Product Data Sheet

Atlac 590

Chemical/physical nature

Atlac 590 is an epoxy novolac based vinyl ester, dissolved in styrene.

Performance

Atlac 590 provides excellent thermal and chemical resistance against solvents, acids and oxidizing media like chlorine. The resin offers high retention of strength at elevated temperatures.

Major applications

Atlac 590 can be used in all fabrication methods, but is especially adapted to meet the requirements of filament winding, centrifugal casting, hand lay-up and spray-up applications. Atlac 590 may also be used to formulate glassflake coatings and mortars.

Approvals

Cured non-reinforced Atlac 590 conforms to type 1310 according to DIN 16946/2 and is classified group 5 according to DIN 18820/1 and group 8 according EN12131/2.

A KIWA approval (BRL-K 541/01) was achieved for underground petrol storage tanks.

Atlac 590 passed testing at TÜV for use in flue gas cleaning plants.

Product specifications upon delivery

Property	Range	Unit	TM
Viscosity, 23°C	208 - 282	mPa.s	2013
Epoxy equivalent	8000 - 12000	WPE	2051
Solids content, IR	61.5 - 64.5	%	2033
Appearance	clear	-	2265
Acid value, as such	6 - 13	mg KOH/g	2401
Gel time from 25 to 35°C	21.4 - 27.6	minutes	2625
Cure time from 25°C to peak	26.4 - 35.7	minutes	2625
Peak temperature	144 - 176	°C	2625

Remarks
TM2013: Z2/ 100 s^{-1} /23°C
TM2625: 3.0 g Accelerator NL49P and 2.0 g Butanox M50 (both AKZO Nobel) added to 100 g resin.

Properties of the liquid resin (typical values)

Property	Value	Unit	TM
Density, 25°C	1.080	kg/m³	2160
Flash point	33	°C	2800
Stability, no init., dark, 25°C	6	months	-

Properties of cast unfilled resin (typical values)

Property	Value	Unit	TM
Glass transition temp. (Tg)	150	°C	DIN 53445
Tensile strength	90	MPa	ISO 527-2
Tensile E-modulus	3.5	GPa	ISO 527-2
Elongation at break	4.0	%	ISO 527-2
Flexural strength	155	MPa	ISO 178
Flexural E-Modulus	3.6	GPa	ISO 178
Heat Deflection Temp. (HDT)	140	°C	ISO 75-A
Impact res. - unnotched sp.	13	kJ/m²	ISO 179
Hardness	45	Barcol	2604
Water absorption at 23°C	1.0	%	ISO 175
Water absorption at 100°C	1.6	%	ISO 175

Properties of glass reinforced resin (typical values)

Property	Value	Unit	TM
Glass content	34	%	-
Tensile strength	111	MPa	ISO 527-2
Tensile E-modulus	10.1	GPa	ISO 527-2
Flexural strength	208	MPa	ISO 178
Flexural E-Modulus	9.8	GPa	ISO 178
Impact res. - unnotched sp.	115	kJ/m²	ISO 179
Hardness	50 - 60	Barcol	2604
Coefficient of linear expansion 20-100°C	30x10-6	C-1	ASTM D696
Glass transition temp. (Tg)	155	°C	DIN 53445
Thermal conductivity	0.19	W/m.K	DIN 52612

Curing conditions
The curing characteristics are obtained using
1. all properties were determined at 20°C unless specified otherwise
2. 0.3% NL51P and 1% Butanox M-50
3. Cure schedule: 24 hrs at 20°C followed by 3 hrs at 100°C and 1 hr at 150°C
4. Glass mat used O.C.F. M710, Vetrotex M 113

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Remarks on curing agents
Butanox M-50 (Methyl ethyl ketones peroxide 50%) and NL 51P (Cobalt octoate, 6% solution) are AKZO NOBEL products

Guidelines before use
Before use, the resin should be conditioned at a well defined, application dependant temperature (usually 15°C minimum for a MEKP / Co cure). Stir the product before blending.

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. 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 for the product is available on request.

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

Date of issue: May 12 Version: 002126/5.0

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