

ALCHEMIX[®] EP 4420 / H4420

*Two Part Epoxy System for High Temperature Curing & Application
95 Shore D Hardness*

ALCHEMIX EP 4420 / H4420 is a specially formulated two part system for processing and curing at high temperatures. This uniquely formulated system is totally VOC free and uses anhydride based hardener which gives long working time at ambient temperatures and thoroughly cures at elevated temperatures. It is optimally filled with suitable minerals to give high thermal conductivity, low coefficient of thermal expansion and flame retardancy equivalent to UL94-V0 standards. This product has excellent adhesion to substrates like metals and has superior temperature cycling resistance. Excellent electrical properties enable possible applications in high temperature electrical encapsulation and applications such as power semiconductors, thyristors, rectifiers and transformers etc.

Mix Ratio

EP 4420 : H4420

By Weight

100 : 100

By Volume

100 : 100

Product Data

Property	Units	EP 4420	H4420	Mix
Material	-	Formulated Epoxy Resin	Formulated anhydride hardener	-
Appearance	-	Black viscous liquid	Off white liquid	Black liquid
Viscosity (25°C)	mPa.s	25,000 – 30,000	22,000 – 32,000 (thixotropic)	22,000 – 32,000
Density (25°C)	g/cm ³	1.71 – 1.76	1.71 – 1.76	1.71 – 1.76
Gel Time (200g, 125°C)	min	-	-	15 – 20
Minimum Cure	Hours/°C	-	-	2/125
Full Cure	Hours/°C	-	-	1/80 + 2/125 + 3/140

Technical Data Sheet



Cured Properties

Properties	Standard/ Method	Units	Result (Full Cure)
Colour	Visual	-	Black
Hardness 25°C 60°C 80°C 100°C 120°C 140°C 160°C 180°C 200°C	BS 2782: Part 3: Method 365B	Shore D	95 95 94 92 90 86 78 74 60
Heat Deflection Temperature	TMA	°C	130
Max Operating Temperature*	Alchemie STM	°C	180
Minimum Operating Temperature	Alchemie STM	°C	-30
Tensile Strength	BS 2782: Part 3: Method 320B	MPa	40 – 50
Elongation at break	BS 2782: Part 3: Method 320B	%	1 – 2
Flexural Strength	BS 2782: Part 3: Method 335A	MPa	30 – 40
Flexural Modulus	BS 2782: Part 3: Method 335A	MPa	4800 – 5400
Water absorption 1day @ 23°C 7day @ 23°C	Alchemie STM	%	0.02 0.08
Coefficient of Linear Thermal Expansion 25 – 130°C 25 – 200°C	TMA	ppm/°C	18 – 20 38 – 42
Thermal Conductivity	Alchemie STM	W/mK	0.6 – 0.7 (TBC)
Flammability Test	Equivalent to UL94V-0 (In-house Test)	6 mm thick	Pass

* Product may decolour at high temperatures.

Method of Use

Prefilled liquid products show some settlement on storage, it is therefore recommended that thoroughly mix the resin and hardener in their original containers prior to use. Equal parts of ALCHEMIX EP 4420 and HARDENER H4420 should be weighed into a clean mix vessel. The two components should be thoroughly mixed, avoiding excess air entrapment. To ensure that all material is fully mixed, scrap down the sides and bottom of the mix vessel several times during mixing. The mixed product can then be poured/dispensed into the mould or

encapsulation place. Heating both the parts to 40 – 45°C before mixing will decrease the mix viscosity significantly. For better electrical properties and deaeration brief degassing of the mix is recommended at 5 – 10 mbar vacuum before casting.

Cure the casting as per specified cycle. If the cured product is intended to be used at temperatures above 125°C, additional post-curing at 180°C for 2 hours is recommended to improve the physical properties of the system and to decrease the coefficient of linear expansion at temperatures greater than 130°C.

The anhydride based hardener is moisture sensitive therefore we recommend to use the complete contents of the container once opened.

Storage

ALCHEMIX EP 4420 and HARDENER H4420 should be stored in original, unopened containers between 15 and 25°C.

If stored under the above conditions, ALCHEMIX EP 4420 / H4420 will have a shelf life of 12 months, from the date of production.

Packaging

ALCHEMIX EP 4420 can be supplied in 1kg, 10kg and 25kg containers.
HARDENER H4420 can be supplied in 1kg, 10kg and 25kg containers.
ALCHEMIX EP 4420 / H4420 can also be supplied in 1kg twinpacks for easy application.

(Please contact Alchemie Ltd for bulk supply)

Further Information

Please contact our Technical Department for any further advice on the use of this product.

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 develop, 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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