

CRYSTIC[®] 921

Polyester resin for Polymer Concrete Castings

INTRODUCTION

Crystic[®] 921 is an un-accelerated, orthophthalic unsaturated polyester resin with a low viscosity to accept the maximum level of filler particles.

APPLICATIONS

Crystic[®] 921 has been developed specifically for polymer concrete. A lower viscosity, thixotropic version is available, Crystic[®] 921PALV. This is suitable for pigmented castings filled to a low level, or not at all.

FEATURES AND BENEFITS

- Suitable for both mechanical and hand mixing processes.
- Exhibits excellent wetting of filler particles to achieve the required filler loadings.
- Finished castings have excellent painting and staining properties.

FORMULATION

Crystic[®] 921 should be allowed to attain workshop temperature (18°C - 25°C) before use. Crystic[®] 921 is formulated for room temperature curing applications. It requires the addition of accelerator and then the correct amount of catalyst - Norox[®] KP9 catalyst or Norox[®] MEKP-925H to start the curing reaction. The recommended formulation is given below:

Products made with Crystic[®] 921 are generally filled with different grades of powdered filler (e.g. calcium carbonate), minimum 50% by weight. Higher amounts may be added but this may require the mould to be vibrated.

Pigment pastes can be mixed with Crystic[®] 921 or 921PALV, when a specific colour is required.

Table 1: Formulation for room temperature curing of Crystic[®] 921PALV.

Component	Parts by weight
Crystic [®] 921PALV	100
Norox [®] KP9	1.0-3.0
Pigment paste	1-5

The catalyst must be stirred thoroughly into the resin shortly before use. Curing should not be carried out at temperatures below 15°C. The resin, mould and workshop should be at, or above, 15°C before curing is carried out. Scott Bader (Pty) Ltd. will not be liable for problems caused by use at lower temperatures than recommended.

N.B. Peroxide catalysts are highly reactive and may decompose with explosive violence, or cause fires, if they come into contact with flammable materials, metals or accelerators. For this reason they must never be stored in metal containers or be mixed directly with accelerators.

Pot Life

The temperature and the amount of catalyst control the gel time of the resin formulation. The level of filler has a strong influence on this, as shown in table 1. It is important to base the filler loading on the mass of the resin component, not on the mass of the mix.

Table 2: Geltimes in minutes for **Crystic® 921** alone and with **300phr** of **Kulubrite 10**

Accelerator G level	Norox KP9 level	Kulubrite 10 level	
		0	300phr
2phr	2phr	6-7 min	30-35 min

Crystic® 921 is formulated for use between 15°C and 35°C. It is recommended that workshop temperatures be maintained within this range. At temperatures above 30°C, the gel time even at 1% Norox® KP9 can be so short that there is insufficient working time to fill the mould. Also, this can cause excessive exotherm which may cause mouldings to crack. In such cases, do not use less than 1% catalyst as this can cause undercure. Rather use Norox® MEKP-925H .

At temperatures below 15°C, the curing reaction can be so slow that there is a high probability of undercure of the resin, even with over 3.0% Norox® KP9. Do not use more than 3% catalyst as that will not speed up the geltime appreciably or result in a faster cure; in fact it can further retard the cure. Rather warm up the resin and working area so that it is above 15°C.

PRODUCT CHARACTERISTICS

TYPICAL PROPERTIES

The following tables give typical properties of **Crystic® 921** and **921PALV**.

Table 3: liquid **Crystic® 921** and **921PALV**.

Property	Units	Nominal value	
		921	921PALV
Colour / Appearance		Clear, pale blue	Cloudy, pale blue
Acid Value	mgKOH/g	20	22
Non Volatiles	%	62	57
Viscosity @ 25°C using Brookfield RVT @ 100rpm	cPs	290	205
Thixotropic Index	Ratio		2.5
Stability in the dark at 25°C	Months	3	
Geltime with 2% Accelerator R using 1.5% Norox® KP9 @ 25° C	minutes	4	
Geltime using 2% Norox® KP9 @ 25° C	minutes		14

Table 4: Crystic[®] 921 (unfilled) casting*.

Property	Units	Nominal value
Barcol Hardness (Model GYZ 934-1)		40
Deflection Temperature under load† (1.80 MPa)	°C	68
Elongation at Break at 20°C	%	1.4
Tensile Strength	MPa	52
Tensile Modulus	MPa	3975

* Curing Schedule. 24 hrs @ 20°C, 3 hrs @ 80°C

† Curing Schedule. 24 hrs @ 20°C, 5 hrs @ 80°C, 3 hrs @ 120°C

STORAGE

Crystic[®] 921 should be stored in the dark in suitable closed containers. It is recommended that the storage temperature should be less than 20°C where practical but should not exceed 30°C. Ideally containers should be opened only immediately prior to use.

PACKAGING

Crystic[®] 921 is supplied in 25kg, 225kg and 1125kg intermediate bulk containers.

HEALTH AND SAFETY

Please see separate Material Safety Data sheet(s)

Technical Leaflet No. SBPTY097.1

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Before you use this information, kindly verify that this data sheet is the latest version.

All information is given in good faith but without warranty. We cannot accept responsibility or liability for any damage, loss or patent infringement resulting from the use of this information.



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