

Technical Data Sheet

ALCHEMIX[®] PU 3833

*Two Component, Low Pressure RIM Polyurethane System
Low Colour, Easily Pigmentable*

ALCHEMIX PU 3833 is a two component polyurethane system which is impact resistant, UV resistant and can be easily pigmented. The system is ideal for rapid prototyping and limited production runs using metering machinery, with or without vacuum.

Special Features

- Fast room temperature cure (20 – 25 °C)
- UV resistant
- Easily pigmentable
- Excellent impact resistance

Mix Ratio

	PU 3833A : PU 3833B
By Weight	100 : 155
By Volume	100 : 137

Product Data

Property	Units	PU 3833A	PU 3833B	Mix
Material	-	Polyol	Isocyanate	Polyurethane
Appearance	-	Colourless liquid	Colourless liquid	Colourless liquid
Viscosity (25 °C)	mPa.s	800 – 1300	900 – 1500	900 – 1500
Density (25 °C)	g/cm ³	1.00 – 1.05	1.14 – 1.18	1.08 – 1.13
Pot life (200g, 25 °C)	Seconds	-	-	80 – 100
Demould Time (20g, 3mm, 25 °C)	Minutes	-	-	20
Recommended Casting Thickness	mm	-	-	5 – 15

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Cured Properties

Properties	Standard	Units	Result (Full Post Cure)
Hardness	BS EN ISO 868	Shore D	75 – 80
Linear Shrinkage*	500 x 50 x 4 mm	mm/m	4
Tensile Strength	BS EN ISO 527	MPa	30.0 – 35.0
Elongation at Break	BS EN ISO 527	%	5.0 – 7.0
Tensile Modulus	BS EN ISO 527	MPa	900 – 1100
Flexural Strength	BS EN ISO 178	MPa	40.0 – 45.0
Flexural Modulus	BS EN ISO 178	MPa	800 – 1000
Glass Transition Temperature (Tg)	DMA	°C	70 – 74

* See "Shrinkage" section below.

Mould Preparation

Ensure that the mould is clean and dry and if the mould is made from metal or resin, use a release agent such as Release Agent R7. For flexible moulds, use ALCHEMIX RTV Silicone Rubber. Never use silicone release agents if the units are to be painted.

Resin Preparation

Stir the Part A can thoroughly in order to homogenise the resin. For best results, ensure the two components are at between 20 – 25 °C before mixing.

Mixing instructions

ALCHEMIX PU 3833 requires metering machinery to process the materials. Machines with either piston pumps or geared pumps can be used. Regularly check that correct ratio is being dispensed from the machine by weighing out the output for both components separately. If the correct ratio is not being dispensed, check that:

1. The nozzle from which the materials are dispensed is not blocked.
2. There is no change on the pump settings (for geared machines).
3. Stock containers for both materials contain sufficient material.

For further information on processing ALCHEMIX PU 3833, or for recommended machinery suppliers, please contact Alchemie Ltd.

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Curing

Casting can generally be demoulded in 20 minutes at room temperature. The precise demould time will vary with the casting thickness, as thin sections will cure significantly slower than thicker sections. When casting thin wall sections, ensure that the mould and resins are at least 20 – 25°C to facilitate a good cure and reduce the risk of brittleness. If brittleness still occurs, check that the machine is dispensing at the correct ratio (see above). If cast at thicknesses below the minimum recommended thickness (5mm), cure can take over 2 hours, we would recommend using PU 3833F in these situations.

Post-Curing

In order to achieve the maximum heat resistance, the following post cure cycle should be carried out. 1 hour at 60°C, 1 hour at 80°C and 3 hours at 100°C. 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.

Shrinkage

The shrinkage value above is quoted as a guide only. Shrinkage will vary with each casting, 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 PU 3833A and B should be stored in original, unopened containers between 20 and 25°C. ALCHEMIX PU 3833B 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 3833A and B will have a shelf life of 6 months, from the date of production.

Packaging

PU 3833A is supplied in 25kg containers.
PU 3833B is supplied in 20kg containers.

(Please contact Alchemie Ltd for bulk supply)

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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 and 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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