

HOT CURING CYCLOALIPHATIC CASTING RESIN SYSTEM- XR 343 /XH 214/ KA 13

XR-343 / XH214 is a prefilled , pigmented Cycloaliphatic epoxy resin system used by the hot curing process. This hot curing casting system has been designed for outdoor applications under difficult climatic conditions used predominantly for Insulation of large metal parts, Outdoor electrical insulators for applications in medium and high voltage, switchgear parts, insulators and bushings and in instrument, current & potential transformers rated for Class F applications requiring stable dielectric properties under humid outdoor conditions.

Major Advantages of XR343 / XH214 /KA13 system are as follows:

- Very high mechanical and dielectric properties
- Good thermal shock resistance
- High resistance to erosion under UV radiation
- High tracking and arc resistance
- The use of silanised silica flour ensures stable dielectric properties
- Under outdoor humid conditions

1.Major Constituents of XR 343

Modified Cycloaliphatic Solvent free liquid epoxy resin of low viscosity

Typical Properties of Liquid epoxy resin

Viscosity at 25°C(Hoeppler)	m Pa.s	350 - 750
EEW	g/eq	180 - 200
Density at 25 °C	g/cm ³	1.14 -1.20

2.Major Constituents of XH214

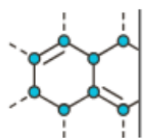
Specially formulated liquid cycloaliphatic anhydride curing agent

Typical Properties of Hardener

Viscosity at 25 °C (Hoeppler)	m Pa.s	70 - 130
Density at 25 °C	g/cm ³	1.15-1.19

Predried , silane treated silica flour of very high purity is used as filler which helps improve the mechanical & electrical properties & also helps reduce shrinkage & exotherm in addition to reducing the cost of the mix.

Accelerator KA 13 is used with XR 343 to speed up the curing process as otherwise a prolonged cure time would be required.



Mix Ratios

XR343 - 100 pbw (parts by weight)

XH214 – 100 pbw

KA13 – 0.1 – 0.2 pbw

Gel time at 80°C - 100 - 110 mts.

Curing schedule 8 hours at 80°C + 8 hours at 140°C

Processing

The Resin & Hardener premixers are blended together at 60 °C under a vacuum of approx. 0.5–5 mbar. Intensive mixing of the Resin & Hardener is extremely important to achieve better flow and reduce tendency to shrinkage. The accelerator is then added to the Resin-Hardener mix under reduced vacuum for 10-20 minutes with intensive stirring just prior to the casting operation. Then the complete mix is cast in preheated moulds (containing the parts to be encapsulated) under a vacuum of 5-20 mbar and at a temperature of 70-100°C. A good release agent must be applied thinly on the surface of the mold to ensure a uniform layer. The addition of accelerator slightly increases the initial viscosity of the system but reduces its pot life, gelling and cure times. This facilitates shorter cycle times and higher output, but care must be taken to keep the exothermic temperature rise within limits. The preadded filler must be properly wetted by the resin and hardener and the mix must be thoroughly degassed if the castings are intended for application in high voltage engineering. The use of good fillers has no significant effect on cure times, but results in slightly longer gel times. High moisture content may reduce pot life and considerably increase the reactivity of the mix. This could lead to a strong exothermic reaction resulting in higher shrinkage and cracking of castings.

Mechanical & Electrical Properties

Tensile strength (N/mm²) 80 - 100

Elongation at break (%) 1.7 -2.0

Flexural strength (N/mm²) 150 - 170

Compressive strength (N/mm²) 160 – 170

Heat deflection temperature (°C) 95 – 105
(Martens temp.)

* curing schedule 8 hrs. at 80°C & 8 hrs. 140°C.

Dielectric strength 25°C/50Hz (kV/mm) 19 - 21
(20 sec value for 2mm sheet)

Di-electric loss factor (Tan δ) 25°C/50Hz 2 - 3%

Tracking Resistance (V) >600

Arc resistance (sec) 180 - 190

Shelf Life

XR 343 will have a max shelf life of 3 months (two pack) when stored in the original container & not exposed to undue heat & humidity. The accelerator KA 13 will have a shelf life of 1 year under similar storage condition

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