

Technical Information

S1706/13

Provisional data

**Bisphenol-Epoxy
Vinyl Ester Resin**

DESCRIPTION

S1706/13 is a low viscosity pre-accelerated Bisphenol-A epoxy vinyl ester resin. The chemical resistance is very good, particularly towards acids, alkalis and oxidizing agents. The outstanding adhesion properties, toughness and fatigue resistance properties make S1706/13 suitable for production of tanks, pipes and process equipment. S1706/13 has a higher heat distortion temperature and lower volatile content than its predecessor Dion Impact 9100-80 and can be cured with conventional MEKP catalyst like Butanox M50.

APPLICATION

S1706/13 is designed for application by hand lay-up, spray-up and filament winding.

FEATURES

- Premium epoxy vinyl ester resin
- Good curing
- Pre-accelerated

BENEFITS

- Excellent chemical resistance to a wide variety of corrosive environments
- High toughness and good crack resistance
- Good mechanical properties
- Good high temperature stability
- Compatible with both aramid and carbon fibres
- Excellent resin colour
- Short demoulding times and good final cure
- Only requires catalyst addition

The information herein is to assist customers in determining whether our products are suitable for their applications. Our products are intended for sale to industrial and commercial customers. We request that customers inspect and test our products before use and satisfy themselves as to contents and suitability. Nothing herein shall constitute any other warranty expressed or implied, including any warranty of merchantability or fitness, nor is protection from any law or patent to be inferred. All patent rights are reserved. The exclusive remedy for all proven claims is replacement of our materials, and in no event shall we be liable for special, incidental, or consequential damages. Our standard conditions of contract will apply to all sales

TYPICAL PROPERTIES

PHYSICAL DATA IN LIQUID STATE AT 25°C

Properties	Unit	Value	Test Method
Viscosity			
- Brookfield LVF sp. 2/12 rpm	mPa's (cP)	350-450	ASTM D 2196-86
- Cone & Plate	mPa's (cP)	350-450	ISO 2884-1999
Density	g/cm ³	1.02-1.06	ISO 2114-1996
Acid Value	mgKOH/g	Max.9	ISO 2114-1996
Styrene Content	% weight	40 - 45	B070
Flash point	°C	32	ASTM D 3278-95
Colour	Hazen	40-70	ISO 2211-1973
Gel time: 2% BUTANOX M50	minutes	20-40	G020
Storage Stability from date of manufacture	month	1	G180

TYPICAL CLEAR CASTING PROPERTIES AT 23°C

Properties	Unit	Value	Test method
Tensile Strength	MPa	83	ISO 527-1993
Tensile Modulus	MPa	3470	ISO 527-1993
Tensile Elongation	%	4	ISO 527-1993
Flexural Strength	MPa	145	ISO 178-2001
Flexural Modulus	MPa	3540	ISO 178-2001
Heat Distortion Temperature	°C	111	ISO 75-1993
Hardness, Barcol 934-1, min.	-	40	ASTM D2583-99
Water Absorption (28 days)	%	0.55	ISO 62-1980

TYPICAL LAMINATE* PROPERTIES AT 23°C

Properties	Unit	Value	Test Method
Glass Content	%	33	-
Tensile Strength	MPa	84	ISO 527-1993
Tensile Modulus	MPa	12887	ISO 527-1993
Tensile Elongation	%	1.1	ISO 527-1993
Flexural Strength	MPa	150	ISO 178-2001
Flexural Modulus	MPa	7569	ISO 178-2001

* Laminate 4 x 450 g/m² CSM

GUIDELINES FOR S1706/13

This resin is sensitive to low temperatures and care must be taken to avoid less than minimum quantities of MEKP type catalysts. Minimum catalyst levels should never be lower than 1.0%. For applications at high ambient temperatures (30 - 35°C), the MEKP catalyst levels must still be maintained above the minimum recommendation to achieve optimum cure.

S1706/13 is pre-accelerated and only requires the addition of catalyst to start the curing reaction. The resin must be allowed to attain workshop temperature (25°C) before being formulated for use. The correct amount of catalyst is therefore added and thoroughly stirred into the resin shortly before use.

The ambient temperature and the amount of catalyst control the geltime of the resin formulation. S1706/13 is designed to cure with Butanox M50 at levels ranging between 1.5 -2.5phr. Butanox LPT may be used if longer gel times are required.

NOTE that S1706/13 is supplied pre-accelerated, however the geltime may drift longer with time. It is therefore very important that the geltime is checked and the appropriate level of catalyst is used to obtain the

geltime required. If there is any problem obtaining the correct geltime, please contact an NCS representative for advice on additional accelerator addition BEFORE using the product.

STORAGE

To ensure maximum stability and maintain optimum resin properties, resins should be stored in closed containers at temperatures below 24°C and away from heat ignition sources and sunlight. Resin should be warmed to at least 18°C prior to use in order to assure proper curing and handling. All storage areas and containers should conform to local fire and building codes. Copper or copper containing alloys should be avoided as containers. Store separate from oxidizing materials, peroxides and metal salts. Keep containers closed when not in use. Inventory levels should be kept to a reasonable minimum with first-in, first-out stock rotation.

Additional information on handling and storing unsaturated polyesters is available in NCS Resins application bulletin "Bulk Storage and Handling of Unsaturated Polyester Resins". For information on other NCS Resins resins or initiators, contact your sales representative or authorized NCS Resins distributor.

SAFETY

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

Obtain a copy of the material safety data sheet on this product prior to use. Material safety data sheets are available from your NCS Resins sales representative. Such information should be requested from suppliers of all products and understood prior to working with their materials.

DIRECTLY MIXING ANY ORGANIC PEROXIDE WITH A METAL SOAP, AMINE, OR OTHER POLYMERIZATION ACCELERATOR OR PROMOTER WILL RESULT IN VIOLENT DECOMPOSITION.

STANDARD PACKAGE

Non returnable metal drums.
Bulk supplies can be delivered by road tanker.

NCS RESINS BRANCHES AT:

JOHANNESBURG / DURBAN / CAPE TOWN / PORT ELIZABETH