



Notus NE6

Low Temperature Epoxy Prepreg System



DESCRIPTION

Notus NE6 is a high-performance epoxy prepreg system that can be cured at temperatures as low as 80°C.

NE6 has been formulated for applications requiring a low temperature cure and a final Tg in the range of 80-120°C. Alternatively, the system can be cured at higher temperatures such as 120°C to reduce production cycle times. It is easy to handle and laminate with and is suitable for both vacuum bag and autoclave curing. Notus NE6 has a very long out life at room temperature (60 days at 21-23°C) and can be kept frozen for up to 18 months at -18°C.

The high flow NE6 resin matrix produces even and consistent wet out in the laminate, even when using the heaviest reinforcement fabrics. Outstanding consolidation can be achieved in extremely thick laminates using only vacuum bag pressure.

Notus NE6 is available in all prepreg and N1-Preg formats with unidirectional, multiaxial and woven reinforcements, it can also be supplied as a resin film.

FEATURES AND BENEFITS

- Low cure temperature.
- High flow resin matrix.
- Suitable for vacuum and autoclave curing (up to 3.5 bar pressure).
- Low exotherm risk, even for thick laminates.
- Long out-life & shelf-life.

APPLICATIONS

The NE6 prepreg system is extremely versatile, lending itself to the production of marine craft and components, sporting equipment and other structural applications where only low Tg tooling is available. NE6 cure temperatures make this system a viable replacement for infusion where components typically require a post cure to 80°C after infusion.

CURE SCHEDULE

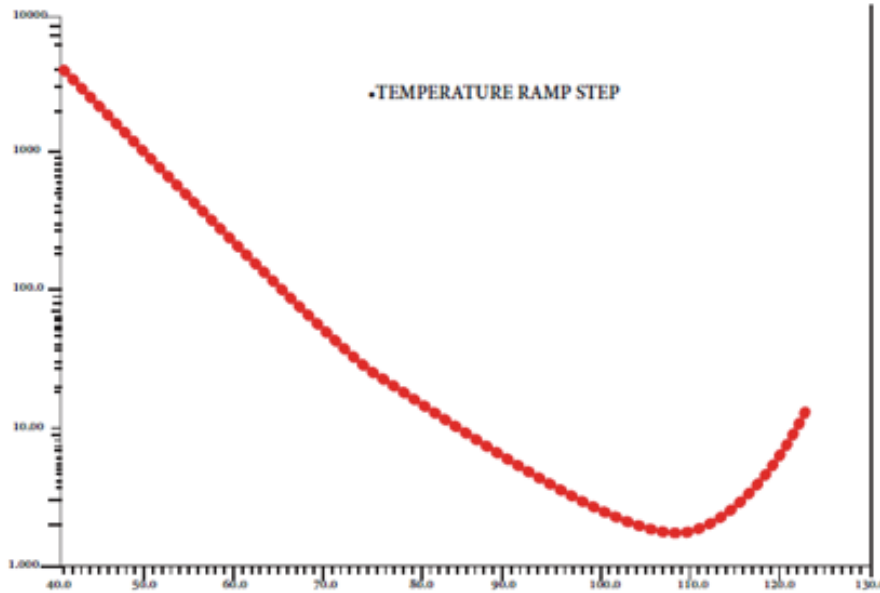
Minimum cure requirements

Property	Result	Test Method
Minimum cure temperature (°C)	80	DSC
Cure time (hours:mins) at min temperature	12:00	DSC
Glass transition temp, Tg (°C)	102	DSC

