

Newport 301

Description:

Newport 301 is a 250°F to 300°F cure, semi-toughened, controlled flow epoxy resin system. Versatile processing, excellent mechanical properties, and long out-life make Newport 301 suitable for a variety of applications.

Application:

Newport 301 is well suited for structural applications in sporting goods, marine, medical, and industrial manufacturing.

Newport 301 can be supplied with most commercially available fibers in both woven form (designated as NB) as well as unidirectional tape (designated as NCT), including:

- Carbon
- Quartz
- Aramid
- S-glass
- E-glass
- Other specialty fibers and fabrics

Woven fabrics are available in standard commercial widths up to 60 inches. Unitape widths up to 39 inches (1M) are available in standard fiber weights ranging from 90 to 300 gsm.

Benefits/Features:

- Excellent mechanical properties
- Moderate tack
- Good toughness
- Controlled flow
- 30 days out-life at 70°F
- Available on most commercial woven fabric
- Available on a wide range of unidirectional fibers

Recommended Processing Conditions:

Newport 301 can be cured at temperatures from 250°F to 300°F depending on service temperature requirements. Low, medium, and high pressure molding techniques may be used to cure 301 resin. Recommended cure cycle is 50 psi; 3°F/min ramp to 275°F; hold for 60 minutes, cool to <140°F.

Physical Properties*:

Gel Time (275°F):	3-5 minutes
Specific Gravity:	1.22 ± 0.02
T _g (DMA, E'):	265°F.
CTE =ppm/°C	60 ± 10 (below T _g)

Mechanical Properties:**Neat resin properties*:**

Tensile strength, psi	8300±400
Tensile modulus, Msi	0.46 ± 0.02
Flexural strength, psi	14600±400
Flexural modulus, Msi	0.50 ± 0.02
Short Beam Shear str., psi	3200±600

* Values are average and do not constitute a specification

7781 E-Glass reinforcement

The mechanical property data supplied in the following table are average values obtained from NB-301 with style 7781 woven fiberglass. All values are based using an "in-hot out-hot" press cure at 275° F for 45 minutes and 25 psi.

PROPERTY	Test Method	RT*	160°F*
Flexural strength, ksi	ASTM D-790	68	54
Flexural modulus, Msi		3.5	3.3
Tensile strength, ksi	ASTM D-638 Type I	54	45
Tensile modulus, Msi		3.5	3.6
Compressive strength, ksi	SACMA SRM 1R-94	61	51
Compressive modulus, Msi		3.6	3.7

* Values are average and do not constitute a specification

34-700 Standard Modulus Uni-directional Carbon Fiber tape reinforcement

The mechanical property data supplied in the following table are average values obtained from NCT-301 with 34-700 carbon fiber at 35% RC. All values are based using a press cure at 275° F for 60 minutes using 25 psi. All data are normalized to 60% fiber volume, except for SBS.

NCT-301 34-700	Test Method	RT*
0° Tensile strength, ksi	ASTM D- 3039	295
0° Tensile modulus, Msi		19.0
Strain, μ in/in		14,700
Poisson's ratio		0.304
0° Compression strength, ksi	SACMA SRM 1R-94	180
0° Compression modulus, Msi		18.6
0° Flexural strength, ksi	ASTM D-790	280
0° Flexural modulus, Msi		18.2
0° Short Beam Shear str., ksi	ASTM D-2344	13.2

NCT-301 34-700	Test Method	RT*
90° Tensile strength, ksi	ASTM D- 3039	8.7
90° Tensile modulus, Msi		1.3
Strain, μ in/in		6,100
Poisson's ratio		0.017
90° Compression strength, ksi	SACMA SRM 1R-94	28.8
90° Compression modulus, Msi		1.2
90° Flexural strength, ksi	ASTM D-790	16.7
90° Flexural modulus, Msi		1.2
90° Short Beam Shear str., ksi	ASTM D-2344	1.3

* Values are average and do not constitute a specification

3k Plain Weave Carbon reinforcement

The mechanical property data supplied in the following table are average values obtained from NB-301 with 3k plain weave carbon fabric. All data are normalized to 55% fiber volume, except for SBS.

