Description

RDN-113 is a high performance rapid-cure hot-melt epoxy resin system, designed for prepreg applications at which short cure cycles are required.

RDN-113 designed for automotive and industrial applications, where high-volume manufacturing and a high level of properties are required.

RDN-113 is recommended for curing in Hot Press or Autoclave at 120 - 150°C and is suitable for a range of pressures (2 - 35bar) at short cure cycles of 20min or less.

Features & Benefits

- 45 days out life at 21°C
- 12 months storage at -18°C
- 120-150°C flexible curing cycle
- Up to 173°C dry Tg following 150°C cure
- Toughened formulation
- Controlled flow of the resin
- Excellent tack and drape characteristics

Neat Resin & Matrix properties

Density: 1.185 g/cm^3

Tack: Moderate to high

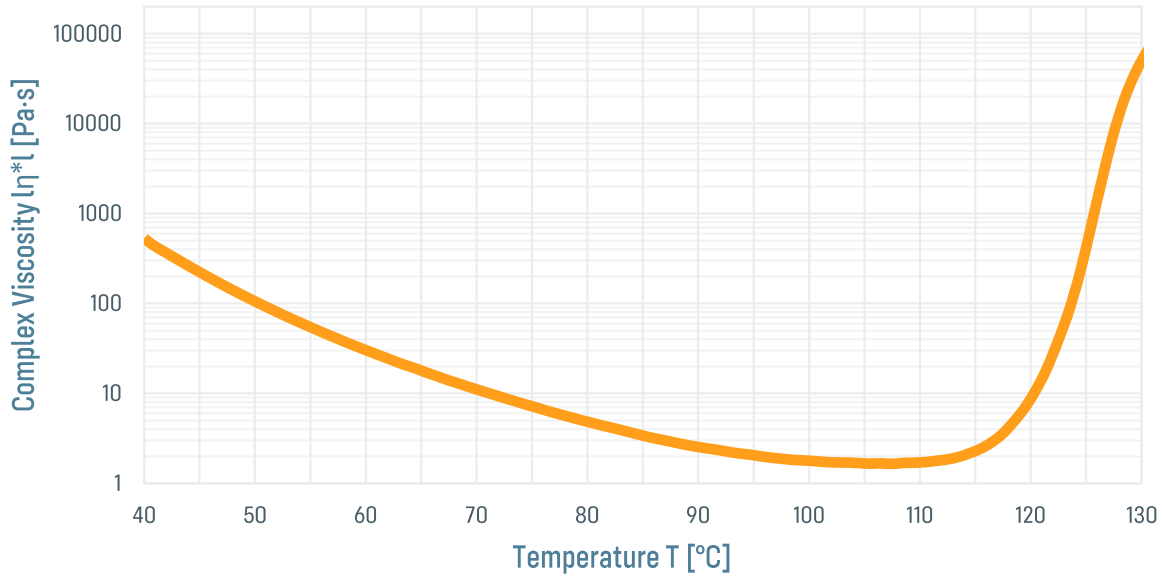
Cured Dry Tg (DMA, a 15min cure @150°C):

