

MTM[®] 49L

MTM[®] 49L is a toughened epoxy resin developed for the manufacture of components.

MTM49L prepregs exhibit excellent hot and wet performance combined with good impact resistance.

Features and Benefits

- 30 days out life at 21°C (70°F)
- 12 months storage at -18°C (0°F)
- Good tack and drape
- High toughness
- 120°C (248°F) cure temperature
- Autoclave or press moulding
- Wet Tg up to 105°C (221°F)

RELATED DOCUMENTS

- De-bulking guidelines (TDS1036)
- Autoclave processing lay-up and bagging guidelines (TDS1037)

RELATED PRODUCTS

- MTA240 adhesive film (PDS1166)
- VTF266 surface improvement film (PDS1255)

CURE CYCLE**Autoclave cure**

Vacuum bag pressure	Minimum of 980mbar (29"Hg) [†]
Autoclave pressure	6.2 bar (90 psi) ^{**}
Ramp rate	1 to 3°C (1.8 to 5.4°F)/minute
Recommended cure cycle	1 hour at 120°C (248°F)
Cool down	Maximum of 3°C (5.4°F)/minute to 60°C (140°F)

*This is the ideal vacuum level, however, it is recognised that it is not always possible to attain. If in doubt, please contact our technical support staff for advice.

†If manufacturing complex shapes, the vacuum can be vented when the pressure reaches 2 bar (30psi) if there is a perceived risk of a bag burst and hence the need to avoid pressurised air being vented through the vacuum line.

**If producing sandwich panels, apply the maximum pressure allowable for the honeycomb type.

Notes:

- This is the minimum recommended cure schedule for MTM49L. For improved Tg and mechanical properties, it is necessary to cure to 135°C (275°F). If in doubt, please contact our technical support.

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Press cure

Mould tools should restrain the flow sufficiently under moulding conditions to avoid fabric or fibre distortion.

Press pressure	Minimum of 2.8 bar (40 psi)/Maximum 3.4 bar (50 psi)
Ramp rate	A suitable rate (dependent on mould tooling)
Recommended cure cycle	1 hour at 120°C (248°F)
Cool down	A suitable rate (dependent on mould tooling) to 70°C (158°F)

Notes:

- Demoulding at the cure temperature may be possible if the tooling is suitably designed. A specific trial is recommended.
- Alternative cure cycles may be employed, but trials should be performed to determine their suitability prior to committing to full-scale production.

Alternative cure cycles

Temperature	Duration
135°C (275°F)	90 minutes

PHYSICAL PROPERTIES

Test	Sample conditions	Results	
Cured resin density	1 hour at 120°C (248°F)	1.23 g/cm ³	
DMA E' onset Tg	1 hour at 120°C (248°F)	dry	130°C (266°F)
		wet*	105°C (221°F)
	90 minutes at 135°C (275°F)	dry	140°C (284°F)
		wet*	105°C (221°F)

*Wet conditioning: 14 days immersion in water at 70°C (158°F).

MECHANICAL PROPERTIES

Cure cycle: 1 hour at 120°C (248°F), 6.2 bar (90 psi)

Test conditions: Room temperature, dry

Test	Test method	Units	MTM49L/PC171* - 37%	MTM49L/HTS (12K) - 340-37%
0° Tensile strength	ASTM D3039	MPa (ksi)	859.0 (124.0)	1785.0 (259.0)
0° Tensile modulus		GPa (msi)	60.5 (8.77)	114.0 (16.5)
0° Interlaminar shear strength (ILSS)	ASTM D2344	MPa (ksi)	79.0 (11.5)	94.8 (13.7)

Tensile data normalised to 50%Vf

* PC171 is a 193g/m2 plain weave fabric containing HTA (3K) fibres.

MTM[®] 49L PREPREG



AVAILABILITY

MTM49L preregs are available in a wide range of reinforcing fabrics and unidirectional tapes, including glass, carbon, aramid and hybrids.

STORAGE

Out life* at 21°C (70°F)	30 days
Storage at -18°C (0°F)	12 months from date of manufacture

*Out life refers to accumulated time out of the freezer before the part is cured.

Note:

The actual freezer storage life and out life are dependent on a number of factors, including; fibre type, format and application. For certain formats, it may be possible for the storage life and out life to be longer than stated. Please contact our technical support staff for advice.

EXOTHERM

MTM[®] 49L preregs are reactive formulations which can undergo severe exothermic heat up during the initial curing process if incorrect curing procedures are followed.

Great care must be taken to ensure that safe heating rates, dwell temperatures and lay-up/bagging procedures are adhered to, especially when moulding solid laminates in excess of 10mm (0.4in) thickness. The risk of exotherm increases with lay-up thickness and increasing cure temperature. It is strongly recommended that trials, representative of all the relevant circumstances, are carried out by the user to allow a safe cure cycle to be specified. It is also important to recognise that the model or tool material and its thermal mass, combined with the insulating effect of breather/bagging materials can affect the risk of exotherm in particular cases.

HEALTH & SAFETY

Please refer to the product MSDS for safe handling, personal protective equipment recommendations and disposal considerations.

Solvay

