

Technical Data Sheet

ALCHEMIX® VC 3399

*High Temperature Vacuum Casting System
85 – 90 Shore D Hardness*

ALCHEMIX VC 3399 is a polyurethane vacuum casting resin with exceptional high temperature resistance. It is designed to simulate thermoplastics such polycarbonate, shock resistant PMMA and ABS. ALCHEMIX VC 3399 has excellent mechanical properties and is easily pigmentable. The system is specifically designed for use in gravity vacuum casting machines.

Special Features

- Exceptionally high HDT
- Rapid demould
- Excellent mechanical properties
- Low viscosity
- Pigmentable

Mix Ratio

VC 3399A : VC 3399B
By Weight 100 : 130

Product Data

Property	Units	VC 3399A	VC 3399B	Mix
Material	-	Polyol blend	Isocyanate	Polyurethane
Appearance	-	Amber liquid	Clear liquid	Pale amber liquid
Viscosity (25 °C)	mPa.s	2500 – 3000	20 – 40	300 – 500
Density (25 °C)	g/cm ³	1.02 – 1.07	1.04 – 1.09	1.03 – 1.08
Pot life (200g, 25 °C)	Minutes	-	-	5 min 30 – 7 min 30
Demould Time (70 °C)	Minutes	-	-	45 – 60
Maximum Casting Thickness	mm	-	-	10

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Cured Properties

Properties	Standard	Units	Result (Full Post Cure)
Hardness (25°C)	BS EN ISO 868	Shore D	85 – 90
Linear Shrinkage	250 x 50 x 2 mm	%	< 0.4*
Tensile Strength	BS EN ISO 527	MPa	50.0 – 55.0
Elongation at Break	BS EN ISO 527	%	3.0 – 4.0
Flexural Strength	BS EN ISO 178	MPa	95.0 – 100.0
Flexural Modulus	BS EN ISO 178	MPa	1950 – 2250
HDT	Alchemie STM	°C	150 – 160

* See 'Shrinkage' section below.

Mould Preparation

Carefully clean the mould, then spray silicone release agent onto the surface if required. Ensure that the surface is dry before coupling the mould parts. Heat the mould in an oven to 60 – 70°C; this may take several hours if the mould is very large. Splitting the tool will speed up the warming process. We do not recommend the use of condensation cured silicone rubber with this product. For best results, use ALCHEMIX RTV 250 silicone rubber.

Resin Preparation

Open both A and B containers and examine for any signs of crystallization, place in the oven at 45 – 60°C if any crystals are observed. Part A should be heated to 40°C and part B to 25°C before use. If using pigments, add the pigment to the part A. We suggest using 1 – 3% pigment.

Mixing/casting

Weigh ALCHEMIX VC 3399A into cup A and ALCHEMIX VC 3399B into cup B. When making the first mix allow an additional amount of A to account for the cup loss. Degas for 8 minutes, whilst slowly mixing cup B. After degassing, pour cup A into cup B while mixing. Mix the A and B components for 90 – 120 seconds, this will ensure thorough mixing of the components. When mixing is complete pour the mixed material into the mould. When material can be seen exiting from the risers break the vacuum.

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Curing

Place the mould in an oven at 70 °C for 45 – 60 minutes immediately after casting. Curing time, especially in thin sections, will depend on mould temperature. The warmer the mould, the quicker the cure. We do not recommend this resin to be cast to more than 10 mm depth.

Post Cure

To achieve full high temperature properties, a step wise post cure treatment is recommended. Allow the product to cure at room temperature for at least 24 hours, then heat to 60 °C for 1 hour, followed by 80 °C for 1 hour, followed by 100 °C for 1 hour, followed by 120 °C for 1 hours, followed by 140 °C for 1 hour and finally 160 °C for 3 hours. Then allow the product to slowly return to room temperature. Post cure can lead to an increase in shrinkage, especially in larger parts. Please contact Alchemie Ltd for further information.

To prevent any distortion during the post cure cycle, the unit should be placed on a conformer. When post-curing is complete, let the unit cool down slowly to room temperature, preferably in the oven. Sudden change in temperature can cause distortion or warping.

The product can be used without post cure or with partial post cure, but will not achieve full high temperature properties.

Shrinkage

The shrinkage value above is quoted as a guide only. Shrinkage will vary with each casting, as factors such as temperature, mould size and geometry can affect the degree of shrinkage. Generally speaking, large, thick castings will have a greater degree of shrinkage than small, thin castings. Other factors, such as mould temperature and resin temperature can also have an effect. Post curing the part can also lead to a greater degree of shrinkage. Please contact Alchemie Ltd for more information.

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Storage

ALCHEMIX VC 3399A and B should be stored in original, unopened containers between 20 and 25°C. ALCHEMIX VC 3399B may crystallize partially or completely if not stored at above 20°C. Like all polyurethanes, both components are moisture sensitive. Moisture absorption will cause excessive aeration in cast parts. KEEP THE PACKING TIGHTLY SEALED WHEN NOT IN USE.

If stored under the above conditions, ALCHEMIX VC 3399A and B will have a shelf life of 3 months, from the date of production.

Packaging

VC 3399A is supplied in 770g containers.
VC 3399B is supplied in 1kg containers.

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.

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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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