



HexPly® M49

120°C curing epoxy matrix

Product Data

Description

HexPly® M49 is a 120°C curing toughened epoxy matrix with good impact resistance suitable for use in performance cars. The matrix is highly tolerant to a wide variety of production techniques and equipment making it easy to process. Hexply® M49 is especially suitable for cosmetic applications (eg car interiors)

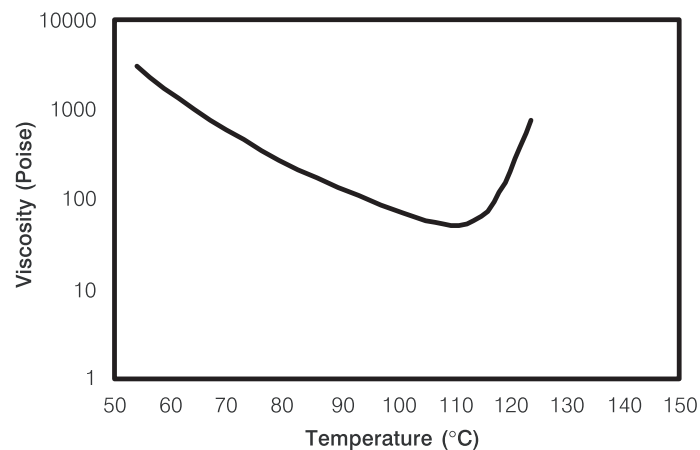
Benefits and Features

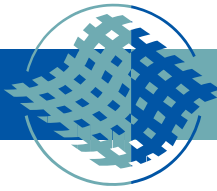
- High Toughened epoxy
- Good impact resistance
- Self adhesive on Honeycomb
- Good stability under UV
- Autoclave or vacuum bag processing
- Long shelf life and out life at room temperature
- Excellent tack and drap

Resin Matrix Properties

Colour	Transparent
Density (g/cm ³)	1,18
Curing Enthalpy (J/g)	290
Gel time at 120°C (min)	12 - 14
Minimum Viscosity (poise)	50
Tg after 120°C 60 min cure dry (°C)	115
Tg wet (°C)	90

Viscosity profile (heat up rate 2°C/min)





HexPly® M49

Prepreg Types

Fibre Designation	200P	245T2	285P	370T2	370S5	600T2
Type	3K high strength carbon	3K high strength carbon	6K high strength carbon	12K high strength carbon	6K high strength carbon	12K high strength carbon
Style	Plain weave	Twill 2X2	Plain weave	Twill 2X2	Satin weave,5 H	Twill 2X2
Weight (g/m ²)	200	245	285	370	370	600
Nominal cure ply thickness (mm)	0.234	0.287	0.333	0.433	0.433	0.660
M49 resin content by weight (%)	42	42	42	42	42	39

Cured Prepreg Mechanical Properties (cured at 120°C in autoclave)

Properties	Test Method	200P	245T2	285P	370T2	370S5	600T2
0° tensile Strength (Mpa) Modulus (Gpa)	prEN2561	900 64	980 69	940 64	1040 61	955 65	870 65
0° compression Strength (Mpa)	prEN 2850 B	725	650	650	600	550	510
0° Flexural Strength (Mpa) Modulus (Gpa)	prEN 2562	850 52	900 55	860 53	880 53	860 50	800 55
0° Interlaminar Shear Strength (Mpa)	prEN2563	63	59	60	58	59	63

