

CRYSTIC[®] 4003PA

Polyester resin for electrical potting

Introduction

Crystic[®] 4003PA is a low viscosity unsaturated polyester resin. It is supplied as a solution dissolved in monomeric styrene. It is pre-accelerated to give sufficient pot life for resin casting using Catalyst M. Crystic[®] 4003PA is designed for use highly filled as a potting compound for electrical components such as ballasts and chokes. It gives excellent wetting of fillers. High filler loadings may be achieved whilst penetrating fine detail in components. It remains easy to dig out for some time after potting, allowing components to be tested and internal parts removed for adjustment should that be needed. Crystic[®] 4003PA releases air effectively and quickly, giving freedom from air bubbles. Crystic[®] 4003PA is designed to give low exothermic heat generated during cure. This allows thick components to be made without cracks developing.

Formulation

Crystic[®] 4003PA is formulated for room temperature curing applications. It requires only addition of the correct amount of Norox[®] KP9 or Norox[®] MEKP-925H to start the curing reaction. The recommended formulation is given below:

Table 1: Formulation for room temperature curing of Crystic[®] 4003PA.

Component	Parts by weight
Crystic [®] 4003PA	100
Norox [®] KP9 or Norox [®] MEKP-925H	1.0-3.0

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.

When catalysing filled mixes, always calculate the catalyst level based on the resin component of the mix.

Pot Life

The temperature and the amount of catalyst control the gel time of the resin formulation and can be approximately determined from table 2.

Table 2: Geltimes in minutes for Crystic[®] 4003PA at 25°C:

Temp	Norox [®] KP9			Norox [®] MEKP-925H		
	1 %	2 %	3 %	1 %	2 %	3 %
15° C		32	30			
25° C	33	25		38	25	21
35° C	21	15		22	15	14

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.

Crystic[®] 4003PA is formulated for use between 15°C and 30°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 component. Also, this can cause excessive exotherm which may cause cracking. 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.

Additives

Crystic[®] 4003PA may be filled with 300phr or more of mineral filler by mass. The higher the filler loading, the higher the viscosity of the mix. For fine detail, less filler may be more appropriate. High filler loadings may require the components to be vibrated whilst adding the resin mix. Care should be taken in selecting the correct filler for the job. Finer fillers allow finer detail to be filled, but at the cost of higher viscosity and lower filler loadings. Coarser fillers allow higher loading but fine detail may not be as well filled.

Crystic[®] 4003PA may be pigmented with up to 5 percent of Crystic[®] pigment paste, although lesser amounts are normally sufficient in a casting resin. Fillers may affect the performance of pigment pastes, so users are advised to carry out tests to ascertain the suitability of the colour before commencing production.

Typical Properties

Below are given the most important typical properties of Crystic[®] 4003PA.

Table 3: Properties of liquid Crystic[®] 4003PA.

Property of liquid resin	Units	Nominal value
Viscosity at 25°C: Brookfield RVT, 100rpm:	Pa.s	350
Acid Value	mgKOH/g	30
Volatile Content	%	36.0
Colour		Clear, purple
Stability in the dark at 20°C	Months	3
Geltime at 25°C using: Crystic [®] SB 4003PA: 100pbw Norox [®] KP9: 1pbw	Minutes	33

Storage

Crystic[®] 4003PA should be stored in the dark in suitable, closed containers. It is recommended that the storage temperature should be less 20°C where practical, but should not exceed 30°C. Ideally, containers should be opened only immediately prior to use. Where they have to be stored outside, it is recommended that they be kept in a horizontal position to avoid the possible ingress of water. Wherever possible, containers should be stored under cover.

Packaging

Crystic[®] 4003PA is supplied in 25kg and 225kg containers.

Health and Safety

Please see the applicable Material Safety Data Sheets, depending on the curing system used.

Technical Leaflet No 102.22SA
August 2013

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.

SCOTT BADER COMPANY LIMITED

Scott Bader (Pty) Ltd
Reg. No. 93/00466/07
1 Lubex Road,
Hammarsdale
P.O. Box 1539, Hillcrest,
3650. South Africa
Tel: +27 (0) 31 736 8500
Fax: +27 (0) 31 736 8511

Gauteng
Broadacres Business
Centre
Cnr Cedar Rd and 3rd
Ave
Broadacres, Sandton
Tel: (011) 064 5673

KwaZulu Natal
1 Lubex Road,
Hammarsdale
Tel: (031) 736 8500

Eastern Cape
Freightpak Building
Chevrolet St
Markman Industrial
Port Elizabeth
Tel: (041) 409 783

Western Cape
Unit 4B
Tyger Lake
Niagara Way
Tyger Valley
Cape Town
Tel: (021) 914 6011

