- EMF shielding
- Dielectric coating

Lightweight

- High stiffness-to-weight ratio
- Enhanced flight endurance
- Payload expansion
- Increased range
- Lightweight construction with additive manufacturing

Reliable

- Industry experts
- Safe and reliable air traffic communication
- Material sustainability
- Extreme condition operations

Affordable

- End-to-end tooling to structures
- Lifecycle cost
- Manufacturing automation
- Higher production rates
- Integrated structures

Unmanned Aerial Vehicles & Advanced Air Mobility

The new combat drone market offers significant advantages, including reduced risks for soldiers, increased precision in military operations, and enhanced operational efficiency through advanced technologies. These drones enable rapid and targeted interventions while minimizing human casualties.

Wings, Fuselage, Pylons, Empennage

Key Attributes
Impact, stiffness, bearing bypass, fatigue, automation, pedigree

Structural Material
HexPly® M91 / 8552 / M56
HiFlow® 1078-1 / HF640F

Rotor, Propeller Blades

Key Attributes
Impact resistance, stiffness, rate, fatigue

Structural Material
HexPly® 8552 / M51
HexFlow® RTM200
HiFlow® HF640F

Movables, Doors, Ribs

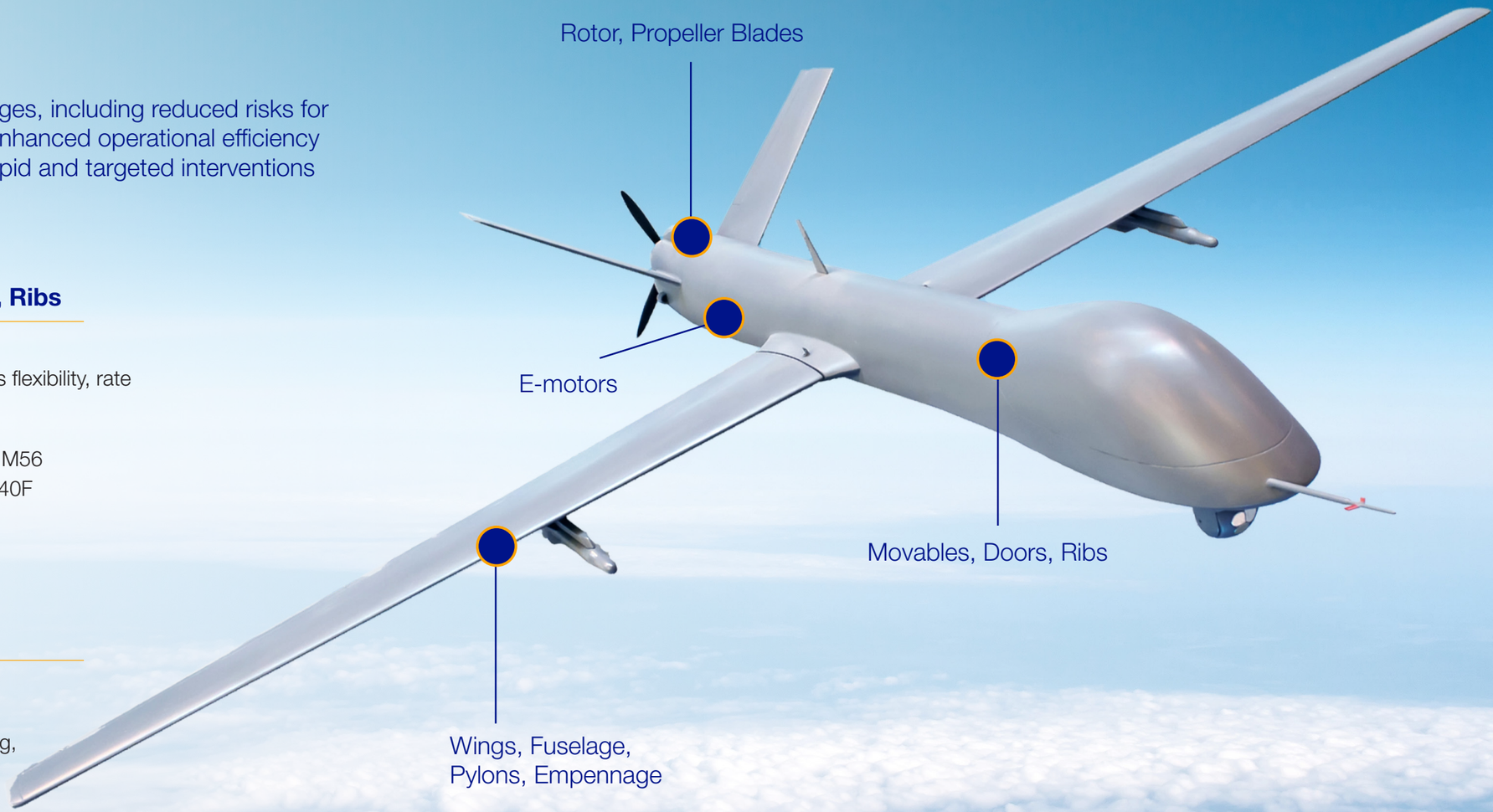
Key Attributes
Shear, impact, process flexibility, rate

