

SYNOLITE™ 8388-P-1

CHEMICAL/PHYSICAL NATURE

Synolite™ 8388-P-1 is a low viscous, pre-accelerated, promoted, thixotropic, medium reactive DCPD polyester resin. An LSE system has been incorporated. Synolite™ 8388-P-1 does not contain monomeric amines.

MAJOR APPLICATIONS

Synolite™ 8388-P-1 has been especially developed for hand lay-up and spray-up applications to produce high performance constructional laminates.

PRINCIPAL PROPERTIES

Synolite™ 8388-P-1 combines good mechanical properties with optimal process ability. This resin shows very good fiber wetting and impregnation properties. Thick laminates can be made in one go due to the low exothermic heat development, good through cure and relatively low shrinkage. An optimized LSE system has been developed to get excellent Low Styrene Emission. A color change system is present for the benefit of spray-up applications. Synolite™ 8388-P-1 can be used with powder and emulsion bound mats.

APPROVALS

Synolite™ 8388-P-1 is found to comply with "Det Norske Veritas' (DNV) Tentative Rules for Classification and Classification of Boats 1997, Grade 2;
Det Norske Veritas' Rules for Classification of High Speed and Light Craft, Grade 2. Certificate No.: K-1720

PRODUCT SPECIFICATIONS UPON DELIVERY

Property	Range	Unit	TM
Appearance	Hazy	-	2265
Acid value, as such	16.5–23.5	mg KOH/g	2401
Viscosity, Physica, 2 s-1, 23°C	900 - 1200	mPa.s	2313
Viscosity, Physica, 20 s-1, 23°C	320 - 390	mPa.s	2313
Viscosity, Physica, 250 s-1, 23°C	200 - 230	mPa.s	2313
Solid content, IR	61 – 63	%	2033
Gel time from 25 to 35°C	22 – 26	minutes	2625
Cure time from 25°C to peak	40 – 50	minutes	2625
Peak temperature	95 - 125	°C	2625

REMARKS & CURING CONDITIONS

Viscosity measurement: TM 2313: spindle Z2, 23°C.
Curing conditions at 25°C, TM 2625:
2.0 g Butanox M-50 in 100 g resin.

PROPERTIES OF THE LIQUID RESIN (TYPICAL VALUES)

Property	Value	Unit	TM
Color on sight	blue	-	-
Density, 23°C	appr. 1100	kg/m ³	2160
Flash point	appr. 33	°C	2800
Shelf life, no init., dark, 25°C	6	months	-

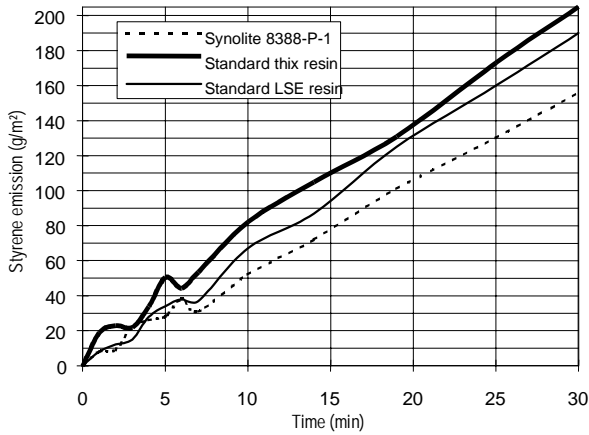
PROPERTIES OF CAST UNFILLED RESIN (TYPICAL VALUES)

Property	Value	Unit	TM
Tensile strength	70	MPa	ISO 527-2
Tensile E-modulus	3.7	GPa	ISO 527-2
Elongation at break	2.2	%	ISO 527-2
Flexural strength	125	MPa	ISO 178
Heat Deflection Temp. (HDT)	85	°C	ISO 75-Ae
Impact res. - unnotched sp.	18	kJ/m ²	ISO 179
Barcol hardness GYZJ 934-1	42	-	DIN EN 59
Density, 23°C	1170	kg/m ³	DIN 53479
Volume shrinkage	6	%	-

CURING CONDITIONS

Cured with 1% Butanox M-50. Post cured 24 hrs. at RT followed by 24 hrs. at 70°C.

