CRYSTIC® 2-446PA

Introduction
Crystic 2-446PA is a pre-accelerated, thixotropic, polyester resin with low styrene emission. Its rapid wet-out, low exotherm and fast hardening characteristics make it ideal for both hand lay and spray applications. Variants giving a range of geltimes and viscosities are also available.

Approvals
Crystic 2-446PA and it's variants are approved by Lloyd's Register of Shipping for use in the construction of craft under their survey.

Formulation
Crystic 2-446PA and its variants should be allowed to attain workshop temperature (18ºC - 20ºC) before use. They need only the addition of a catalyst to start the curing reaction. A colour change mechanism is incorporated into Crystic 2-446PA and its variants, to indicate the presence of catalyst. After catalyst addition, the resins will change from blue to green, then to a yellowish colour, before gelation. The recommended catalyst is Catalyst M (or Butanox M50) which should be added at 1% or 2% into the resin. The geltime of Crystic 2-446PA can be approximately determined from the table below

Pot Life

Table 1 - Catalyst M (or Butanox M50)

Parts of Catalyst M to 100 parts of Crystic 2-446PA	**1.0**	**2.0**
Pot life in minutes at 15ºC	62	41
Pot life in minutes at 20ºC	39	29
Pot life in minutes at 25ºC	25	20

The mould, resin and workshop should be at, or above, 15ºC before curing is carried out.

Additives
Certain pigments, fillers or extra styrene may adversely affect the spraying and final properties of Crystic 2-446PA and its variants. Any additions should therefore be evaluated before any large scale use.

Post Curing
Satisfactory laminates for many applications can be made from Crystic 2-446PA and its variants, by curing at workshop temperature (20ºC). Some increase in properties may be obtained by post curing. The laminates should be allowed to cure for 24 hours at 20ºC, and then be oven cured for 16 hours at 40ºC.

Typical Properties
The following tables give typical properties of Crystic 2-446PA and its variants when tested in accordance with BS 2782.

Property		Liquid Resin				
		Crystic 2-446PA	Crystic 2-446PALV	Crystic 2-446MPALV	Crystic 2-446SPALV	Crystic 2-446HPALV
Viscosity at 25ºC Ferranti shear rate 37.35 sec[1]	poise	4.0	3.0	3.0	3.0	3.0
Ferranti shear rate 4.500 sec[1]	poise	2.2	1.7	1.7	1.7	1.7
Specific Gravity at 25ºC		1.10	1.10	1.10	1.10	1.10
Acid Value	mg KOH/g	17	23	23	16	23
Volatile Content	%	41	42	42	43	42
Appearance		Bluish	Bluish	Bluish	Bluish	Bluish
Stability from date of manufacture when stored in accordance with storage recommendations	months	6	6	6	6	6
Geltime at 25ºC using Resin 100 pbw Catalyst M I pbw	minutes	25	25	42	18	42

Property		Fully Cured* Resin (unfilled casting)
Barcol Hardness (Model GYZJ 934-1)		42
Deflection Temperature under load † (1.80 MPa)	ºC	67
Water Absorption 24 hours at 23ºC	mg	15
Tensile Strength	MPa	50
Tensile Modulus	MPa	3800
Elongation at Break	%	1.5
Specific Gravity at 25ºC		1.20
Volumetric Shrinkage	%	8.3

* Curing Schedule - 24 hrs at 20ºC, 3 hrs at 80ºC
† Curing Schedule - 24 hrs at 20ºC, 5 hrs at 80ºC, 3 hrs at 120ºC

Property		C.S.M** Laminate
Glass Content	%	28
Tensile Strength	MPa	98
Tensile Modulus	MPa	7600
Elongation at Break	%	1.7
Flexural Strength	MPa	190
Flexural Modulus	MPa	7400

** Made with 4 layers 450g/m^2 PB CSM
Curing schedule - 24hrs at 20ºC, 16hrs at 40ºC

Storage
Crystic 2.446PA & variants should be stored between 5°C and 25°C in the original, unopened container in a dry, well ventilated place. Protect from freezing and direct sunlight. Avoid contact with oxidising agents. If stored outside of these recommendations, shelf life will be significantly reduced.

Packaging
Crystic 2-446PA is supplied in 25kg and 225kg & 1100kg containers. Bulk supplies can be delivered by road tanker.

Health & Safety
Please see separate Material Safety Data Sheet.

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