



THE COMPLETE RANGE OF
UPR RESINS

HIGH QUALITY UNSATURATED POLYESTER



LOXAPAL & LOXA FIREQUARD

Unsaturated polyester resins are utilized in numerous high volume applications that touch our everyday lives.

TECHNOLOGIES FOR A SECURE FUTURE



UPR polyester resins, are a group of thermosetting synthetic resins, which are poly condensation products of dicarboxylic acids with dihydroxy alcohol's, used along with Fibre Glass Mats for production of FRP Components which are durable and outstanding in mechanical, electrical and chemical properties.

UPR are used in automobiles, wood coatings, encapsulation of electrical equipment, protective coatings, piping, roof sheeting, bathtubs, boat hulls, chemical industries and electrical industries.

The applications of the unsaturated polyester resin are varied. The polyester resins in fact represent one of the absolute compounds used in a wide range of industries.



The most important, as well as those illustrated above, are:

- General purpose
- Polymer concrete
- Sanitary ware products
- Chemical, heat & corrosion resistant
- Marine & swimming pool
- Tanks, pipes & pipe relining putty
- Chemical anchoring resistant
- Pultrusion
- RTM & related processes
- Infusion
- SMC-BMC press moulding
- Panels & sheets
- Low profile additives
- Gel coats
- Tooling
- Bonding paste
- Cleaning agents
- Fire retardant
- Styrene free UPR

LOXA-RAPID A 200

N,N-Di-(2-hydroxy-propyl)-p-toluidine polymer

Used as an accelerator for curing of unsaturated polyester and PMMA resins.

Technical Data:

Appearance:	clear brown liquid
Density:	approx. 1,10 g/cm ³
Acid Value:	approx. 3 – 6 ; mgKOH/g
Curing time:	8 – 12 min.
Storage Temperature:	max. 20 °C
Viscosity at 25°C:	20 – 30 mPa.s
Color:	max. 8

Gel times and cure times of a standard polyester resin cured with 2 wt.-% dibenzyl peroxide

Application and Properties:

High reactivity LOXA-RAPID amine polymeric accelerator A 200 is recommended in combination with dibenzoyl peroxide for cold-curing of unsaturated polyester resins, vinyl copolymer resins even around 0 °C at room temperature or slightly elevated temperatures.

The shortest curing times for the system dibenzoyl peroxide / amine accelerator will be obtained at room temperature with excellent properties. This system is preferred in case short demoulding times are required, e.g. for cold pressing.

LOXA-RAPID amine accelerators and dibenzyl peroxide are used for curing of car putties, polyester concrete and final parts made from glass fiber reinforced polyester resin which are produced by hand lay-up, fiber spray-up, cold pressing or filament winding.



Styrene-free resins: More than emissions reduction

Styrene-free LOXAPAL FR: We offers resin systems that meet and exceed customer expectations of application properties, environmental compliance and end use performance. Introduction of new 'green' resins based on Low VOC and/or styrene free systems in combination with high performance properties shows the dedication of LOXAMER's commitment to development of environmentally friendly products

LOXAPAL STF 800 is halogenated highly flexible resin (e.g. for roofing applications), not preaccelerated, as a styrene free version.

Optimal safety: LOXAPAL FR – fire protection with a system in producing composite materials, it is important to achieve the desired component properties and economic efficiency – while complying with fire protection regulations too.

In all systems that use glass fibre reinforced plastics, LOXAPAL FR converts the GRP composite material into a flame-retardant material and the GRP casing into a fire barrier.



