

Description

ALCHEMIX PU 3838 is a two-component polyurethane system suitable for a variety of applications in the automotive industry. The system is ideal for rapid prototyping and limited production runs using dedicated metering machinery. ALCHEMIX PU 3838 contains milled carbon fibre and is specifically designed for low rates of thermal expansion and dimensional stability.

Features

- Fast room temperature cure (20 – 25°C)
- Contains milled carbon fibre
- Low coefficient of thermal expansion
- Dimensionally stable
- Excellent physical properties
- Flame retardant: tested to FMVSS 302 and DIN 75200

Mix Ratio

	PU 3838A	PU 3838B
By Weight	100	47
By Volume	100	46

Component Data

	Conditions	PU 3838A	PU 3838B
Description	-	Polyol	Isocyanate
Appearance	-	Black liquid	Brown liquid
Viscosity	25°C	3500 – 4500 mPa.s	180 – 240 mPa.s
Density	25°C	1.17 – 1.23 gcm ⁻³	1.20 – 1.25 gcm ⁻³

Cure Data

	Conditions	Typical Value
Appearance	-	Black
Mixed Viscosity	25°C	1800 – 2800 mPa.s
Mixed Density	25°C	1.17 – 1.23 gcm ⁻³
Pot Life	200g, 25°C	55 – 65 secs
Demould Time	3mm, 25°C	20 – 30 mins

	Conditions	Typical Value
Maximum Casting Thickness	-	10 mm

Cured Properties

	Standard	Typical Value	
		Standard Cure ¹	Post Cure ²
Hardness	ISO 868	80 – 84 D	80 – 84 D
Linear Shrinkage ³	500 x 50 x 4 mm	1 mm/m	2 mm/m
Tensile Strength	ISO 527	35 – 40 MPa	35 – 40 MPa
Elongation at Break	ISO 527	3.0 – 4.0 %	2.5 – 3.5 %
Tensile Modulus	ISO 527	1650 – 1750 MPa	1700 – 1800 MPa
Flexural Strength	ISO 178	53 – 58 MPa	53 – 58 MPa
Flexural Modulus	ISO 178	2050 – 2250 MPa	2200 – 2400 MPa
Glass Transition Temperature (T _g) ⁴	DMA	103 – 108 °C	123 – 128 °C
Horizontal Flame Spread (Interior Materials in Motor Vehicles)	FMVSS 302	Self-extinguishing	
	DIN 75200	Self-extinguishing	

¹ & ² See “Curing and Post Cure” section below

³ See “Shrinkage” section below.

⁴ T_g 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 use.

Processing Instructions

ALCHEMIX PU 3838 should be processed using a suitable low pressure RIM machine. For further information on processing ALCHEMIX PU 3838, or for recommended machinery suppliers, please contact Alchemie Ltd.

Curing and Post Cure

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 resin components are at least 20 – 25°C to facilitate a full cure.

To achieve optimum properties, a post cure is required. A typical post cure schedule would be a step wise heat treatment of 1 hour at 60°C, 1 hour at 80°C, 1 hour at 100°C and 3 hours at 120°C. The part should be fully supported during the post cure cycle to prevent any distortion. When post-curing is complete, allow the part to 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 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 PU 3838A and B should be stored in original, unopened containers between 20 and 25°C. ALCHEMIX PU 3838B 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 3838A and B will have a shelf life of 6 months, from the date of production.

Packaging

ALCHEMIX PU 3838A is supplied in 25kg kits.
ALCHEMIX PU 3838B is supplied in 11.75kg 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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