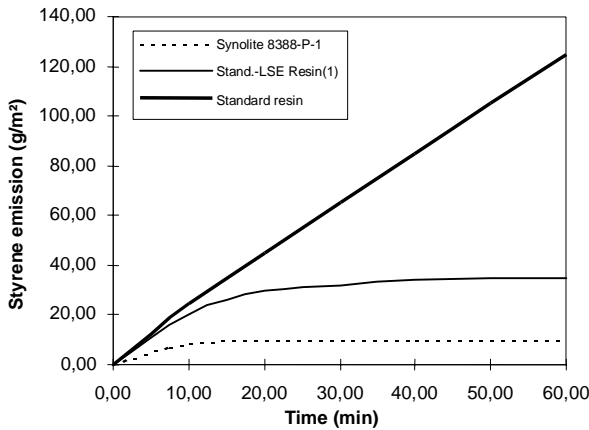
GRAPH SHOWING DYNAMIC STYRENE EMISSION



DYNAMIC STYRENE EMISSION TEST

This test is based on a preliminary test method developed to measure dynamic styrene emission. Emission is measured by an airflow of 0.4 m/s at 20°C while the surface of the resin is continuously disturbed. The description of this test method is available on request.

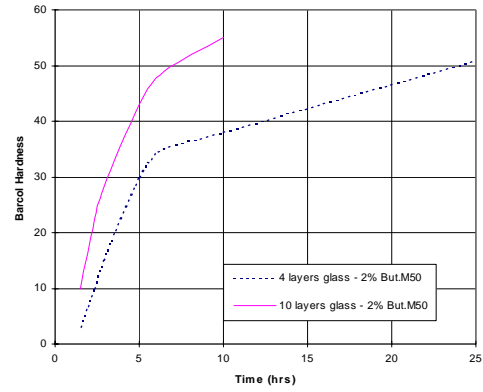
GRAPH SHOWING REDUCED STATIC STYRENE EMISSION



REMARKS

Measured in a stove at 23°C with certain ventilation, resins not initiated. The LSE system in Synolite™ 8388-P-1 is responsible for good low styrene emission properties. (1) = Synolite™ 0528-P-1

GRAPH SHOWING BARCOL HARDNESS DEVELOPMENT



THROUGH CURE

Due to the special accelerator system, the final through cure of the resin in thick and thin laminates is good. In both cases the Barcol hardness after 24 hours reaches the leaflets value. Of course, the cure speed is related to the added amount of peroxide and the laminate thickness; this also defines the trimming time within broad ranges.

Glass mat CSM 450 g/m² .

REMARKS ON CURING AGENTS

Butanox M-50 is an AKZO Nobel product, methyl ethyl ketone peroxide (MEKP).

PROCESSING

Synolite™ 8388-P-1 contains barrier forming agents to reduce emission of styrene. These agents may reduce the bonding strength of over laminates. Good strength can be obtained with over laminating of the base laminate after delayed lay-up if the surface is not too resin rich. In other cases the surface might need sanding.

GUIDELINES BEFORE USE

The resin should be conditioned at 15°C minimum before use to obtain a sufficient cure when MEKP is used as a curing system. Stir the resin mechanically before use. Do not use air bubbles to stir the resin.



STORAGE GUIDELINES

The resin should be stored indoors in the original, unopened and undamaged packaging, in a dry place at temperatures between 5°C and 30°C and the properties might change during storage. Shelf life is reduced at higher temperatures and the properties of the resin might change during storage. The shelf life of styrene containing unsaturated polyesters will be significantly reduced when exposed to light. Store in dark and in 100%light tight containers only.

MATERIAL SAFETY

A Material Safety Data Sheet of this product is available on request.

TEST METHODS

Test methods (TM) referred to in the table(s) are available on request.

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