LOXAPAL-Resin: Unsaturated polyester resin UPR

PRODUCTS	Characteristics	Nonvolatile Content [%]	Viscosity [mPa.s]/ 23 °C	Gel Time [min]	Peak Exotherm [°C]	Application
C-910	C-910 is a high reactivity and high solid unsaturated orthophthalic acid polyester resin with good heat resistance.	64 - 68	1.400 - 1.600	12 - 24	180 - 200	SMC / BMC
C-915	C-915 is a medium viscosity, high reactive Iso-phthalic polyester resin containing styrene monomer.	69 - 73	1.000 - 1.300	12 - 24	190 - 220	SMC / BMC
C-920	C-920 is a high reactivity and high solid unsaturated orthophthalic acid polyester resin with good heat resistance.	69 - 73	2.300 - 2.700	12 - 24	190 - 220	SMC / BMC
C-925	C-925 is a medium viscosity, medium reactive Iso-phthalic polyester resin containing styrene monomer.	56 - 60	600 - 900	10 - 15	190 - 210	Hand or spray-up for high heat and/or chemical and/or corrosion resistance application.
FIERQUARD F-535	HET-acid resin, high dimensional stability at elevated temperature, good resistance to chemicals, fire retardant. Transparent moulded parts correspond to type 1130 in accordance with DIN 16946, part 2.	73 - 77	2.500 - 3.000	9 - 15	65 - 90	Flame retardant F-5335 resin is rather used in automotive, rail systems, marine vessels, containers, architectural and conduit boxes.
P-945	P-945 is amine-accelerated unsaturated polyester resin of high reactivity which is cold-curing, even around 0 °C, and yields polymers of medium flexibility.	63.5 - 66.5	500 - 650	5 - 15	80 - 95	Binder for highly filled, coarse and fine knifing fillers for use on metal, wood and mineral substrates.
P-958	P-958 is an amine-accelerated unsaturated polyester resin which is cold curing, even around 0 °C, and yields polymers of medium hardness. It is used as a binder for highly filled, coarse and fine knifing fillers for use on metal, wood and mineral substrates. Because of the high reactivity of this product, fillers based on this product achieve early dry sandability, especially with sanding machines.	60.5 - 63.5	500 - 550	10 - 16	135 - 165	Surfacers, fillers and putties.
W-950	W-950 is a reactive, direct glossy unsaturated polyester resin (wax-free).	75 - 77	1.600 - 2.000	10 - 12	70 - 80	For clear and pigmented, wax-free coatings for wood and furniture.
P-956	P-956 is a medium-viscosity unsaturated polyester resin with high reactivity, which is pre-accelerated using a polymeric amine to give fast curing with benzoyl-peroxide. It also has very good elasticity properties.	61 - 63	350 - 450	10 - 15	85 - 100	Surfacers, fillers and putties.
C-960	C-960 is a high viscosity, medium reactive, orthophthalic polyester resin containing styrene monomer.	67 - 72	1.100 - 1.400	7 - 9	180 - 195	For hot press moulding & SMC applications, using this reactive & high HDT resin.
P-962	P-962 is a medium-viscosity unsaturated polyester resin with high reactivity, which is pre-accelerated.	68 - 70	750 - 950	8 - 12	100 - 120	Surfacers, fillers and putties.

LOXAPAL-Resin: Unsaturated polyester resin UPR

PRODUCTS	Characteristics	Nonvolatile Content [%]	Viscosity [mPa.s]/ 23 °C	Gel Time [min]	Peak Exotherm [°C]	Application
C-975	C-975 is a medium viscosity, high reactive Iso-phthalic polyester resin containing styrene monomer. C-975 is designed to offer high impact resistance as well as excellent heat and chemical resistance.	64 - 67	1.000 -1.400	120 - 150	250 - 280	SMC / BMC
E-937	E-937 is a very high flexible reactivity unsaturated polyester resin.	64 - 67	800 - 1.100	10 - 20	140 - 160	As a flexibilising resin.
E-938	Highly flexible, unsaturated paraffin-wax polyester resin. E-938 is a medium-viscosity, low reactive unsaturated polyester resin based on adipic acid and standard glycols which after curing is characterised by a high level of flexibility.	72 - 74	800 -1.200	10 - 30	25 - 35	For elasticising fine coats, gel coats and top coats.
G-939	Highly reactive, unsaturated polyester resin based on isophthalic acid and NPG which after curing gives products with good thermal and mechanical properties and is suitable for almost any conventional type of processing.	60 - 64	800 - 1.200	10 - 20	165 - 195	GRP mouldings by the hand and spray lay-up processes, gel coats.
G-963	G-963 is a medium viscosity; flexible Ortho-phthalic resin designed for general-purpose hand lay up applications. G-963 is a medium reactive resin and offers a moderate chemical resistance.	64 - 66	500 - 600	10 - 15	145 - 165	Hand or spray-up for high heat resistance
G-960	G-960 is a low viscosity, medium reactive Orthophthalic polyester resin used for manufacturing of composites parts, such as corrugated sheets, pipes, green houses and structural panels.	60 - 64	300 - 500	10 - 20	135 - 150	General Purpose
M-973	M-973 is a pre accelerated, low reactive polyester Orthophthalic synthetic marble resin. M-963 is designed to provide controlled shrinkage and moderate curing rate. It gives low exotherm suitable for thick cast. The designed viscosity of M-973 allows high filler loading at high solids.	64 - 68	500 - 800	10 - 20	150 - 170	Synthetic marbles and sanitary products
M-964	M-964 is a low reactive polyester synthetic marble resin. M-964 is designed to provide controlled shrinkage and moderate curing rate. It gives low exotherm suitable for thick cast. The designed viscosity of M-964 allows high filler loading at high solids.	60 - 63	300 - 400	23 - 35	140 - 160	Synthetic marbles and sanitary products, bathroom vanity tops.

