

CRYSTIC® 2-301EPA

Low Exotherm LSE Orthophthalic Polyester Resin

INTRODUCTION

Crystic® 2-301EPA is an orthophthalic unsaturated polyester resin. It is supplied as a solution dissolved in monomeric styrene. It is pre-accelerated to give sufficient pot life for contact moulding using Cadox M50A MEKP catalyst at normal ambient temperatures. It has been formulated with a special blue colour change mechanism for indicating the correct addition of catalyst. It is suitable for a wide range of applications.

APPLICATIONS

Crystic® 2-301EPA is designed for application by spray, roller or brush in contact moulding. Its thixotropy will prevent draining when used on vertical or inclined surfaces with suitable glass fibre reinforcement. It requires only the addition of catalyst to start the curing reaction and is therefore ideal for long production runs under controlled workshop conditions. It has a low exotherm temperature, which allows laminates up to 3mm in thickness to be laid up in one operation without excessive heat being generated.

Crystic® 2-301EPA has been formulated to give a tough resilient laminate. It can be used with confidence in the construction of industrial and general-purpose mouldings.

VERSIONS

Crystic® 2-301EPA is supplied in summer and winter grades. The summer grade has the code **Crystic® 2-301EPA-45** and the winter grade **Crystic® 2-301EPA-35**.

STYRENE EMISSION

In normal polyester resins most styrene evaporates from the liquid resin during the application phase, when the resin surface is being disturbed. Once this phase is complete, and the resin is left to cure undisturbed, the rate of styrene emission is appreciably reduced. With **Crystic® 2-301EPA** there is a reduction in the rate of styrene emission during application. **Crystic® 2-301EPA** meets the Australian Standard as an LSE resin.

FORMULATION

Crystic[®] 2-301EPA is formulated for room temperature curing applications. It requires only addition of the correct amount of catalyst to start the curing reaction. The recommended formulation is given in Table 1.

Table 1: Formulations for room temperature curing of **Crystic[®] 2-301EPA**.

Component	Parts by weight
Crystic[®] 2-301EPA	100
Cadox M50A or L50A MEKP Catalyst	1.0-3.0

The catalyst must be mixed thoroughly into the resin shortly before use. Curing should not be carried out at temperatures below 15°C. The resin must be allowed to attain workshop temperature (15-30°C) before being formulated for use.

Crystic[®] 2-301EPA has a chemical blue colour change mechanism to indicate to operators that the catalyst has been incorporated into the resin. Table 2 shows how the colour changes with time.

Table 2: Catalyst colour indicator operation time for **Crystic[®] 2-301EPA**.

Time after catalyst addition	Colour
0 minutes	Blue
1-5 minutes	Green
10-15 minutes	Pink

Pot Life

The temperature and the amount of MEKP catalyst control the gel time and hence the pot life of the resin.

Crystic[®] 2-301EPA is formulated for use between 15°C and 30°C. It is recommended that workshop temperatures be maintained within this range.

MEKP catalyst should not be used at levels below 1% or above 3% with **Crystic[®] 2-301EPA**. At higher operating temperatures, use a slower MEKP catalyst, such as Cadox L50A, to give a longer gel time.

At lower operating temperatures, do not use Cadox M50A at levels higher than 3% 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.

Crystic[®] 2-301EPA is available in different gel time versions. Please contact us to determine the best version for your application.

PIGMENTS AND FILLERS

Crystic® 2-301EPA may be pigmented with up to 5 percent of pigment paste, although lesser amounts are normally sufficient in a laminating resin. Pigment pastes and fillers should be used with caution, as they are likely to have a significant effect on the storage stability, geltime and cure of the resin system, and the physical strength properties of the final product.

POSTCURING

For most applications, where the moulded product will be used at ambient temperatures, satisfactory laminates can be produced without post curing at elevated temperatures, provided workshop temperatures are not below 15°C. For more critical applications, where optimum properties are required, or where the service temperature of the moulding will be above ambient temperature, post curing at elevated temperature is recommended.

The optimum elevated temperature post cure for **Crystic® 2-301EPA** is 80°C. After release from the mould, laminates should be allowed to mature for 24 hours at a workshop temperature of not less than 15°C before being post cured. Place the part in an oven, suitably supported to prevent warping, and increase the temperature from ambient to 80°C in 10°C stages. Leave the moulding at 80°C for three hours, and then switch the oven off. Allow the moulding to cool slowly in the oven. Post curing is most effective if it is carried out immediately after the 24-hour maturing period.

LIQUID PROPERTIES

The most important typical liquid properties of **Crystic® 2-301EPA** are given in Table 3.

Table 3: Typical liquid properties of **Crystic® 2-301EPA**.

Property	Units	Nominal value	
		Crystic® 2-301EPA-35	Crystic® 2-301EPA-45
Viscosity at 25°C: Brookfield LVT sp.2@ 3rpm	mPa.s	2500	2500
Viscosity at 25°C: ICI Cone & Plate, 4500s ⁻¹	dPa.s	2.2	2.2
Geltime with 1% Cadox M50A at 25°C	minutes	35	45
Specific Gravity at 25°C		1.08	1.08
Acid Value	mgKOH/g	22.2	22.2
Volatile Content	%	40	40
Colour	visual	Bluish, cloudy	Bluish, cloudy
Stability in the dark at 25°C	months	3	3

Table 4: Interlaminar adhesion and styrene emission of **Crystic® 2-301EPA**.
Tested according to AS/NZS 4585.1 and.2

Property	Units	Nominal value
Styrene emission at 25°C after 60 minutes	g/m ²	<20
Interlaminar adhesion at 72h		pass

STORAGE

Crystic® 2-301EPA should be stored in the shade in suitable, closed containers. It is recommended that the storage temperature 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 drums be kept in a horizontal position to avoid the possible ingress of water. Wherever possible, containers should be stored under cover.

PACKAGING

Crystic® 2-301EPA is supplied in 25kg pails, 225kg drums, and 1100kg intermediate bulk containers.

HEALTH AND SAFETY

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

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

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