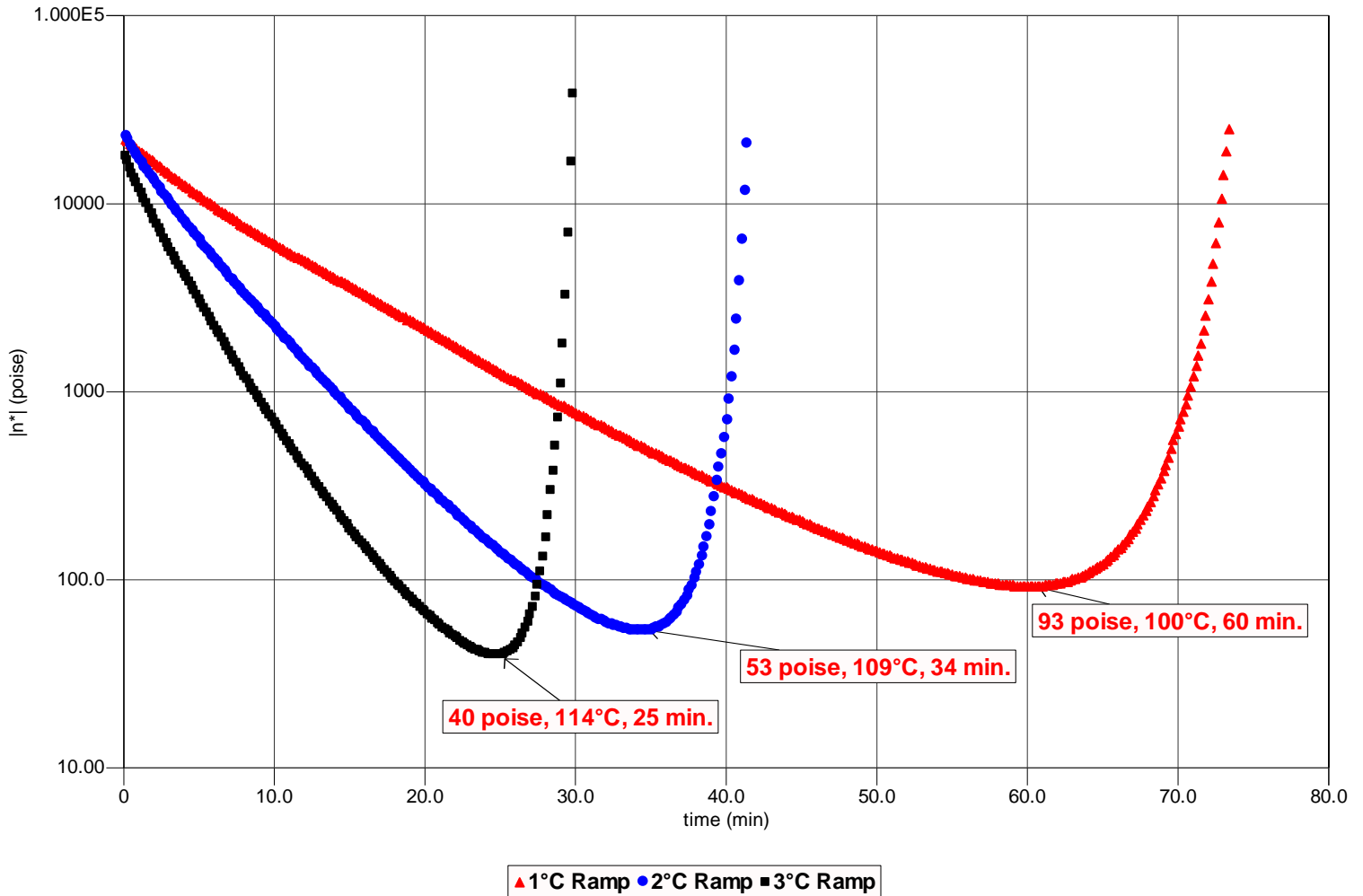
PROPERTY	Test Method	RT*
Flexural strength, ksi	ASTM D-790	129
Flexural modulus, Msi		7.7
Tensile strength, ksi	ASTM D-638 Type I	81
Tensile modulus, Msi		9.1
Compressive strength, ksi	ASTM D-695	78
Compressive modulus, Msi		7.9
Short Beam Shear strength, ksi	ASTM D-2344	9.2

