Synolite™ 5690-P-1

High quality Hand lay-up resin with Low Styrene Emission capability

Synolite™ 5690-P-1 is a versatile Ortho resin for Hand lay-up and Spray-up processes with Low Styrene Emission (LSE) system.

The high HDT and enhanced chemical resistance make the resin is particularly suited for Marine applications. Synolite™ 5690-P-1 is Lloyd's Register approved.

The resin is also well suited for making tanks and pipes.

Benefits

- Easy and robust processing
- Can be used both for making thick and thin laminates
- Enhanced chemical resistance for Marine
- DNV and Lloyd's certified
- Reduced Styrene emissions compared to equivalent competitive Ortho resins

Major Applications

Synolite™ 5690-P-1 resin is well suited for hand lay-up and spray techniques, and best for the production of thin laminates (< 5 mm).

The resin readily impregnates the reinforcing materials during lay-up and does not run off inclined from laminates. An outstanding feature of Synolite™ 5690-P-1 is its low level of styrene emission and as a consequence reduced exposure of styrene in the workshop.

Certifications and Approvals

Cured unreinforced Synolite™ 5690-P-1 resin conforms to type 1140 according to DIN 16946/2 and is classified in group 1 according to DIN 18820/1. The resin is approved by DNV-GL and Lloyd´s Register for use in boat building.

Product Specifications

Property	Value	Unit	TM
Solids content	56 - 60	%	TM 2033
Viscosity 23 °C, 2 s^{-1}	900 - 1300	mPa.s	TM 2313
Viscosity 23 °C, 20 s^{-1}	330 - 430	mPa.s	TM 2313
Viscosity 23 °C, 250 s^{-1}	230 - 260	mPa.s	TM 2313
Gel time 25 until 35 °C	22 - 28	min	TM 2625
Peak time	32 - 40	min	TM 2625
Peak temperature	150 - 180	℃	TM 2625

Viscosity: Physica Z2/23°C. Reactivity determined with 1.5 g Medium reactive Methyl Ethyl Ketone Peroxide (MEKP) added to 100 g resin.

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Liquid			
Property	Value	Unit	TM
Density 20 °C	1100	kg/m³	TM 2160
Flash point	33	°C	TM 2800
Stability (Solid, dark, 25 °C)	3	month	

Solid Unfilled			
Property	Value	Unit	TM
Tensile strength	75	MPa	ISO 527-2
Tensile modulus	3.8	GPa	ISO 527-2
Elongation at break	3.4	%	ISO 527-2
Flexural strength	115	MPa	ISO 178
Flexural E-Modulus	3.7	GPa	ISO 178
Outer fiber strain	4.3	%	ISO 178
HDT	90	°C	ISO 75A
Impact strength	12	kJ/m²	ISO 179
Tg	125	°C	DIN 53445

Mechanical properties determined on resin not containing thixotropic agent. Cured with 1 ml high reactive Methyl Ethyl Ketone Peroxide (MEKP) added to 100 g resin. Cured 24 h at room temperature and post cured 24 h at 80 °C.

Application Guidelines

Synolite™ 5690-P-1 resin contains barrier-forming agents to reduce the emission of styrene. These agents may reduce the bonding strength of over laminates. Good strength can be obtained with over lamination of the base laminate within 24 hours, if the surface is not too resin rich. In other cases, the surface might need sanding.

Synolite™ 5690-P-1 resin normally exhibits tack-free cure. Nevertheless, the surface may not be cured completely. To ensure complete cure of surfaces exposed to air, suitable additives (e.g. a paraffin solution) should be added. The final state of cure may be optimized by post curing at elevated temperatures (e.g. 80 °C) for several hours.

Before use, the resin should be conditioned at a well-defined application dependent temperature (usually 15 °C minimum for a MEKP / Cobalt cure). Stir the resin well before use.

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.

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Test Methods

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

ISO 9001:2015 Certified

The Quality Management Systems at every AOC manufacturing facility have been certified as meeting ISO 9001:2015 standards. This certification recognizes that each AOC facility has an internationally accepted model in place for managing and assuring quality. We follow the practices set forth in this model to add value to the resins we make for our customers.

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Contact us for more information

We will help you to choose the right resin solution.

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