

HexFlow® RTM 6

180°C epoxy system for Resin Transfer Moulding
monocomponent system

Product Data

Description

HexFlow® RTM 6 is a monocomponent resin already degassed, specifically developed to fulfil the requirements of the aerospace and space industries in advanced resin transfer moulding (RTM) process.

Nature

HexFlow® RTM 6 is a premixed epoxy system for service temperatures from -60°C up to 180°C (-75°F up to 350°F). At room temperature, it is a brown translucent paste but its viscosity decreases quickly by increasing the resin temperature.

Advantages

- Monocomponent system
- Already degassed. Ready for use
- High glass transition temperature
- Excellent hot/wet properties
- Easy to process (low injection pressure)
- Long injection window ≤ 150 min at recommended injection temp.
- Low moisture absorption
- Short, simple cure cycles

Availability

HexFlow® RTM 6 resin is available with a wide range of Injectex®, HexForce® and multiaxials (carbon, glass, aramid, hybrid).

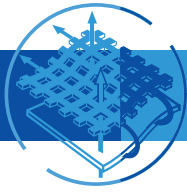
Storage

- Shelf Life @ 23°C 15 days maximum
- Guaranteed Shelf Life @ -18°C 9 months

Typical Resin Properties

Gel Time

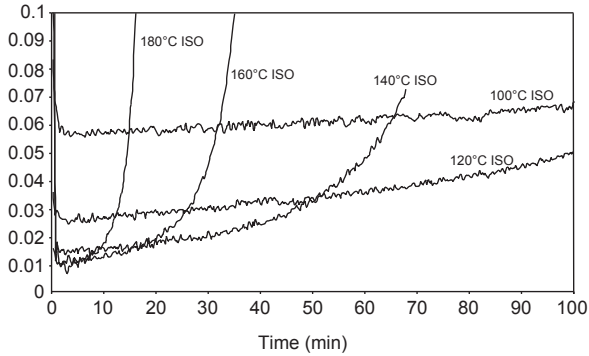
Temperature (°C)	Time (min)
120	> 240
140	95
180	30
210	12
240	5



HexFlow® RTM 6

Viscosity Profile

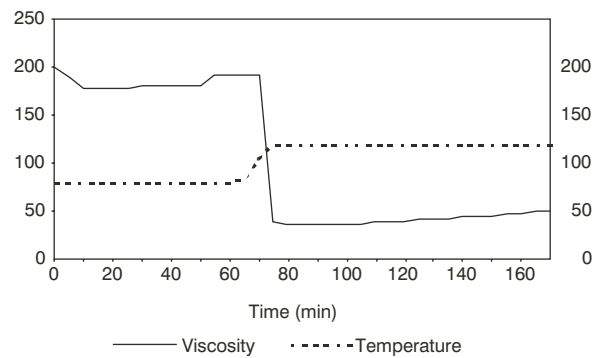
Complex viscosity (Pas)



HexFlow® RTM 6 Isothermal viscosity

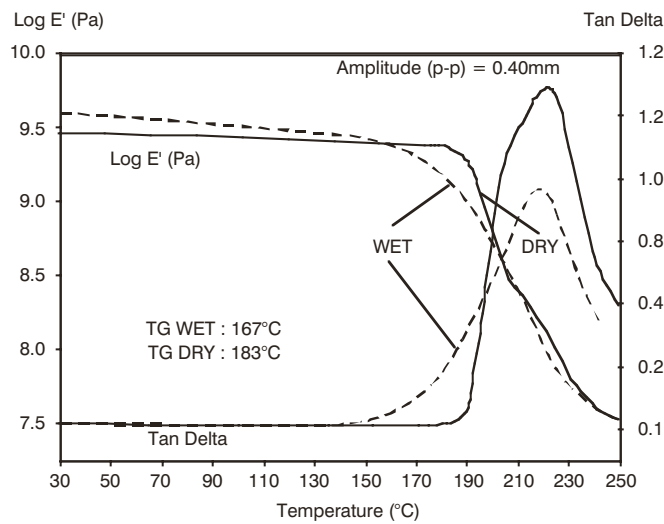
Viscosity (mPa.s)