* Values are average and do not constitute a specification

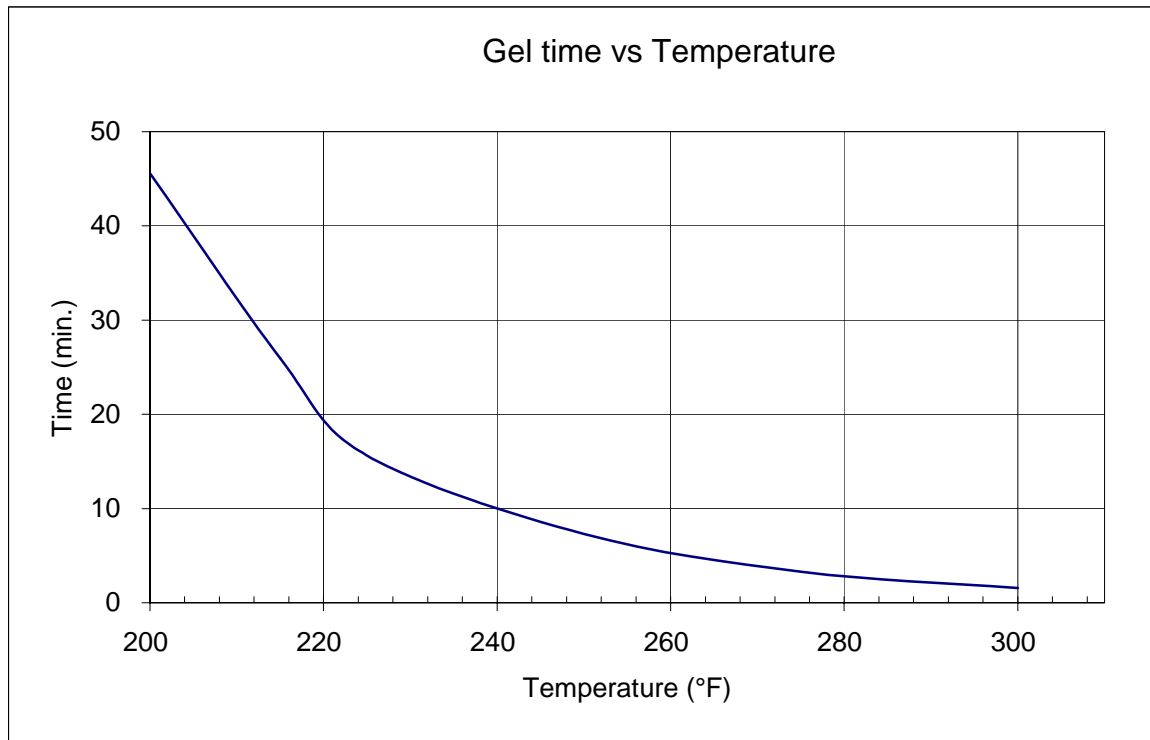
Melt Viscosity Profile of Newport 301

A TA (model AR2000) parallel plate rheometer was used to determine the melt viscosity profile of the neat resin system.

Newport NB 301 Viscosity vs Time



Gel Curve Profile of Newport 301



Prepreg Storage:

Material can be stored at 40°F for 3 months, or 0°F for 6 months.

Availability:

Newport 301 is available on a wide variety of woven fabrics and unidirectional tapes including aramid, E-glass, S-glass, carbon, and other fibers. Tack, flow and other properties can be tailored to meet your specific requirements. Contact Newport about any specialty fibers or requirements.

For orders, pricing, availability, technical assistance or other inquiries please contact:

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