

## ALCHEMIX<sup>®</sup> EP 4511 - H4511

### *Highly Thermally Conductive & Highly Flame Retardant Epoxy Resin System*

*85 – 87 Shore D Hardness*

EP 4511/H 4511 is a two part, ambient temperature cure, liquid epoxy system; exhibiting outstanding thermal dissipation and electrical characteristics, and a high level of flame retardancy. This system has remarkably low mixed viscosity and when cured shows good electrical properties even at elevated temperatures. This system has coloured hardener to give visual indication of thorough mixing.

#### Mix Ratio

	<b>EP 4511</b>	<b>:</b>	<b>H 4511</b>
<b>By Weight</b>	20	:	1
<b>By Volume</b>	8.15	:	1

#### Product Data

Material	EP 4511	H 4511	Mixture
<b>Description</b>	Mineral Filled Epoxy Resin	Formulated Polyamine	Epoxy
<b>Appearance</b>	White liquid	Black liquid	Bluish-grey liquid
<b>Density @ 25°C (g/cm<sup>3</sup>)</b>	2.39 g/cm <sup>3</sup>	0.98 g/cm <sup>3</sup>	2.24 g/cm <sup>3</sup>
<b>Viscosity @ 45°C (mPa.s)</b>	45000 mPa.s	30 mPa.s	5000 mPa.s
<b>Pot life (200g) 25°C</b>			2 hours
<b>Cure time (200g) 25°C 60°C 100°C</b>			24 hours 4 hours 2 hours
<b>Full cure At 25°C</b>			7 days

## Cured Properties

Physical Properties	After 7 days curing at room temperature
Density (g/cm <sup>3</sup> )	2.24
Shore Hardness (D)	86 – 88
After 7 days Exposure at 155 °C	93 – 95
Thermal Conductivity	2.12 W / m/ °C
Coefficient of thermal expansion	39 x 10 <sup>-6</sup> / °C
Heat Deflection Temperature	110 °C
Maximum Operating Temperature	(continuous) 155 ° C (short term) 180 ° C
Minimum Operating Temperature	-40 ° C
Tensile Strength	60 Mpa
Compressive Strength	80 Mpa
Linear Shrinkage (depends upon mould geometry)	<0.015%
Flammability Testing	Highly flame retardant

## Hardness (Shore D) Measurements at Elevated Temperatures

Temperature (°C)	Time Specimen at given temperature	Hardness (Shore D)
155	1 day	81
155	2 days	81
155	3 days	82
155	5 days	83
155	7 days	83
180	1 hour	83

Note: Decolourisation may occur on continuous exposure at elevated temperatures.

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## **Method of Use**

Thoroughly mix the resin and the hardener according to the indicated mixing ratio, avoiding air entrapment and make certain that the material at the bottom and sides of the container is well stirred into the centre. The hardener is specially formulated coloured to give indication of thorough mixing. In a thoroughly mixed resin, there should be no streaks of hardener colour in the mixed resin. After mixing, pour into the potting vessel from one end or along the wall of the vessel within the pot life of the system. Let it cure as mentioned above.

## **Storage**

EP4511 / H4511 should be stored in a cool dry place to extend shelf life. If stored correctly EP4511 / H4511 should have a shelf life of at least 12 months.

## **Packaging**

EP4511 / H4511 can be supplied in 5 kg and 25 kg bulk containers or in 500g/1 kg Twin-pack for convenient mixing and dispensing.

(Please contact Alchemie Ltd for bulk supply)

## **Further Information**

All data listed relates to typical values. This data should not be considered a product specification.

Our technical advice, whether verbal, or in writing is given in good faith, but without warranty – this also applies where proprietary rights of third parties are involved. It does not release you from the obligation to test the products supplied by us as to their suitability for the intended process and use.

Before using this product users should familiarize themselves with the relevant MSDS provided by Alchemie Ltd.

## **Alchemie Limited**

Alchemie Ltd develops, formulate and distribute Epoxy Resins, Polyurethane Resins, Silicones, Model Boards and Sheet Wax for use in the following applications:

- Electrical encapsulation
- Rapid Prototyping
- Prototypes
- Casting
- Gel Coating
- Laminating
- Model Making
- Master Models
- Flexible and rigid mould making

We offer fast service, technical support, development expertise, innovative products, diverse knowledge and experience.

We are a well-established company, with a high level of investment and experience. We implement BS EN ISO 9001.

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