

ALCHEMIX[®] PU 3826

Two Component, Low pressure Reaction Injection Moulding (RIM) Polyurethane System; Hardness 80 – 82 Shore D

ALCHEMIX PU 3826 is a two component polyurethane system, which is designed for use in low pressure Reaction Injection Moulding (RIM) equipment. It simulates thermoplastics such as POLYPROPYLENE. The system is ideal for rapid prototyping and limited production runs using metering machine, with or without vacuum. ALCHEMIX PU 3826 is ideal for high temperature applications such as under the hood uses in the automotive industry. This product is far superior than the many of the competitor's high Tg RIM products available in the market.

Special Features

- Fast room temperature cure (20 – 25°C)
- Fast demould
- Good impact strength
- No sedimentation
- High glass transition temperature (Tg > 200°C)

Mix Ratio

	PU 3826A : PU 3826B
By Weight	100 : 78
By Volume	100 : 67

Product Data

Property	Units	PU 3826A	PU 3826B	Mix
Material	-	Polyol	Isocyanate	Polyurethane
Appearance	-	White/black liquid	Brown liquid	Beige/black liquid
Viscosity (25°C)	mPa.s	1000 – 1500	180 – 200	600 – 800
Density (25°C)	g/cm ³	1.00 – 1.05	1.20 – 1.25	1.04 – 1.09
Pot life (200g, 25°C)	Seconds	-	-	30 – 45
Demould Time (200g, 25°C)	Minutes	-	-	12 – 15
Maximum Recommended Thickness	mm	-	-	10

Cured Properties

Properties	Standard	Units	Result (Full Cure)
Hardness	BS 2782: Part 3: Method 365B	Shore D	80 – 82
Linear Shrinkage	500 x 50 x10 mm	%	0.35
Tensile Strength	BS 2782: Part 3: Method 320B	MPa	25 – 30
Elongation at break	BS 2782: Part 3: Method 320B	%	5 – 10
Flexural Strength	BS 2782: Part 3: Method 335A	MPa	42 – 45
Flexural Modulus	BS 2782: Part 3: Method 335A	MPa	850 – 900
Glass Transition Temperature (Tg)	TMA	°C	>200 °C

The post cured sample when tested on Mettler Thermo Mechanical Analyser TMA 40, exhibits Glass Transition Temperature (Tg) at 205°C. For the purpose of comparison a high Tg PU RIM sample (5220) from the market was also tested that shows its Tg only at 181°C under similar test conditions. Please see the comparative curve generated by the state-of-the-art Mettler STARe software (Figure 1).

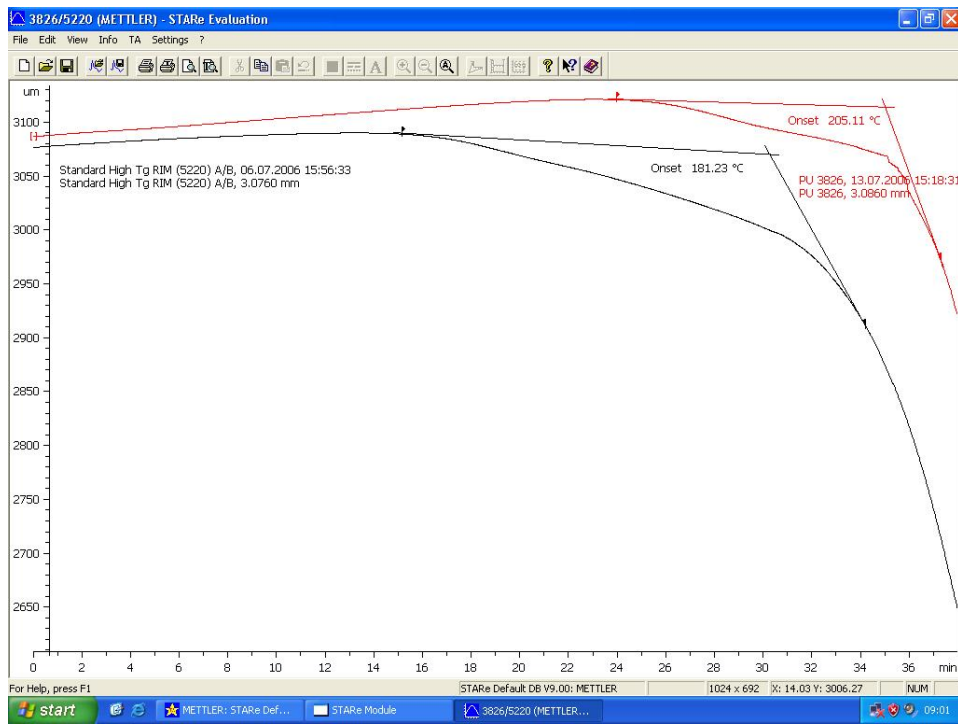


Figure 1: Comparison of PU 3826 with other high Tg PU RIM material

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 least 20°C before mixing.

Mixing instructions

ALCHEMIX PU 3826 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.

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, preferably with the unit on a conformer:

2 hours at 80°C
2 hours at 100°C
1 hour at 120°C
1 hour at 140°C
1 hour at 160 °C
1 hour at 180 °C

When post-curing is complete, let the unit cool down slowly to room temperature, preferably in the oven. Sudden change in temperature (from 160 °C to 20 °C) can make the unit brittle.

Storage

ALCHEMIX PU 3826A and B should be stored in original, unopened containers between 20 and 25°C. ALCHEMIX PU 3826B 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 3826A and B will have a shelf life of 6 months, from the date of production.

Packaging

ALCHEMIX PU 3826A is supplied in 5kg and 25kg kits.
ALCHEMIX PU 3826B is supplied in 4kg and 20kg 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 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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