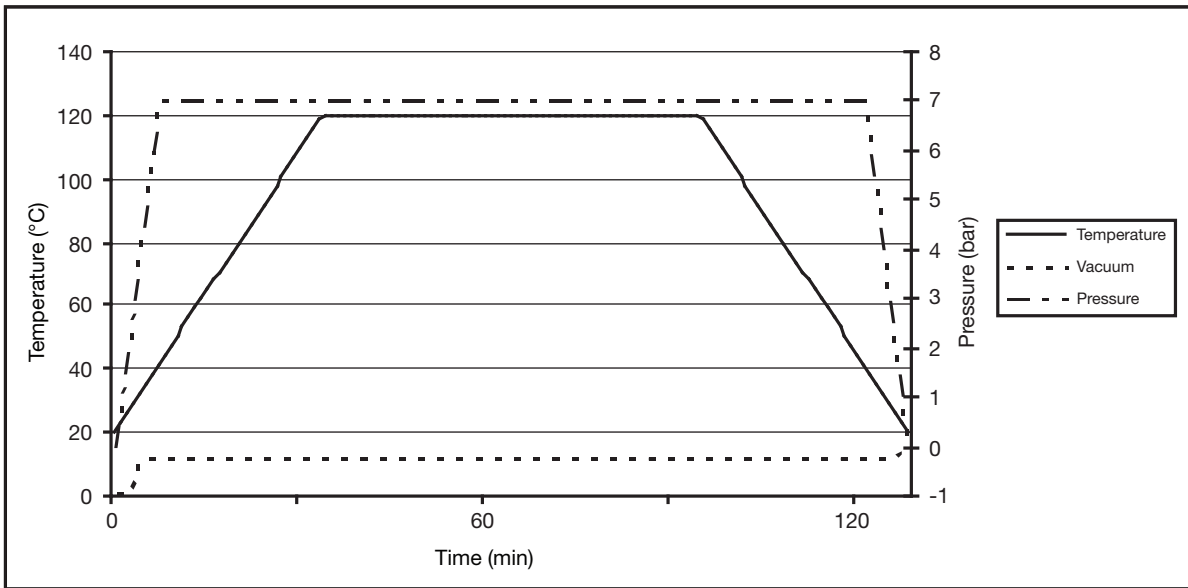
Results for cured prepregs at 55% fibre volume content.

Prepreg Curing Conditions

For cosmetic parts it is recommended to use autoclave process rather than vacuum only.

A typical autoclave cure cycle for a thin part is:

- (1) Apply the full vacuum (0.9 bar)
- (2) Apply 7 bar gauge autoclave pressure
- (3) Reduce vacuum to a safety value of 0.2 bar when the autoclave pressure reaches approximately 1 bar gauge
- (4) Heat up at 1-3 °C/minute to 120°C
- (5) Hold at 120°C for 60 minutes
- (6) Cool at 2-5°C/min
- (7) Vent autoclave pressure when the component reaches 60°C or below.



Heat-up rates are dependent on component thickness, eg, slow heat-up rates should be used for thicker components and large tools. Accurate temperature measurements of the component should be made during the cure cycles by using thermocouples. For a honeycomb sandwich panel, a cure pressure of 1 – 3 bars should be used, dependent on honeycomb density.

Alternative cure cycle can be used:

Cure temperature (°C)	Time (min)
140	30
120	60
100	120
90	360
85	720

Performance testing should be done for alternative cure cycle (to 60min at 120°C autoclave) in order to ensure suitability for the particular application. Cycles lower than 120°C cure will be suitable depending on the application, especially level of Tg needed.

A recommended vacuum cycle for a thin part is:

- (1) Apply the full vacuum (0.9 bar)
- (2) Heat up at 1-2 °C/minute to 120°C
- (3) Hold at 120°C for 60 minutes
- (4) Cool at 2-5°C/min



Prepreg Storage Life

- Out Life: 30 days at RT (23°C/73°F)
- Shelf Life: 12 months at -18°C (0°F) (from date of manufacture)

Definitions:

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 expiry date, consult the box label.

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

Storage Conditions

HexPly® M49 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 reel 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. 120°C curing epoxy matrix

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.

©Copyright Hexcel Corporation
Publication FTM175c (Nov 2008)

For More Information

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

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

For US 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:

<http://www.hexcel.com/contact/salesoffices>