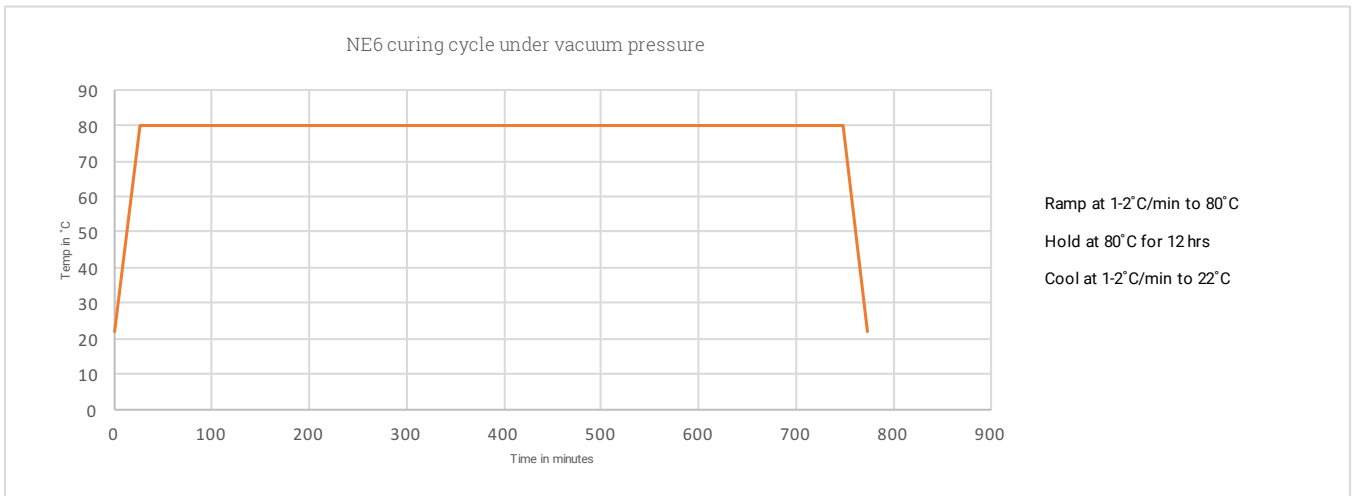


RHEOLOGY

Rheology profile for NE6 prepreg system



Typical vacuum curing schedule for NE6 prepreg system



Alternative cure cycles

Laminate Temp. (°C)	Dwell Time (Hours)	Tg by DSC (°C)	Test Method
80	12	102.5	DSC
80	5	80	DSC
85	10	100.1	DSC
85	4	87.2	DSC
90	6	105	DSC
100	3	115	DSC
120	0.75	98	DSC



CURED MATRIX PROPERTIES

(12hrs at 80°C)

Property	Result	Test Method
Tensile Strength (MPa)	80 ± 2	ISO R527
Tensile Modulus (GPa)	3.1 ± 0.1	ISO R527
Strain (%)	3.57 ± 0.12	ISO R527
Flexural strength (MPa)	125 ± 5	ISO R178
Flexural modulus (GPa)	3 ± 0.1	ISO R178
Compression strength (MPa)	107 ± 2	ASTM D695
Compression modulus (GPa)	3.1 ± 0.1	ASTM D695
Fracture toughness K1C (MPa√m)	0.82 ± 0.05	ISO 13586
Fracture energy G1C (J/m ²)	240 ± 25	ISO 13586
Density (g/cm ³)	≈ 1.162	
Glass Transition Temperature (°C)	102	DSC - 10°C/min

LAMINATE PROPERTIES

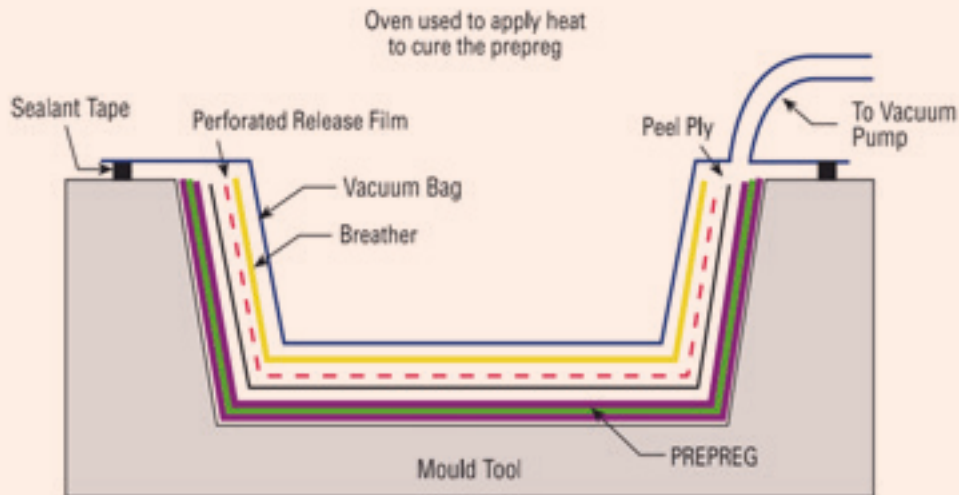
(12hrs at 80°C – Various E-glass Reinforcements)

