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PREMIUM VINYL ESTER RESIN

DESCRIPTION

NCS 5100 is an un-accelerated and non-thixotropic vinyl ester based on bisphenol A epoxy that has been optimised for superior performance. This premium vinyl ester resin was designed to have improved thermal stability and exhibits excellent mechanical strength and exceptional osmosis resistance in addition to good toughness.

APPLICATION

This resin has been designed for fabrication using hand lay-up, spray-up, filament winding, pultrusion, casting and resin transfer moulding techniques as well as floor screeding.

FEATURES & BENEFITS

- High epoxy content
- High HDT
- Fast curing
- Reduced volatile content
- High strength and better adhesion
- Good heat resistance, improved thin film cure
- Improved mould turn around time
- Lower shrinkage and VOC

OTHER VERSIONS

Variant	Description	Viscosity (cps)	Gel time (min), 2phr Butanox M50	Application
NCS 5100 PAT	Pre-accelerated, thixotropic	310 – 330	20 - 30	Laminating
NCS 5100 PA	Pre-accelerated	350 – 450	20 - 30	Laminating, filament winding

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TYPICAL PROPERTIES*

LIQUID PROPERTIES AT 25°C

PROPERTY	UNIT	SPECIFICATION
Volatile content	%m/m	34 – 36
Viscosity (Brookfield Sp 3 100 rpm)	cPs	400 – 600
Liquid appearance	visual	pale yellow, free from bits and lumps
Stability @ 120°C Ambient	hours months	>8 12 minimum
Density	g/cm ³	1.06 – 1.09
Typical Curing Characteristics at 25°C using 2 phr[†] AC 2 and 2 phr Butanox M50		
Time to gel	minutes	19
Time to peak	minutes	32
Peak exotherm	°C	175
†phr = parts per hundred resin, by mass		

PHYSICAL PROPERTIES

NON-REINFORCED RESIN PROPERTIES (unfilled casting)			
PROPERTY	UNIT	TYPICAL RESULT	TEST METHOD
Heat distortion temperature	°C	110	ISO 75-2A
Tensile strength	MPa	80	ISO 527-2
Tensile modulus	MPa	3750	ISO 527-2
Elongation at break	%	4.5	ISO 527-2
Flexural strength	MPa	120	ISO 178
Flexural modulus	MPa	2320	ISO 178
Barcol (GYZJ 934-1) hardness	BHU	40 minimum	BS2782-10, 1001

*TYPICAL PROPERTIES SHOULD NOT BE CONSTRUED AS SPECIFICATIONS.

CURING CHARACTERISTICS

NCS 5100 requires cobalt accelerator and the addition of catalyst to start the curing reaction. The resin must be allowed to attain workshop temperature (23°C) before use. The correct amount of accelerator is added and thoroughly stirred into the resin prior to the addition of Butanox M50 catalyst shortly before use. Curing should not be carried out at temperatures below 15°C.

Ensure that the catalyst is thoroughly dispersed into the well mixed homogenous product to prevent uneven or undercured areas which may lead to product failure.

The ambient temperature and the amount of accelerator & catalyst control the gel time of the resin formulation. This can be approximately determined from the table below which shows the typical gel time of 100 parts by mass of NCS 5100 with the required level of NCS Ultracure AC1 and Butanox M50 at varying temperatures.

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Table 1: Typical gel times at varying temperatures, accelerator and catalyst levels.‡

Temperature (°C)	NCS Ultracure AC1 (phr)	Butanox M50 (phr)	Gel time (minutes)
15	0.27	2	27
	0.25	2	40
	0.25	1	91
20	0.20	2	26
	0.20	1.5	47
	0.15	1	100
25	0.10	2	29
	0.10	1.5	50
	0.10	1	109
30	0.10	2	19
	0.10	1.5	30
	0.10	1	91
35	0.125	2	14
	0.125	1.5	23
	0.125	1	50
	0.08	1	109

‡Contact NCS for further recommendations outside the scope of this table.

STORAGE & HANDLING

To ensure maximum stability and maintain optimum properties, the resin should be stored in closed containers, maintained below 25°C and away from heat sources and sunlight. All storage should conform to local fire and building codes. Drum stock should be kept to a reasonable minimum with first-in, first-out stock rotation.

Where bung-in-head containers are stored outside, it is recommended that these be stored in a horizontal position to avoid the ingress of water.

PRODUCT SAFETY

A Safety Data Sheet is available from your NCS representative. Make certain that you obtain a copy of this guide to the safe handling of unsaturated polyester resins and resin systems.

Warning: Care must be taken to avoid direct mixing of any organic peroxide (catalyst) with metal soaps, amine or any other polymerisation accelerator or promoter, as violent decomposition will result!

PLEASE READ AND UNDERSTAND THE SAFETY DATA SHEET BEFORE WORKING WITH THIS PRODUCT

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