

ALCHEMIX[®] PU 3580

*Two Component, Variable Hardness PU Elastomeric Foam System
250 – 500 kgm⁻³ Moulded Density*

ALCHEMIX PU 3580 is a two component polyurethane foam system, that when mixed gives a medium density soft, elastomeric foam. The foam is self skinning, durable and has excellent physical properties. Typical free rise density is between 140 – 160 kgm⁻³, however the foam can be over packed in the mould to give higher densities of up to 500 kgm⁻³. The final hardness of the foam can be adjusted by small adjustments to the mixing ratio.

Mix Ratio

	PU 3580A : PU 3580B	Relative Hardness
By Weight	100 : 33	Soft
	100 : 36	Medium*
	100 : 40	Hard*

* For bulk castings using Medium and Hard PU 3580, shrinkage of the cured product may be observed.

Product Data

Property	Units	PU 3580A	PU 3580B	Mix
Material	-	Formulated polyol blend.	Isocyanate	polyurethane
Appearance	-	Clear, yellow liquid	Brown liquid	Flexible yellow foam
Viscosity (25 °C)	mPa.s	600 – 800	150 – 250	-
Density (25 °C)	g/cm ³	1.00 – 1.05	1.20 – 1.25	-
Cream Time (133g, 25 °C)	seconds	-	-	30 – 40
Tack Free Time (133g, 25 °C)	seconds	-	-	100 – 140
Rise Time (133g, 25 °C)	seconds	-	-	135 – 165
Exotherm (133g, 25 °C)	°C	-	-	85 – 95
Free Rise Density	kgm ⁻³	-	-	140 – 160
Moulded Density Range	kgm ⁻³	-	-	250 – 500

Cured Properties

Properties	Units	Soft	Medium	Hard
Tensile Strength	MPa	0.19 – 0.21	TBC	TBC
Tear Strength	kN/m	0.93 – 0.94	1.5 – 1.6	2.25 – 2.35
Elongation at break	%	120 – 140	TBC	TBC

Method of Use

Calculating Shot Size

To calculate how much ALCHEMIX PU 3580 is required to fill the mould, known as the “shot size”, first calculate the volume of the mould (in m³). The amount of foam required is then calculated as follows:

$$\text{Amount of PU 3580 (kg)} = \text{Desired Density (kgm}^{-3}\text{)} \times \text{Mould Volume (m}^3\text{)}$$

ALCHEMIX PU 3580 has a free rise density of approximately 160 kgm⁻³, but minimum moulded density is approximately 250 kgm⁻³. Increasing the density will give a harder, less flexible foam.

Mould Preparation

ALCHEMIX PU 3580 should be cast into a strong, rigid mould with a silicone rubber coating. Alternatively a mould release agent such as ALCHEMIX R6 should be used. Ensure that the entire mould surface has been coated. The mould should be warmed to 25°C. It is important to allow some small bleed holes to allow any gas generated to escape.

Mixing and Pouring

Once the mould has been prepared, accurately weigh out the required quantity of ALCHEMIX PU 3580A into a clean mixing vessel. Weigh the required amount of ALCHEMIX PU 3580B into the mix vessel and immediately mix the two components until they are homogenized. The mixed material should be cream/brown in colour and should be streak free. Poor mixing will result in poor quality foam. Immediately pour the mixed material into the mould. It is important that the mixing/ pouring operation is completed before the cream time of the foam (30 seconds).

Demould

ALCHEMIX PU 3580 is a fast curing system. Depending on mould volume and shape, the product can be demoulded after as little as 10 minutes. Full cure can take up to 72 hours.

Trials

When using ALCHEMIX PU 3580 for the first time, or when using new mould shapes or volumes, trials must be carried out to determine the appropriate shot size. ALCHEMIX PU 3580 can be pigmented, however some pigments may increase the reaction speed so small scale trials should be carried out when using for the first time. We recommend a pigment loading of 1 – 3%

Storage

ALCHEMIX PU 3580A and B should be stored in original, unopened containers between 20 and 25°C. ALCHEMIX PU 3580B may crystallise 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 PU 3580A and B will have a shelf life of 6 months, from the date of production.

Packaging

ALCHEMIX PU 3580A is supplied in 1kg, 5kg and 25kg containers.
ALCHEMIX PU 3580B is supplied in 400g, 2kg and 10kg containers.

(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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