- ✓ $T_{g,\ Onset}$ 148°C
- ✓ $T_{g,\ Peak}$ 173°C

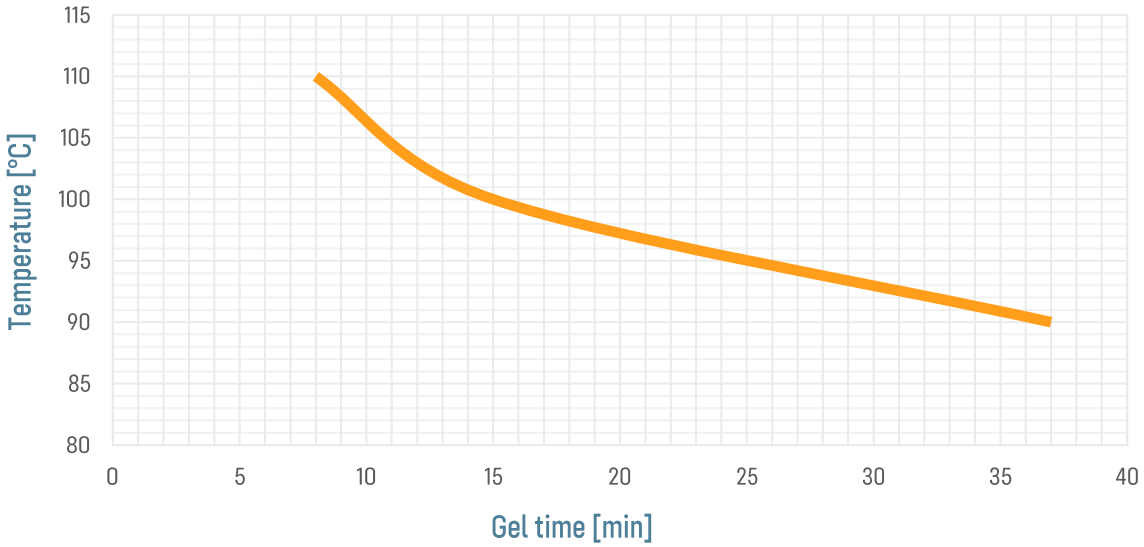
Enthalpy: 440 J/g

Viscosity profile

Dynamic Complex Viscosity of RDN-113 @ 2°C/min



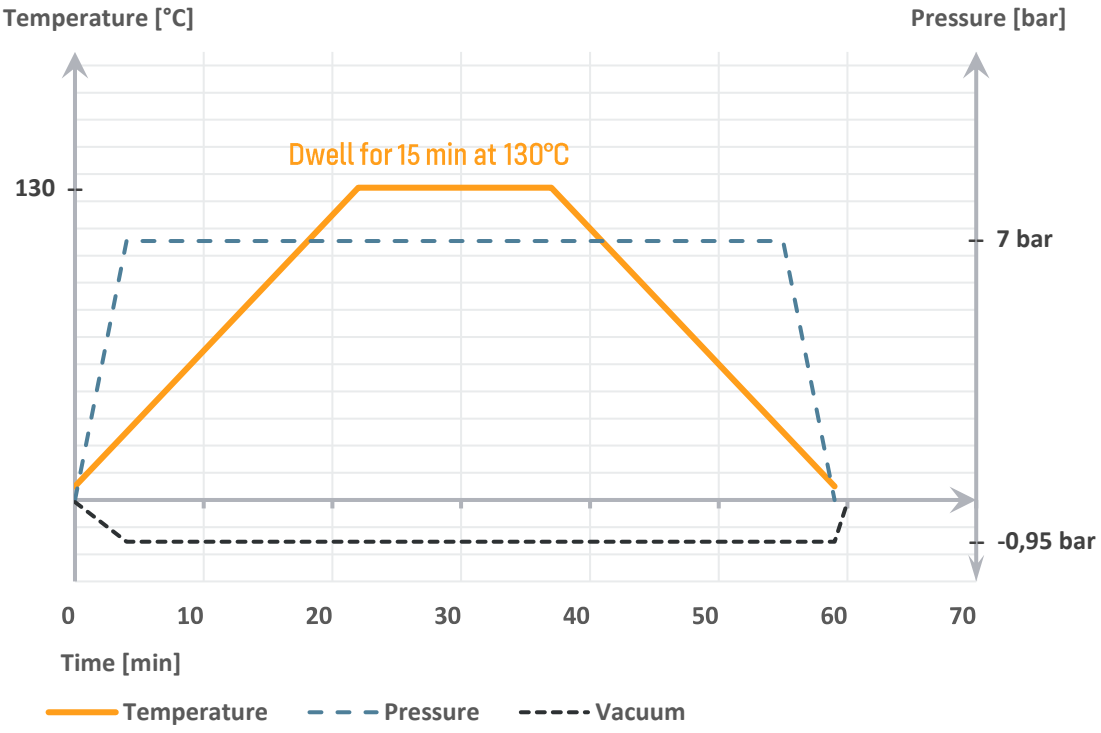
Gel Time



Cure Cycles & Properties

Recommended autoclave cure cycle

Vacuum bag pressure: minimum of 950mbar
Autoclave pressure: 2-7 bar
Ramp rate: 0.5 to 5°C/minute
Cool down Maximum of 5°C/minute to 60°C



	POSSIBLE CURE CYCLES (1)			
	120°C	130°C	140°C	150°C
Curing time, min	15-30	15-20	15-20	15

(1) Temperature must be measured by the lagging thermocouple attached to the part.

Recommended hot-press cycle

		POSSIBLE CURE CYCLES [1]			
		120°C	130°C	140°C	150°C
1	Hold at curing temp., sec	270-360	150-210	120-150	30
2	Apply pressure	2 – 35 bar			
3	Hold at Curing temp, min	25-40	15-25	15-20	15

Thermal properties

	CURE CYCLES		
	130°C – 15 min	140°C – 15 min	150°C – 15 min
$T_{g\ dry,\ Onset}$ °C (DMA)	136	142	148
$T_{g\ dry,\ Peak}$ °C (DMA)	171	173	173

Cured Woven Prepreg Properties

Physical Properties	Units	RDN-113.200TC
Weave/Fiber		Twill/200 gsm/ 3K-HS
Nominal Resin content	wt%	38
Theoretically Calculated Cured Ply Thickness	mm	0.224

Mechanical Properties

All tensile and compression data are normalized to Vf = 55%

Cure Cycle: 25 min at 130°C; Pressure 2 bar (Hot Press)

Mechanical Properties	Units	Method	RDN-113.200TC		
			RTD (23°C)	ETD (80°C)	ETW(2) (80°C)
Tg Dry, DMA (Onset/Peak)	°C	ASTM D7028	149/161		
Tensile strength [0°]	MPa	ASTM D3039	805	-	-
Tensile modulus [0°]	GPa		62	-	-
Compression strength [0°]	MPa	ASTM D6641	620	560	460
Compression modulus [0°]	GPa		58	50	53
In-plane Shear Strength	MPa	ASTM D3518	65	54	33
In-plane Shear Modulus	GPa		3.6	2.7	2.4
ILSS	MPa	ASTM D2344	68	-	-

(2) Wet – 14 days immersion in water at 70°C

AVAILABILITY

RDN-113 is available in multiple formats to meet your manufacturing needs:

- Based on glass or carbon fiber
- Based on UD or standard woven fabrics
- Semipregs (prepregs impregnated on one side) for vacuum molding

Contact us to discuss custom formats for your specific application.

STORAGE

Out-life: at 21°C – 45 days [3]
Storage: at -18°C – 12 months [4]

Handling: Prepregs must be kept sealed in a polythene bag which must not be opened until thawed to room temperature.
Safety: Refer to Material Safety Data Sheet (MSDS) for complete handling instructions

(3) Accumulated time out of the freezer before the part is cured
(4) Prepregs must be kept sealed in a polythene bag which must not be opened until thawed.