Structural Material
HexPly® M51 / 8552 / M56
HiFlow® 1078-1 / HF640F

E-Motors

Key Attributes
Thermal resistance, high wear, EM shielding, thermal expansion

Structural Material
TowPly™ M901



Adhesives and Surface Preparation

Film Adhesive	HexBond® ST1480
Paste Adhesive	HexBond® EA9394
Surface Prep	HexPly® M21 / 8552

Surfacing and LSP / EMI Protection

HexPly® 8552 / M98

Product Selection

Prepreg

Trade Name	Resin Designation	Resin	Key Attributes	Typical cure cycle		Dry Tg (onset DMA) °C (°F)	Cure Process			Product form*					Design data
				°C (F°)	Time (mins)		Autoclave	Vacuum	Press		Product Designation	FAW	Reinforcement Style	Fiber Type	NCAMP / HEXCEL
HexPly®	M91	Epoxy	High performance, very tough matrix	180 (356)	120	185 (365)	✓			UD tape	IM8-GS/M91;36%;145AW;24	145	Tape	IM8 12K	NCAMP in progress
										Woven Carbon	EGP145PZB/M91;40%;145AW;60	145	Plain weave	IM8 6K	
	8552	Epoxy	High Performance, widely aerospace qualified	180 (356)	120	195 (383)	✓		✓	UD tape	AS4 12K/8552;35%;190AW;48	190	Tape	AS4 12K	NCAMP
										Woven Carbon	AGP193/8552S/38%/193AW;50	193	Plain weave	AS4 3K	
	M56	Epoxy	High performance, Out of the autoclave cure, low density resin	180 (356)	120	195 (383)	✓	✓		Woven Carbon	M56/40%/193PW/AS4-3K	193	Plain weave	AS4 3K	HEXCEL
										Woven Carbon	M56/40%/280H5/AS4-3K	280	5H Satin	AS4 3K	
	M51	Epoxy	High performance with short cure cycle. Hot In/Hot Out stamping	180 (356)	40	170 (338)	✓		✓	UD tape	M51/34%/UD194/IM5-12K	194	Tape	IM5 12K	HEXCEL
										Woven Carbon	M51/40%/285T2/AS4C-6K	285	Twill 2/2	AS4C 6K	
	M901	Epoxy	Very short cure cycle	180 (356)	15	175 (347)	✓	✓ (subject to fabric style)	✓	UD tape	M901/38%/UD300/AS4-12K	300	Tape	AS4 12K	HEXCEL
										Woven Carbon	M901/42%/200T2/AS4-3K	200	Twill 2/2	AS4 3K	
										Woven Carbon	M901/40%/370T2/AS4C-12K	370	Twill 2/2	AS4C 12K	
	913	Epoxy	125°C cure cycle with outstanding environmental resistance. Widely aerospace qualified	125 (257)	60	125 (257)	✓			UD tape	913/35%/UD132/AS7-12K	132	Tape	AS7 12K	HEXCEL
										Woven Carbon	913/45%/193PW/AS4C-3K	193	Twill 2/2	AS4C 3K	
										Woven Carbon	913/40%/98PW/AS4-1K	98	Plain weave	AS4 1K	
	M79	Epoxy	Low temperature cure	80 (176)	240	95 (203)	✓	✓ (subject to fabric style)		UD tape	M79/38%/UD300/AS4-12K	300	Tape	AS4 12K	HEXCEL
										Woven Carbon	M79/48%/98PW/AS4C-3K	98	Plain weave	AS4C 3K	
										Woven Carbon	M79/42%/200T2/AS4C-3K	200	Twill 2/2	AS4C 3K	

*multiple other areal weight / combinations of resin, other fibers & reinforcements are available upon requests.

