

Chemical/physical nature

Synolite 8388-P-2 is a low viscous, pre-accelerated, promoted, thixotropic, medium reactive DCPD polyester resin. An LSE system has been incorporated. Synolite 8388-P-2 does not contain monomeric amines.

Major applications

Synolite 8388-P-2 has been especially developed for hand lay-up and spray-up applications to produce high performance constructional laminates.

Principal properties

Synolite 8388-P-2 combines good mechanical properties with optimal processability. This resin shows very good fibre 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 colour change system is present for the benefit of spray-up applications. Synolite 8388-P-2 can be used with powder and emulsion bound mats.

Product specifications

Specification	Range	Unit	TM
Appearance	hazy	-	2265
Acid value, as such	13 - 22	mg KOH/g	2401
Viscosity, Physica, 2 s ⁻¹ , 23°C	800 - 1150	mPa.s	2313
Viscosity, Physica, 20 s ⁻¹ , 23°C	300 - 370	mPa.s	2313
Viscosity, Physica, 250 s ⁻¹ , 23°C	200 - 230	mPa.s	2313
Solids content, IR	61 - 63	%	2033
Gel time from 25 to 35°C	32 - 36	minutes	2625
Cure time from 25°C to peak	48 - 62	minutes	2625
Peak temperature	90 - 120	°C	2625

Curing conditions & remarks

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 upon delivery (typical values)

Property	Value	Unit	TM
Colour 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	-

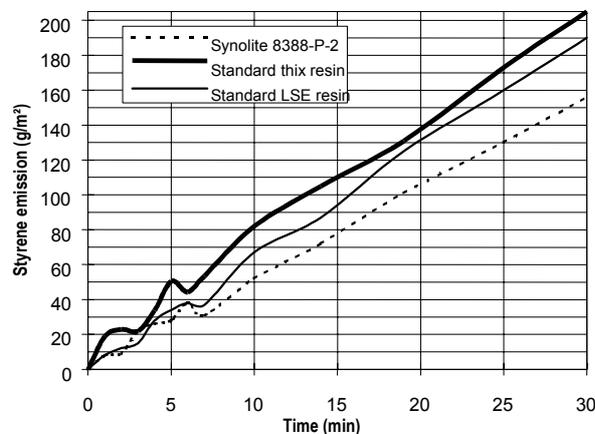
Properties of cast unfilled resin (typical values)

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. Postcured 24 hrs at RT followed by 24 hrs 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.

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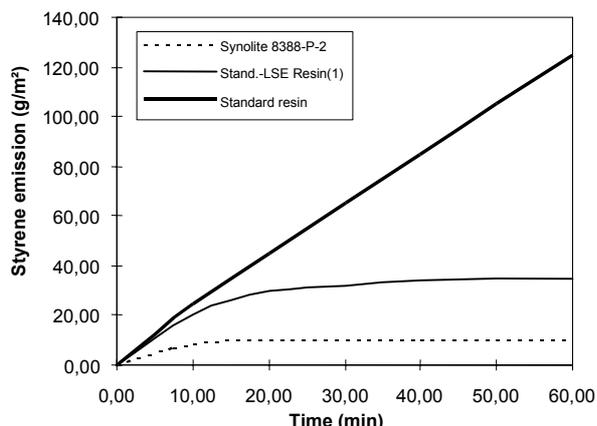
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Graph showing reduced static styrene emission

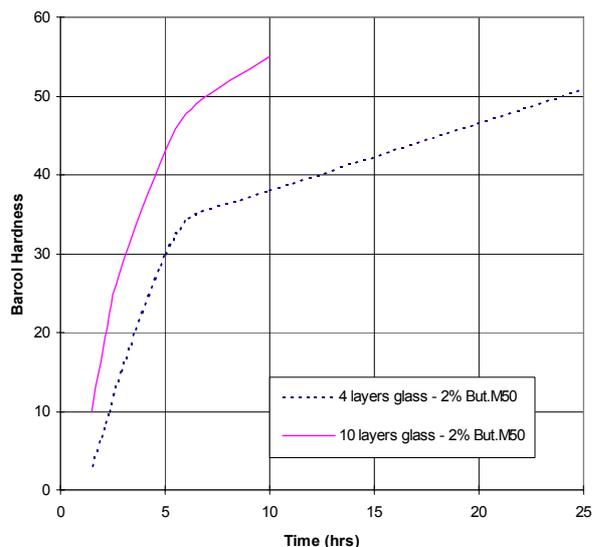


Remarks

Measured in a stove at 23°C with certain ventilation, resins not initiated. The LSE system in Synolite 8388-P-2 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 .

Processing

Synolite 8388-P-2 contains barrier forming agents to reduce emission of styrene. These agents may reduce the bonding strength of overlaminates. Good strength can be obtained with overlaminating of the base laminate after delayed lay-up if the surface is not too resin rich. In other cases the surface might need sanding.

Remarks on curing agents

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

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 before use.

Storage guidelines

The resin should be stored in a dark and dry place at temperatures between 5°C and 25°C. 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. From DCPD resins it is known that skin formation occurs when exposed to air ventilation or replacement from the original packaging.

Material Safety

A material safety data sheet for the product is available on request.

Test methods

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

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