

Description

ALCHEMIX VC 3300 is a three component, flexible, polyurethane vacuum casting system. By altering the ratio of the three components, the hardness of the cured rubber can be selected. Very soft elastomers of 35 Shore A through to tough, semi flexible elastomers of 95 Shore A can be achieved.

Features

- Variable hardness (35 – 95 Shore A)
- Excellent tear strength and elongation
- Strong on demould
- Easily pigmentable

Component Data

	VC 3300A-35	VC 3300A-95	VC 3300B
Description	Polyol	Polyol	Isocyanate
Appearance	Off white liquid	Off white liquid	Straw coloured liquid
Viscosity (25°C)	500 – 700 mPa.s	750 – 950 mPa.s	200 – 400 mPa.s
Density (25°C)	1.00 – 1.05 gcm ⁻³	1.00 – 1.05 gcm ⁻³	1.18 – 1.23 gcm ⁻³

Mix Ratio (by weight)

Hardness ³ (Shore A)	35	40	45	50	55	60	65	70	75	80	85	90	95
VC 3300A-35	100	94	87	80	74	67	60	52	44	33	22	11	0
VC 3300A-95	0	6	13	20	26	33	40	48	56	67	78	89	100
VC 3300B	18	19.5	22	24.5	26.5	29.5	32	35	38.5	43.5	48.5	54.5	60.5

³ Hardness can be affected by many factors such as reaction temperature, cup loss, storage conditions, etc. The values listed are typical values only, they should not be considered as a specification. We would generally expect the hardness to be within 5 Shore A of the stated value.

Cure Data

	Conditions	Typical Value
Appearance	-	Off white liquid
Pot Life	200g, 40°C	2 mins – 2 mins 30
Demould Time ¹	70°C	45 – 60 mins
Maximum Casting Thickness	-	15 mm

¹ See "Curing" section below.

Processing Data

	Recommended Value
Part A Temperature ²	40°C
Part B Temperature ²	40°C
Mould Temperature	70°C
Cure Temperature	70°C
Vacuum time	10 minutes
Mixing time ⁵	45 seconds
Cure Time ⁶	45 – 60 minutes

² See "Resin Preparation" section below.

Mixed Liquid Data

	35 A	45 A	55 A	65 A	75 A	85 A	95 A
Mix Viscosity (25°C)	450 – 650 mPa.s	480 – 680 mPa.s	520 – 720 mPa.s	560 – 760 mPa.s	600 – 800 mPa.s	650 – 850 mPa.s	700 – 900 mPa.s
Mixed Density (25°C)	1.02 – 1.07 gcm ⁻³	1.02 – 1.07 gcm ⁻³	1.03 – 1.08 gcm ⁻³	1.03 – 1.08 gcm ⁻³	1.04 – 1.09 gcm ⁻³	1.04 – 1.09 gcm ⁻³	1.05 – 1.10 gcm ⁻³

Cured Properties

	Standard	Typical Value: Standard Cure ⁴						
		35 A	45 A	55 A	65 A	75 A	85 A	95 A
Hardness ⁵	ISO 868	35 A	45 A	55 A	65 A	75 A	85 A	95 A
Tensile Strength	ISO 37	1.5 – 3.5 MPa	3.0 – 5.0 MPa	4.0 – 6.0 MPa	6.0 – 8.0 MPa	7.5 – 9.5 MPa	9.5 – 11.5 MPa	9.5 – 11.5 MPa
Elongation at Break	ISO 37	900 – 1100 %	1100 – 1300 %	700 – 800 %	500 – 600 %	400 – 500 %	300 – 400 %	200 – 300 %
Tear Strength	ISO 34	9 – 14 N/mm	18 – 23 N/mm	22 – 27 N/mm	29 – 34 N/mm	35 – 40 N/mm	40 – 46 N/mm	57 – 63 N/mm
Maximum Operating Temperature ⁶	Short Term (< 1hour)	100 °C	100 °C	100 °C	100 °C	120 °C	120 °C	120 °C
	Long Term (24 hours)	60 °C	60 °C	60 °C	60 °C	80 °C	80 °C	80 °C
Linear Shrinkage ⁷	500 x 50 x 3 mm	0.2 – 0.4%						
Appearance	-	Translucent / white flexible solid.						

⁴ See “Curing” section below.

⁵ Hardness can be affected by many factors such as reaction temperature, cup loss, storage conditions, etc. The values listed are typical values only, they should not be considered as a specification. We would generally expect the hardness to be within 5 Shore A of the stated value.

⁶ Maximum operating temperature is application specific. We recommend customers carry out full testing to determine suitability.

⁷ See “Shrinkage” section below.

Mould Preparation

For best results, use ALCHEMIX RTV 240 silicone rubber. Before use, ensure that the mould is clean. Heat the mould in an oven to 70°C; this may take several hours if the mould is very large. Splitting the tool will speed up the warming process. Using a release agent can prolong the life of the mould, but may affect the surface finish of the cured product. We do not recommend the use of condensation cured silicone rubber with this product.

Resin Preparation

Open both A and B containers and examine for any signs of crystallization. If crystallization has occurred, place the container in an oven at 50 – 60°C for approximately 2 hours, gently shaking the container every 30 minutes. Both components should be heated to 40°C before use. For large casts, the two components can be used at 25°C, however, the cure time may need to be increased to compensate. If using pigments, add the pigment to the part A. We suggest using a maximum of 3% pigment.

Processing Instructions

ALCHEMIX VC 3300 should be processed in a gravity vacuum casting machine. Weigh the part A into the larger mixing cup and the part B into the smaller cup. Allow an additional amount of part B to account for the cup loss. Degas for 10 minutes, whilst slowly mixing the part A. After degassing, pour the part B into the part A whilst mixing. Mix the two components for 45 seconds. When mixing is complete pour the mixed material into the mould. When material can be seen exiting from the risers break the vacuum.

Curing

Immediately after casting, place the mould in an oven at 70°C for 45 – 60 minutes. Curing time, especially in thin sections, will depend on mould temperature. The warmer the mould, the quicker the cure. Larger castings may require a shorter curing time, smaller castings may require a longer curing time. Demould immediately, do not leave in the mould for prolonged periods of time (more than 90 minutes). A post cure is not normally required for this product.

Shrinkage

The shrinkage value above is quoted as a guide only. Shrinkage will vary with each mould design, as factors such as 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.

Storage

ALCHEMIX VC 3300A-35, VC 3300A-95 and VC 3300B should be stored in original, unopened containers between 25 and 30°C. ALCHEMIX VC 3300A-35, VC 3300A-95 and VC 3300B may crystallise partially or completely if not stored at above 20°C. Like all polyurethanes, all 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 3300A-35, VC 3300A-95 and VC 3300B will have a shelf life of 6 months from the date of production.

Packaging

ALCHEMIX VC 3300A-35 is supplied in 1kg kits.
ALCHEMIX VC 3300A-95 is supplied in 1kg kits.
ALCHEMIX VC 3300B is supplied in 1kg kits.
Please contact Alchemie Ltd for bulk supply.

Further Information

This data is not to be used for specifications. Values listed are for typical properties and should not be considered minimum or maximum.

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 any of our products, users should familiarise themselves with the relevant Technical Data Sheet (TDS) and Safety Data Sheets (SDS) provided by Alchemie Ltd.

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