Property	UD-1200	UD-1600	Biax-600 (±45°)	Biax-600 (0/90)	Triax-900 (0,±45°)	Test Method
Reinforcement weight (gsm)	1200	1600	600	600	900	
Resin content by weight (%)	32	32	35	35	38	
Number of plies in test laminate	2	2	4	4	4	
Test laminate thickness (mm)	1.76	2.4	1.76	1.76	2	
Test laminate fibre volume thickness (%)	53	53	53	53	53	
Tensile strength (MPa)	1166	1170	565.22	151.2	690.5	ISO 527-4 & 5
Tensile modulus (GPa)	46.8	47.1	27.0	13.9	28.6	ISO 527-4 & 5
Flexural strength (MPa)	1220	1270	600	200	750	
Flexural modulus (GPa)	48	47.5	28	14	29	
Strain to failure (%)					2.287	ISO 527-4 & 5
Interlaminar shear strength (MPa)	62	60	42	40	45	ASTM D-2344/ISO 14130

PROCESSING METHOD

- Take the prepreg roll out of sealed plastic bags.
- Cut the prepreg to the desired size on a cutting table.
- Pull off the protective polyethylene film and lay the prepreg onto the mould. If multiple layers are required, pull off protective film and lay prepreg layers one on top of each other. Make sure that a roller is applied to each layer to avoid any wrinkling or air voids between layers.
- When the desired thickness or lay-up is completed, make the vacuum bag on the mould to cover the entire laminate and apply vacuum.
- Apply full vacuum (approx. 760mm Hg) for 10 minutes before starting the heated cure cycle
- When all air is removed, place the mould in the oven or turn on heat source.
- Complete the cure cycle (as per the defined cure cycle chart).
- After completing the cure cycle, turn off the heat source whilst maintaining vacuum pump pressure.
- Turn off the vacuum pump only when part temperature has dropped to 60°C or below.
- After turning of the vacuum pump, the part can be removed from the mould.

Typical Vacuum Bagging Arrangement





TRANSPORTATION, HANDLING AND STORAGE

NE6 prepregs should be kept in the original packaging during transport and storage. Transport should be at -18°C to maximise the life of the product. NE6 prepregs should be stored, wrapped and sealed in polythene, at -18°C for maximum shelf life.

Temperature	Maximum Storage Time
-18°C	18 months
5°C	6 months
23°C	60 days

The material must be fully thawed for 48 hours and allowed to reach ambient temperature before breaking the polythene seal to avoid moisture contamination.

Handling of the prepreg should be at a clean area where relative humidity is \leq 50% and ambient temperature is 20-23°C.

Only take out the quantity required for immediate production usage, the remaining material should be wrapped up and sealed and returned to the freezer. This will extend the shelf life of the NE6 prepreg.

The backing film should be removed from the NE6 prepreg only when it is ready to be laminated or positioned in the mould. Remove the backing film from the side which is going to touch the mould surface. Remove the remaining backing film only when the next prepreg layer is ready to be placed.

HEALTH AND SAFETY PRECAUTIONS

Prepregs are low risk in terms of handling hazards. However, the usual precautions should be applied. Gloves and protective clothing should be worn and operators should avoid skin contact with the materials. Hands and contaminated skin must be cleaned properly with soap and warm water after finishing work.

To avoid eye contamination, safety glasses should be worn. In the case of any contamination, eyes must be flushed for 15 minutes with clean water and a doctor should be consulted or further medical advice should be sought. Use mechanical exhaust ventilation when heat curing the NE6 prepreg product.

NOTICE AND DISCLAIMER

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