Towpreg

TowPly™	M901	Epoxy	Very short cure cycle	180 (356)	15	175 (347)	✓	X (if specific bagging)		Mono Yarn	M901/29%/IMA 24K	N/A	Mono Yarn	IMA 24K	HEXCEL

Injection Resins

							Infusion	RTM	HP-RTM	Mix ratio (pbw)	Product form	Time below 200 mPa.s (min)	Injection Temp. °C (°F)	Transport Restrictions	NCAMP / HEXCEL
HexFlow® & HiFlow®	RTM200	Epoxy	Low temperature cure with liquid Part A & Part B	130 (266)	60	140 (284)		✓	✓	100 : 81	Bi-component liquid Part A & B	90	80	Standard Restrictions	HEXCEL
	1078-1	Epoxy	Liquid Part A & Part B, long injection window	180 (350)	120	205 (401)	✓	✓		100 : 63	Bi-component liquid Part A & B	120	120	Standard Restrictions	NCAMP in progress
	HF640F-2	Epoxy	Liquid Part A & Part B for very short cure cycle	180 (350)	15	185 (365)		✓	✓	100 : 39	Bi-component liquid Part A & B	5	180	Standard Restrictions	HEXCEL

Adhesive Film

							Autoclave	Vacuum	Press		Product form	Composite Bonding	Metal-to-metal Bonding	Honeycomb bonding	NCAMP / HEXCEL
HexBond®	ST1480	Epoxy	Low weight film adhesives with high Tg	180 (355)	90	195 (383)	✓				Film	✓	✓	✓	HEXCEL
	679	Epoxy	Low-temperature cure adhesive fully compatible with Hexply M79	90 (194)	130	95 (203)	✓	✓			Film			✓	HEXCEL

Fabrics Selection

Carbon Fabrics

Weight		Weave	Reinforcement yarn		Thickness
gsm	oz/yd²		Warp	Weft	mm
46075	75	2.21	PLAIN	IM7 6K	IM7 6K	0.07
43098	98	2.89	PLAIN	AS4 3K	AS4 3K	0.09
43161	160	4.72	PLAIN	AS4C 3K	AS4C 3K	0.16
43162	160	4.72	TWILL 2x2	AS4C 3K	AS4C 3K	0.16
43199	200	5.9	PLAIN	AS4C 3K	AS4C 3K	0.20
43200	200	5.9	TWILL 2x2	AS4C 3K	AS4C 3K	0.20
43280	280	8.26	5H SATIN	AS4 3K	AS4 3K	0.29
G0986	285	8.41	TWILL 2x2	AS4C 6K	AS4C 6K	0.29
G0926	375	10.91	5H SATIN	AS4C 6K	AS4C 6K	0.37
48370	370	10.91	TWILL 2x2	AS4C 12K	AS4C 12K	0.37

E-Glass Fabrics

Weight		Weave	Reinforcement yarn		Thickness
gsm	oz/yd²		Warp	Weft	mm
220	105	3.08	4H SATIN	EC7 22	EC7 22	0.08
1035	200	5.9	TWILL 2x2	EC9 68	EC9 68	0.15
7581	300	8.85	8H SATIN	EC9 68	EC9 68	0.23

S2 Glass Fabrics

Weight		Weave	Reinforcement yarn		Thickness
gsm	oz/yd²		Warp	Weft	mm
6781	305	9	8H SATIN	S-2 68	S-2 68	0.23

Quartz Fabrics

Weight		Weave	Reinforcement yarn		Thickness
gsm	oz/yd²		Warp	Weft	mm
4581	285	7.82	8H SATIN	C14 80	C14 80	0.22

Peel Ply

Weight		Weave	Reinforcement yarn		Thickness
gsm	oz/yd²		Warp	Weft	mm
BI9760	95	2.8	PLAIN	PA66 235	PA66 235	0.07
BI9842	90	2.65	PLAIN	PES 140DT	PES 140DT	0.07

Other styles available on demand. Stated thickness is the theoretical thickness of a cured ply with 50% fiber volume content.

Additional Resources

Learn more about our innovative products and technology.

World of Composite Technologies

Aerospace Selector Guide

HexBond® Selector Guide

HexPly® Prepreg Technology

HexTow® Carbon Fiber

HexWeb® Selector Guide

Hexcel Corporation is a global leader in advanced lightweight composites technology. We propel the future of flight and transportation through excellence in providing innovative high-performance material solutions that are lighter, stronger and tougher, helping to create a better world for us all. Our broad and unrivaled product range includes carbon fiber, specialty reinforcements, prepregs and other fiber-reinforced matrix materials, honeycomb, resins, engineered core and composite structures for use in commercial aerospace, space and defense, and industrial applications.