Temperature °C



Viscosity for a standard injection cycle

Glass Transition Temperature



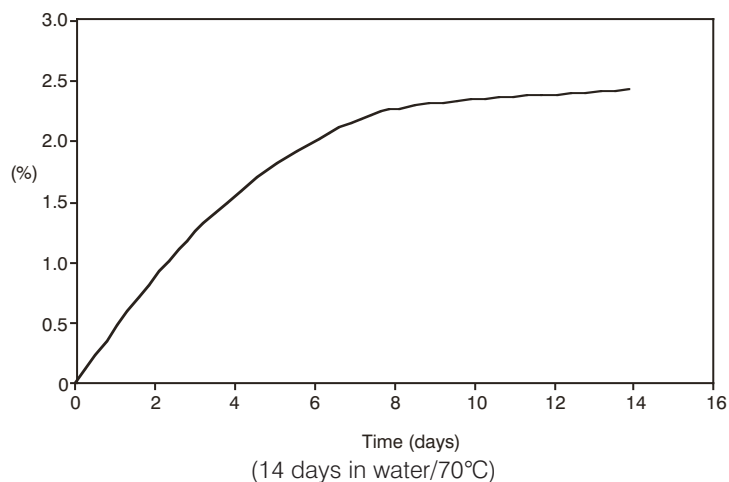
Comparison dry/wet (14 days in water/70°C)

Viscosity evolution versus storage time at 80°C

	Initial viscosity 120°C (mPa.s)	Viscosity after 2h at 120°C (mPa.s)
T0	33	59
T0 + 2h30 80°C	32	59
T0 + 5h00 80°C	33	63
T0 + 7h30 80°C	35	75
T0 + 10h00 80°C	38	89

T0: time to reach 80°C.

Water Pick-up (neat resin)



Neat Resin Properties

	Tensile	Flexure
Strength (MPa)	75	132
Modulus (MPa)	2890	3300
Strain (%)	3.4	
Standard specifications	ASTM D638	ASTM D790

Uncured resin density: 1.11 g/cm³ at 25°C

Cured resin density: 1.14 g/cm³ at 25°C

Fracture toughness

(G_{1C}/ASTM E399): 168 J/m²

Properties on Composite Laminate

Composition of the laminate: Injectex® G0926: 5H Satin weave of 370g/m², HR 6K
 Epoxy powdered fabric
 Fibre volume fraction: 57%
 HexFlow® RTM 6 resin
 Injection pressure of 1 bar + vacuum in mould
 Cure cycle 75 min at 160°C
 Post-cure cycle 120 min at 180°C (1°C/min)

Dry/RT Properties

	Tensile Warp	I.L.S. Warp	Compression Warp	In Plane Shear
Strength (MPa)	860	67	700	100
Modulus (GPa)	63	-	60	4.3
Standard specifications	Pr EN 2597 B	Pr EN 2563	Pr EN 2856 TA	AiTM 1.0002



HexFlow[®] RTM 6 *Product Data*

Wet/80°C Properties

	Tensile Warp	I.L.S. Warp	Compression Warp	IPS
Strength (MPa)	830	44	536	78
Modulus (GPa)	63	-	63	35
Standard specifications	Pr EN 2597 B	Pr EN 2563	Pr EN 2850 TA	AiTM 1.0002

Process Specification

Injection:

- Preheat resin at 80°C
- Preheat the mould at 120°C
- Inject the resin (80°C) under vacuum/low pressure (1 to 3 bar)

Standard Cure and Post-cure Cycle

Cure in mould: 75 min at 160°C

Free standing post-cure: 120 min at 180°C (ramp: 1°C/min)

Cure Cycle Possibilities

		Cycle No.1	Cycle No.1 +P.C.	Cycle No.2	Cycle No.3	Cycle No.4	Cycle No.5
Cure cycle							
160°C	min	75	75	120	/	/	/
180°C	min	/	120	/	60	90	120
α poly	%	91	94	91	95	96	96
DMA dry							
Glass Transition	°C	160	183	173	189	193	196
Tan δ onset	°C	166	189	174	194	196	198
Tan δ max	°C	224	222	224	224	222	222
Moisture weight gain 14 days at 70°C	%	2.1	2.4	2.1	2.5	2.55	2.55
DMA wet							
Glass Transition	°C	150	167	155	170	169	170
Tan δ onset	°C	153	162	158	164	165	167
Tan δ max	°C	219	219	195-219	186-215	188-219	187-220

Important

All information is believed to be accurate but is given without acceptance of liability. Users should make their own assessment of the suitability of any product for the purposes required. All sales are made subject to our standard terms of sale which include limitations on liability and other important terms.

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Publication ITA 065e (July 2009)

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Hexcel is a leading worldwide supplier of composite materials to aerospace and other demanding industries. Our comprehensive product range includes:

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- HexTOOL[®] composite tooling material
- Structural Film Adhesives
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