DESCRIPTION

Cardolite NX-4004 is a solvent-free, low viscosity cardanol based novolac resin designed as a cross-linking agent for epoxy resins and particularly suitable for wet layup, pultrusion and adhesives. This product is specifically engineered to have low odor and good miscibility with epoxy and epoxy-novolac resins. It is characterized by a high functionality and high equivalent weight with good moisture and chemical resistance and improved flexibility and toughness. In addition, NX-4004 enables high biocontent formulations.

PROPERTIES

PROPERTY	TYPICAL VALUE	Тезт Метнор
Appearance	Dark Brown Liquid	Visual
Color (Gardner)	14 - 18	ASTM D1544
Viscosity @ 25°C (cPs)	5,000	ASTM D2196
Hydroxyl Equivalent Weight ¹	290 - 325	Calculated
Density @ 25°C (kg/L) (lbs/gal)	0.95 - 1.00 7.84 - 8.35	ASTM D1475
Recommended Use Level	15 - 30	-

Typical properties are not to be construed as specifications ¹ Based on total product weight

APPLICATIONS

- Composites based on epoxy chemistry
- Wet Layup
- Pultrusion
- Hot Mold formulations

- Vacuum assisted processes
- High temperature cure composites
- Composites for automotive, sports & leisure, and construction
- Natural fiber composites

ADVANTAGES

- · Good processability
- Excellent formulation latitude
- Good chemical resistance
- Very long pot life
- Good mechanical properties

- High in biocontent
- Compatible with most epoxy resins and novolac-epoxy resins
- Non-toxic
- Based from natural, renewable, non-food chain raw material feedstock

TYPICAL HANDLING PROPERTIES

	TYPICAL VALUE	Теѕт Метнор
Use Level with Epoxy Resin	20	-
Mix viscosity @ 25°C (cPs)	11,385	ASTM D2196
Mix viscosity @ 50°C (cPs)	505	ASTM D2196
Pot Life, 100 g mix @ 50°C	8.5 hrs	Internal Method ²
Pot Life, 100 g mix @ 80°C	56 min	Internal Method ²
Cure time @ 100°C (min)	13	Internal Method ³
Cure time @ 120°C (min)	3.0	Internal Method ³

Properties have been measured on a standard formulation of: 80% Liquid Epoxy Resin (EEW=188), 20% NX-4004, and 2,9 pbw 2-ethyl,4-methylimidazole, cured at 120°C for 2 hrs. Pot life refers to the time at which the formulation reaches a viscosity of 10,000 cPs at the reference temperature.

³Based on cure time of a thin layer of formulation on hot plate at the reference temperature.

TYPICAL PERFORMANCE PROPERTIES

PROPERTIES	TYPICAL VALUE ¹	TEST METHOD
Glass transition temperature (°C) ²	92	ASTM 3418-99
Tensile strength (MPa)	52	ASTM D638-10
Tensile modulus (MPa)	1,880	ASTM D638-10
Tensile elongation (%)	2.6	ASTM D638-10
Flexural strength (MPa)	78	ISO 178
Flexural modulus (MPa)	2,103	ISO 178

¹ Cure schedule: 2h @120°C. Base resin: Liquid epoxy (EEW=190) @ 80% ² DSC scan from 0 to 200°C, 2nd run

Please refer to the material safety data sheet (MSDS). Specific information regarding chemical inventory listing can be obtained from your local sales representative.

SAFETY PRECAUTIONS

Please refer to the material safety data sheet (MSDS). Copies of the MSDS can be requested on the Cardolite website or via your local sales representative.

STABILITY AND STORAGE

Cardolite products may absorb moisture and carbon dioxide when left in open containers, which could result in increased viscosity, discoloration, reduction of reactivity, and/or crystallization of the products. These products should be kept tightly sealed in their original containers when not in use, and stored in a cool, dry place.

CONTACT INFORMATION



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