

HexFlow® RTM6-2

180°C epoxy system for Resin Transfer Moulding and infusion technologies

Product Data

Description

HexFlow® RTM6-2 is a two component resin system for RTM/infusion of aerospace structures. This system is designed for ease of transportation by road, air and sea.

HexFlow® RTM6-2 operates at service temperatures from -60°C up to 180°C (-75°F up to 350°F). At room temperature, after appropriate mixing, it is a brown translucent paste but its viscosity decreases quickly by increasing the resin temperature.

Advantages

- Transportable version of standard qualified HexFlow® RTM6
- Compatible with +5°C storage before mixing
- Same formulation as standard HexFlow® RTM6 after appropriate mixing
- High glass transition temperature
- Excellent hot/wet properties
- Easy to process (low injection pressure)
- Long injection window ≤ 150 min at recommended injection temperature
- Low moisture absorption
- Short, simple cure cycles

Availability

HexFlow® RTM6-2 resin is available in kit form for part A and part B and in drums of up to 200 kg per component.

Storage

- Shelf Life (after mixing) @ 23°C 15 days maximum
- Guaranteed Shelf Life (before mixing) @ ≤ +5°C 12 months
- Guaranteed Shelf Life (after mixing) @ ≤ -18°C 9 months for 5 kg cans max

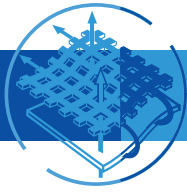
Transport classification

- 1) Prior to mixing air freight is possible
Product classifications:
 - HexFlow® RTM6-2 Part A: UN3082 division 9 GE III
 - HexFlow® RTM6-2 Part B: UN3077 division 9 GE III
- 2) After mixing: Air freight is totally forbidden
Product classification:
 - HexFlow® RTM6-2 Mono-Component: ONU 3233 division 4.1 (type C)

Typical Resin Properties

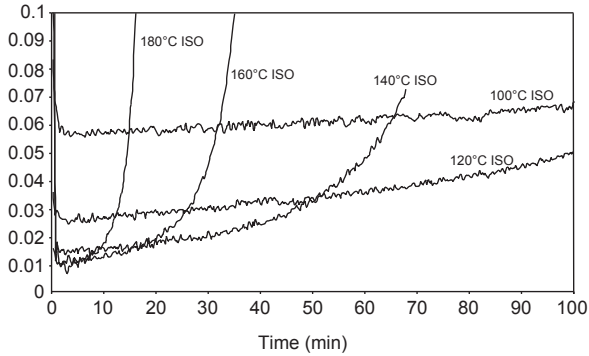
Gel Time

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



Viscosity Profile

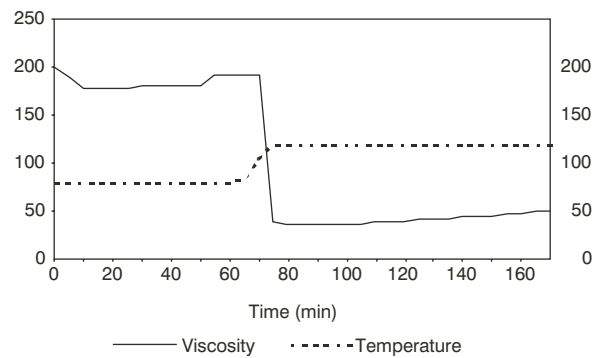
Complex viscosity (Pa.s)



HexFlow® RTM 6 Isothermal viscosity

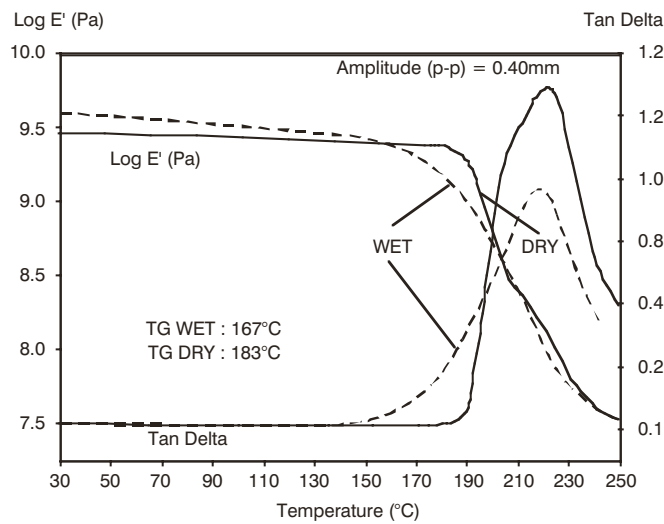
Viscosity (mPa.s)

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.

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® RTM6-2 resin

Injection pressure of 1 bar + vacuum in mould

Cure cycle 90 min at 180°C

Post-cure cycle 120 min at 180°C (1°C/min)

Dry/RT Properties

	Tensile (warp)	ILSS (warp)	Compression (warp)	In Plane Shear
Strength (MPa)	900	67	700	98
Modulus (GPa)	69	-	60	4.3
Standard Specifications	EN 2597 B	EN 2563	EN 2850 B	EN 6031

Wet/80°C Properties

	Tensile (warp)	ILSS (warp)	Compression (warp)	In Plane Shear
Strength (MPa)	838	44	525	78
Modulus (GPa)	65	-	62	3.5
Standard Specifications	EN 2597 B	EN 2563	EN 2850 B	EN 6031



Process Specification

Mixing:

- Preheat part A and B at 95°C until completely liquid (maximum 24h)
- Pour part B into part A and mix together at defined mix ratio
- Stir slowly (50 to 200 rpm) at around 80°C for 30 minutes

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)

Degasing can be done if necessary

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	N/A	120	/	60	90	120
α poly	%	91	94	91	95	96	96
DMA dry Glass Transition Tg onset	°C	160	183	173	189	193	196
DMA wet Glass Transition Tg onset	°C	150	167	155	170	169	170

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 290 (March 2010)

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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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- Honeycomb Cores
- Carbon, glass, aramid and hybrid prepregs
- HexTOOL® composite tooling material
- Structural Film Adhesives
- Honeycomb Sandwich Panels
- Engineered Core
- Reinforcement Fabrics

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