

Technical data sheet

Resin

Damival E110 (DOLPHON C(a)-1114-A / C(a)-1114-B)

- Two parts epoxy potting resin,
- Excellent resistance to thermal cycles,
- Good electrical properties,
- Low shrinkage when curing,
- Good water resistance,
- Self-extinguishing: UL94V0 approved 4mm (file E317428),
- Suitable for application up to 180°C,
- Included in UL Insulating System 155°C: E317429, DV-155J table IX & XI,
- Good thermal conductivity,
- EN 45545-2 certified: HL2 for R22 and HL3 for R23.

Description

The resin Damival E110 with the hardener H804 (former DOLPHON C(a)-1114-A with the hardener C(a)-1114-B) is a two component, filled, halogen-free, self-extinguishing epoxy resin.

It has good mechanical and thermal features, as well as a good penetrating behavior, and it is available in different colors and reactivities.

Application

Potting, casting resin for motors stators, transformers (including C2 E2 F1 ones according to IEC 60076-11), electrical brakes, coils, bus bars.

Processing guidelines

The resin must be stirred prior use, as it contains fillers which may settle during storage. Avoid air introduction during stirring.

A preheating of the parts and/or of the resin up to 40 – 60°C may improve the encapsulation if needed. The preheating will shorten the gel time.

A vacuum processing enables a better flow of the mix, as well as a void-free potting and consequently, enhances the dielectric and mechanical properties.

Mixing can be done by a mixing-metering-dispensing machine or manually according to the mix ratio. In the machine vessels, it is recommended to stir on a regular basis, to avoid the filler settling and consequently, a bad mixing.

The curing time (as the gel time) depends on the mixed volume, the temperature and the thickness of the layer. Final properties are depending on the curing level.

The system cures at 25°C and is accelerated by any higher temperatures up to 70°C. The curing time depends on the part and on the expected properties to be achieved after the curing. Please contact us for the best curing cycle recommendation.

Mix ratio Resin/hardener and gel time:

Hardener	Weight	Volume	Gel time @ 25°C (100g)
H804 (C(a)-1114-B)	100/13	100/22	80-110
H803 (CF-1114-B)	100/13	100/22	55-70
H805 (CS, CL-1114-B)	100/13	100/22	200-300

Color code table:

Resin, base A	Former Color Code	Hardener, base B	Former Color Code
E110 Yellow	CY-1114-A	H804 Blue	CX-1114-B
E110 Black	CB-1114-A	H804 Natural	CC-1114-B
E110 Blue	CX-1114-A	H803 Blue	CF-1114-B
E110 Red	CR-1114-A	H805 Blue	CS-1114-B
E110 Beige	CN-1114-A	H805 Natural	CL-1114-B

Health and safety

Our products are intended for industrial use only. For any further information, please refer to the Safety Data Sheet.

Storage conditions

Resins: 12 months in original sealed packaging, at maximum 30°C, protected from direct sunlight and heating sources. Like all epoxy resins, it may crystallize during a cold storage. In such case, warm the resin up to 40°C and remix before use.

Hardener: 12 months in original sealed packaging, at maximum 30°C, protected from direct sunlight and heating sources.

Physical Properties Resin	Test norm	Unit	Value
Colour			Refer to colour code table
Specific gravity @ 25°C	ISO 2811-1	g/l	1600-1660
Viscosity Brookfield @ 25°C	ISO 2555	mPa.s	6000-10000

Physical Properties Hardener H804	Test norm	Unit	Value
Specific gravity @ 25°C	ISO 2811-1	g/l	970-1030
Viscosity Brookfield @ 25°C	ISO 2555	mPa.s	40-100

Physical Properties Mix	Test norm	Unit	Value
Specific gravity @ 25°C	ISO 2811-1	g/l	1500-1560
Viscosity Brookfield @ 25°C	ISO 2555	mPa.s	1000-3000
Exothermic peak, 500g, @ 25°C		°C	71

After curing: Physical Properties	Test norm	Unit	Value
Hardness Shore D @ 25°C	ISO 868		85
Shrinkage		%	0.3

Thermal Properties	Test norm	Unit	Value
Thermal Conductivity	ASTM D-7984	W/m.K	0.8
Thermal class (20.000h)	ASTM D-2307	°C	180
Thermal cycles resistance	Oliphant test	°C	10 cycles -60 / +180
Glass Transition Temperature Tg	TMA	°C	48
Glow-wire ignition temperature, GWIT	IEC 60695-2-13	°C	900 (3mm)
Glow-wire flammability index, GWFI	IEC 60695-2-12	°C	960 (3mm)
Coefficient of Thermal Expansion <Tg	TMA	µm/m/°C	45
Coefficient of Thermal Expansion >Tg	TMA	µm/m/°C	134

Mechanical Properties	Test norm	Unit	Value
Tensile strength @ 25°C	ISO 527	MPa	38
Elastic modulus @ 25°C	ISO 527	MPa	3300
Elongation at break @ 25°C	ISO 527	%	1.7
Flexural strength @ 25°C	ASTM D-790	MPa	68

Chemical Properties	Test norm	Unit	Value
Water absorption 24h @ 25°C	ISO 62	%	0.25

Electrical Properties	Test norm	Unit	Value
Dielectric strength @ 25°C	IEC 60243	KV/mm	22
Surface Resistivity @ 25°C	ASTM D-257	Ω	$8.1 \cdot 10^{13}$
Volume Resistivity @ 25°C	ASTM D-257	$\Omega \cdot \text{cm}$	$9 \cdot 10^{14}$
Comparative Tracking Index CTI	IEC 60112	V	600

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