LOXAPAL-Resin / FIREQUARD FR: Unsaturated polyester resin UPR

PRODUCTS	Characteristics	Nonvolatile Content [%]	Viscosity [mPa.s]/ 23 °C	Gel Time [min]	Peak Exotherm [°C]	Application
R-965	R-965 is a low viscosity, medium reactive Orthophthalic polyester resin having good mechanical properties. R-965 is designed specially for RTM based moulding and it offers a good chemical resistance.	56 - 61	200 - 300	10 - 15	190 - 210	RTM process, injection.
B-963	B-963 is a medium viscosity, medium reactive Iso-phthalic polyester resin containing styrene monomer. B-963 is designed to offer high impact resistance as well as excellent heat and chemical resistance.	56 - 60	600 - 900	10 - 15	190 - 210	Hand or spray-up for high heat and or chemical and or corrosion resistance application.
C-966	C-966 is a high viscosity, medium reactive, orthophthalic polyester resin containing styrene monomer. C-966 is designed to offer moderate chemical resistance.	68 - 72	1.100 - 1.400	7 - 9	180 - 200	Hot press moulding & SMC.
G-969	G-969 is a low viscosity, medium reactive Orthophthalic polyester resin having good mechanical properties.	60 - 63	300 - 500	14 - 25	135 - 145	For manufacturing of composites parts, such as corrugated sheets, pipes, green houses and structural panels.
FIREQUARD S-3340	Halogenated, highly, flexible resin for eg. roofing applications, not pre-accelerated. Also available as a styrene free version (788-0842).	63 - 65	not derminated		HDT [°C] 35	ISO-UPR, flame retardant for roofing application
FIREQUARD S-3342	Styren-free, halogen-free, highly, flexible resin for eg. roofing applications, not pre-accelerated. Also available as a styrene free version (788-0842).	54 - 57	2.500 - 3.500	14 - 20	135 - 145	ISO-UPR, styrene-free, flame retardant
FIREQUARD N-3314	An unfilled, unsaturated polyester resin dissolved in styrene. The resin is halogenated, moderately reactive and non-thixotropic, for the production of flame resistant, translucent sheets and can be processed by machine as well by hand.	64.5 - 67.5	200 - 220	17 - 23	135 - 165	Halogenated , DCPD based, fire retardant
FIREQUARD N-3313	An unfilled, halogenated, unsaturated polyester resin in styrene. It is a non-thixotropic, medium reactive fire retardant resin, designed for the retardant translucent sheeting manufacturer and it is suitable for automated machine or hand-lay-up processes. N-3313 allows high light transmission in cured laminates, good environmental resistance and it is light stabilized. It has low viscosity for rapid wetting of glass fibre and rapid cure suitable for machine laminating.	61.5 - 66.5	182 - 214	19 - 25	135 - 165	Halogenated , fire retardant



FIREQUARD



PRODUCTS WITH PRESPECTIVE



VARENA CHEMICAL is a global company in the intermediates, coating, adhesives, inks and composite and solid surface resins, thermoset compounds, gel-coats and niche specialties and specialty additives for coatings and inks.

VARENA CHEMICAL is known for its superior quality and impressive range of products and with its excellent distribution network it can provide first-class service to customers whatever their market. Customer Service and Technical Service teams are renowned for their customer focus, offering the best service even after products have left manufacturing.

The group strives to keep customers satisfied, assisting them in producing premium quality products every time they use its products.



Product innovation is important for the group's business and it's the reason for which it constantly works with customers to find solutions to problems.

Introducing new or improved products ensures that VARENA CHEMICAL continue not only to deliver what the market wants and needs, but also when it is wanted and needed.



THE SPECIALITY SUPPLIER FOR SOLID SURFACE RESINS