POOLKEMIE

Liquid Rubbers & Resins
Chemicals for Industry & Artworks

Resin PU 087
Casting Polyurethane system for models

RESIN	HARDENER	FILLER	MIXING RATIO
PU 087 Component A	PUH 887 Component B	AL 3-H	100:100

INTRODUCTION:

Two component odourless polyurethane system with separate filler. The filler can be added in the suggested or in a different ratio depending on the application and on the required thickness of the casting. Very good detail reproduction, fast cure, low exothermic reaction, low shrinkage. The use of AL 3-H filler (mix ratio 100:100:150) allows production of components with lower specific weight.

APPLICATION:

Foundry patterns, copy models, negatives, fast reproductions. Prototypes, short runs of casting components. Vacuum thermoforming tooling.

PROCESSING:

Face and solid casting also at high thickness. RT cure. The casting size is limited only by the short pot life of the system. Further casting can be made by successive application on the previous gelled layer (within 5 min.).The greater the filler loading, the lower the shrinkage.

Attention: homogenize the resin before use (follow the instructions). This system can be mixed in various mixing ratio with the medium reactivity system PUC-087/ PUH-887 in order to obtain pot life and demoulding times in between.

ISTRUCTIONS:

Homogenize the resin component before use to keep in suspension the light settlement eventually formed. Add the required quantity of filler to the resin and to the hardener separately, thoroughly mix. It is advisable to put more filler on the hardener side. Add the filled hardener to the filled resin, mix carefully avoiding air trapping, then apply quickly. For the surface preparation (moulds or pattern) refer to the release agents data sheet.

POST-CURING:

Post curing is always advisable for RT curing systems in order to stabilize the component and to reach the best mechanical properties. Post curing becomes necessary when the component works at elevated temperature. Post cure the component as stated in the table, avoiding thermal gradients over 10° C/hour. The thermal gradient and post curing time refer to standard specimens. Users should find the best conditions depending on the component size and shape (for big size components decrease the thermal gradient and increase the post curing time; in the case of thin layer applications and composites post cure on the jig).

STORAGE AND HANDLING PRECAUTIONS:

Polyurethane components can be stored for six months in the original well sealed package, in a cool and dry place. The hardener may present an increase in viscosità but does not change the cured system properties. The two components are moisture sensitive (keep the package tightly sealed!). Moisture absorption make cause the expansion of the product during application, and /or the hardener may crystallize during storage. The isocyanates may crystallize at low temperatures. To restore the original conditions, heat the material at 70 80°C avoiding local overheating. Before use, the product must be rehomogenized and cooled down at room temperature. Refer to the product health and safety data sheet.

SYSTEM SPECIFICATIONS:

RESIN:	Viscosity at 25°C	MPa	25 - 45
	System gelation time (w/w), 100 ml, T=25 °C	Min.	3 - 4
HARDENER:	Viscosity at 25°C	MPa	35 - 55

TYPICAL SYSTEM CHARACTERISTICS

Resin Colour	White	
Hardener Colour	Pale Yellow	
Density resin at 25*C (ASTM D 1475)	0,96 - 0,98 (g/ml)	
Density hardener at WC (ASTM 0 1475)	1,09 - 1,12 (g/ml)	
PROCESSING DATA	**A + B**	**A + B + C**
Mixing ratio by weight	100 g.	100
Mixing ratio by volume	-	300
Initial rnixture viscosity at 25°C	40 - 50 Mpa	2.500 - 3.500
Pot life (100 ml, 40 mm, 25°C)	3 – 4 Min.	5 - 6
Exothermic peak (100 mi, 40 mm, 25°C)	80 – 90 °C	30 - 40
Gelation time (15 ml, 6 mm, 25°C)	4 – 5 min.	45 - 60
Demoulding time (15 ml, 6 mm, 25°C) (*)	30 – 45 min.	6- 7
Post-curing 60°C	2 – 4 h	(2 - 4)
Maximum recommended thickness	5 mm	30 - 70

CURED SYSTEM PROPERTIES

Properties determined on standard specimens cured 24 h at R.T. (23±2° C) + 15 h at 60° C

DATI DI LAVORAZIONE	A + B	A + B + C
Colour	White	White
Machinability	Very good	Very good
Density (ASTM D 792)	1.08 - 1.10 g/ml	1.60 – 1.65
Shore hardness (ASTM D 2240)	75 – 79 D/15	82 - 86
Glass transition Maximum Tg (ASTM D 3418)	78 – 84 °C 98 – 104 °C	78 – 84 °C 98 – 104 °C
Max. recommended operating temperature	80 – 85 °C	80 - 85
Flexural strength (ASTM D 790)	48 - 56	35 - 41
Maximum strain (ASTM D 790)	5 – 6 %	1.0 – 1.5 %
Strain at break (ASTM D 790)	8 – 9 %	1.0 – 1.5 %
Flexural elastic modulus (ASTM D 790)	1,300 – 1,500 MN/m2	3.800 – 4200 MN/m2
Tensile strength (ASTM D 638)	30 – 32 MN/m2	23 – 25 MN/m2
Elongation at break (ASTM D 638)	4.3 - 4.8 %	0.8 - 1.2 %
Compressive strength (ASTM 0 695)	46 – 50 MN/m2	60 – 64 MN/m2

nd = not determined; na = not applicable; RT = TA = laboratory room temperature (23±2°C)
Conversion units: 1 mPas = 1 cPs 1MN/m2 = 10 kg/cm2 = 1 MPa
(*) for larger quantities pot life is shorter and exothermic peak increases
(**) the brackets mean optionality
(***) The maximum operating temperature is given on the basis of laboratory information available being it function of the curing conditions used and of the type of coupled materials. For further possible information see post-curing paragraph.

The information given in this publication is based on the present state of our technical knowledge but buyers and users should make their own assessments of our products under their own application conditions.