

CRYSTIC[®] 3642.3

Versatile High Performance Unsaturated Polyester Resin

Introduction

Crystic 3642.3 is a non thixotropic, non accelerated, orthophthalic unsaturated polyester resin with good mechanical properties.

Application

Crystic 3642.3 can be used by spray or by filament winding but also by hand lay up. The resin can be used in many applications but its high performance makes it particularly suitable for the production of oil tanks and also for direct bonding on sanitary acrylic.

Features and Benefits

Features	Benefits
Low viscosity	Rapid and easy impregnation
Direct bonding on acrylic	No primer needed Cost savings
Medium reactivity	Rapid hardening even on thin laminates
Medium to high HDT	Suitable for many applications
Good chemical resistance	Suitable for oil tanks production

Approvals

Crystic 3642.3 has the SKZ approval for the production of oil tanks.

Variants

Crystic 3642.9 is a high solid content version.
Crystic 3642 3Y is a variant version with internal release agent.

Formulation

The following cold curing formulation is recommended:

Crystic 3642.3	:	100 parts
Catalyst M	:	1 to 2 parts
Accelerator E	:	2.5 to 7 parts

Catalyst M is a Methyl Ethyl Ketone Peroxide at 50% such as the Butanox M50 from AKZO. Accelerator E is a cobalt octoate at 0.4 % active cobalt.

Catalyst and accelerator should not be mixed directly together as they will react with explosive violence.

Gel time

The ambient temperature, the quantity and the type of catalyst and accelerator will control the gel time of the resin. The following table shows the gel time in minutes at 20°C of 100 parts of Crystic 3642.3.

Parts of Catalyst M	Parts of Accelerator E		
	2.5	4	7
1	21 minutes	14 minutes	9 minutes
2	15 minutes	11 minutes	7 minutes

Curing should not be carried out at temperatures below 15°C.

The reactivity of CRYSTIC 3642.3 according to the SPI test (NF T 51022) is as follows:

Gel time	4'30 +/- 30''
Time to pic	7' +/- 30''
Pic exotherm temperature	220°C +/- 5°C

Additives

Since certain pigments, fillers or extra styrene may affect the properties of Crystic 3642.3 their effect should be evaluated before addition to the formulation.

Post-Curing

For most applications satisfactory results will be obtained by curing at room temperature (20°C). Some improvement in properties may be obtained by post-curing 16 hours at 40°C after release from the mould.

Typical Properties

The following tables give typical properties of Crystic 3642.3 when tested in accordance with BS 2782.

Property		Liquid 3642.3	Liquid 3642.9
Aspect		Clear yellow	Clear yellow
Viscosity at 25°C Rhéomat at 37,35 sec ⁻¹	dPas	2 - 3	6.5 – 7.5
Specific Gravity at 25°C		1.1	1.1
Volatile Content	%	38 - 42	31 - 35
Acid value	mg KOH/g	22 - 25	22 - 25
Stability at 20°C	months	6	6
Geltime at 20°C using 1% Catalyst M and 2.5% Accelerator E	minutes	18 - 23	18 - 23

Test according to BS 2782: 1980

Property		Fully cured* Resin
Barcol Hardness (Model GYZJ 934-1)		45
Deflection Temperature under load † (1.80 MPa)	°C	75
Water Absorption 24 hrs at 23°C	mg	15
Tensile Strength	MPa	70
Tensile Modulus	MPa	3200
Elongation at Break	%	2.0
Flexural Strength	MPa	65
Flexural Modulus	MPa	4000
Specific Gravity at 25°C		1.2

*Curing schedule - 24 hrs at 20°C, 3 hrs at 80°C

†Curing schedule - 24 hrs at 20°C, 5 hrs at 80°C, 3 hrs at 120°C

Storage

Crystic 3642.3 should be stored under cover in the dark within the container it is supplied. It is recommended that the storage temperature should not exceed 20°C.

Packaging

Crystic 3642.3 is supplied in 225kg and 1100kg containers. Bulk supplies can be delivered by road tanker.

Health & Safety

Please see separate Material Safety Data Sheet.

Version 2 : February 2013

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