

Description and Basic Properties

ES-2144-2 is an orthophthalic based unsaturated polyester resin. General purpose applications glass reinforced (GRP) hand-up and spray-up are used. Because of the low deformation and thixotropy when it is applied to vertical surfaces there will be no flowing and hanging and provides homogenous final product. It is used in automotive sector, production of tractor and heavy-duty vehicle cabins, prefabricated buildings, modular cabins also it is optimized for marine applications such as yacht, boats and catamarans. Available with cobalt, without cobalt and low styrene emission.

Application Methods	Chemical Structure
Hand lay-up Spray-up	Acid : Orthophthalic Acceleration : Yes

Properties of Liquid Form

	Unit	Value	Method
Appearance	-	Cloudy, purplish	-
Viscosity¹	cp	1300 ± 300 (5 rpm)	ISO 2555
		600 ± 200 (50 rpm)	
Monomer Content	%	36 ± 3	ISO 3251
Density	g/cm ³	1.15 ± 0.02	ISO 1675
Gel Time²	min	20 ± 5	ISO 2535
Peak Exotherm²	° C	140 ± 10	ISO 584
Shelf Life	month	3	-
¹ Brookfield DV II, 25° C, 2 spd ² 25° C, 1 ml MEK-P (Butanox M50) for 100 g sample			

Mechanical Properties of Cured Resin

	Unit	Value ¹	Method
Tensile Strength	MPa	60 ± 5	ASTM D638
Tensile E-Modulus	GPa	3.2 ± 0.4	ASTM D638
Strain at Fracture	%	4.0 ± 0.4	ASTM D638
Elongation at Break	%	3.0 ± 0.3	ASTM D638
Flexural Strength	MPa	100 ± 10	ASTM D790
Flexural E-Modulus	GPa	3.2 ± 0.4	ASTM D790
Heat Deflection Temperature (HDT)²	° C	50 ± 5	ISO 75 A
Barcol Hardness	Barcol	40 ± 5	ASTM D2583
Impact Strength	Kj/m ²	8 ± 2	ISO 180
¹ For fully cured resin, curing Schedule – 24 hrs at 20° C, 4 hrs at 90° C ² Curing Schedule – 24 hrs at 20° C, 4 hrs at 90° C, 3 hrs at 120° C			

Storage Conditions

It should be stored in a dry, clean and cool place (15-25 ° C) in closed packages. The shelf life of the product is valid for this temperature range and it should not be forgotten that it will shorten at high temperatures. Products with the same charge number and date must be stored together.

Another factor that affects the life of unsaturated polyester resins containing styrene is sunlight. Styrene must be polymerized in the sunlight and products that are considered to shorten the life of the product should be avoided from direct sunlight contact.

More Information

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