ALCHEMIX PU 376S

Description

ALCHEMIX PU 376S is a fast curing, pre-filled polyurethane casting system designed for high temperature applications such as small vacuum forming tools that requiring rapid cure times, accurate detail replication, and minimal shrinkage.

Features

- Low shrinkage
- High temperature resistance
- Fast cure

Mix Ratio

	PU 376SA	PU 376SB
By Weight	100	15

Component Data

	Conditions	PU 376SA	PU 376SB
Description	-	Polyol	Isocyanate
Appearance	-	Grey liquid	Brown Liquid
Viscosity	25°C	20000 – 30000 mPa.s	180 – 240 mPa.s
Density	25°C	1.69 – 1.79 gcm^{-3}	1.20 – 1.25 gcm^{-3}

Cure Data

	Conditions	Typical Value
Appearance	-	Grey
Mixed Viscosity	25°C	6500 – 8500 mPa.s
Mixed Density	25°C	1.65 – 1.75 gcm^{-3}
Pot Life	200g, 25°C	10 – 16 minutes
Demould Time[1]	200g, 25mm thickness, 25°C	4 – 6 hours
Maximum Casting Thickness	-	75 mm

[1] See "Curing and Post Cure" section below

Cured Properties

	Standard	Typical Value	
		Standard Cure[2]	Post Cure[3]
Hardness	ISO 868	78 – 83 D	80 – 85 D
Linear Shrinkage[4]	500 x 50 x 10mm	<0.10 %	<0.10 %
Tensile Strength	ISO 527	14 – 19 MPa	20 – 25 MPa
Elongation at Break	ISO 527	0.8 – 1.4%	0.9 – 1.4%
Tensile Modulus	ISO 527	1700 – 2200 MPa	2400 – 2900 MPa
Flexural Strength	ISO 178	18 – 23 MPa	33 – 38 MPa
Flexural Modulus	ISO 178	1350 – 1850 MPa	2700 – 2200 MPa
Glass Transition Temperature (Tg)	DMA	53 – 58 °C	88 – 93 °C

[2 & 3] See "Curing and Post Cure" section below

[4] 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

Mix the Part A container thoroughly in order to homogenise the resin. Inspect the part B for any signs of crystallization. Crystallization can cause the liquid to become cloudy or viscous, and in extreme cases, the product could become solid. If the part B has crystallized, heat to 40°C using sufficient extraction to remove any fumes. Please read the Safety Data Sheet (SDS). Shake the containers periodically until the product becomes a clear liquid. Ensure that both components are between 20 – 25°C before mixing.

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Processing Instructions

Thoroughly mix the two components according to the indicated mixing ratio, avoiding air entrapment and ensuring that the material at the bottom and sides of the container is well stirred into the centre. Pour carefully in one place into the mould in order to avoid air inclusion. The mixing and processing operations should be completed within the pot life of the system.

Large quantities of material, will always produce more heat and will gel quicker than smaller amounts.

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 recommended. A typical post cure schedule would heat for 1 hour at 60°C, 1 hour at 80°C, 1 hour at 100°C, followed by 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 changes 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 376SA and B should be stored in original, unopened containers between 20 and 25°C. ALCHEMIX PU 376SB 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 376SA and B will have a shelf life of 6 months, from the date of production.

Packaging

ALCHEMIX PU 376SA is supplied in 7kg kits.
ALCHEMIX PU 376SB is supplied in 1.05kg 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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