

# Technical Data Sheet

## ALCHEMIX<sup>®</sup> PU 3828S

*Two Component, Low Pressure RIM Polyurethane System  
Fast Curing, Low Viscosity, Very High Heat Resistance*

ALCHEMIX PU 3828S is a two component polyurethane system, which is designed to simulate thermoplastics such as polypropylene. The system is ideal for rapid prototyping and limited production runs using metering machinery, with or without vacuum. The product is ideal for high temperature applications, such as under the bonnet uses in the automotive industry. ALCHEMIX PU 3828S is available in neutral or black.

### Special Features

- Fast room temperature cure (20 – 25°C)
- Fast demould
- Good impact strength
- High heat distortion temperature

### Mix Ratio

	<b>PU 3828SA : PU 3828SB</b>
By Weight	100 : 78
By Volume	100 : 67

### Product Data

Property	Units	PU 3828SA	PU 3828SB	Mix
Material	-	Polyol	Isocyanate	Polyurethane
Appearance	-	White/black liquid	Brown liquid	Beige/black liquid
Viscosity (25°C)	mPa.s	1250 – 1750	180 – 240	600 – 800
Density (25°C)	g/cm <sup>3</sup>	1.01 – 1.06	1.20 – 1.25	1.09 – 1.14
Pot life (200g, 25°C)	Seconds	-	-	50 – 60
Demould Time (20g, 3mm, 25°C)	Minutes	-	-	15
Maximum Thickness	mm	-	-	8

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## Cured Properties

Properties	Standard	Units	Room Temperature Cure	Full Post Cure
Hardness	BS EN ISO 868	Shore D	80 – 84	80 – 84
Linear Shrinkage*	500 x 50 x 4 mm	mm/m	3	4
Tensile Strength	BS EN ISO 527	MPa	28 – 33	30 – 35
Elongation at Break	BS EN ISO 527	%	3.5 – 5.5	3.0 – 5.0
Flexural Strength	BS EN ISO 178	MPa	40 – 45	40 – 45
Flexural Modulus	BS EN ISO 178	MPa	800 – 1100	800 – 1100
Heat Distortion Temperature (HDT)	TMA	°C	> 100**	180 – 190

\* See "Shrinkage" section below.

\*\* HDT will depend on exotherm generated during the reaction.

## 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 3828S requires metering machinery to process the materials. Machines with either piston pumps or geared pumps can be used. Piston pumps should be set to a 3:2 ratio by volume. 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 3828S, or for recommended machinery suppliers, please contact Alchemie Ltd.

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## **Curing**

Casting can generally be demoulded in 15 minutes at room temperature. The precise demould time will vary with the casting thickness, as thin section units will cure slower than thicker section units. 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).

## **Post-Curing**

In order to achieve the maximum heat resistance, the following post cure cycle should be carried out. 4 hours at 80°C, 2 hours at 100°C, 1 hour at 120°C, 1 hour at 140°C and 1 hour at 160 °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 3828SA and B should be stored in original, unopened containers between 20 and 25°C. ALCHEMIX PU 3828SB 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 3828SA and SB will have a shelf life of 6 months, from the date of production.

## **Packaging**

ALCHEMIX PU 3828SA is supplied in 5kg and 25kg kits.  
ALCHEMIX PU 3828SB is supplied in 4kg and 20kg kits.

(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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