NEUKADUR high elastic

2-C PUR Casting Elastomers for Rapid Prototyping
Shore A 20 – Shore D 65

altropol

Main features

- high elongation
- high restoring force
- processible by hand and machine
- very good flow properties
- very good resistance to tear propagation
- very good abrasion resistance
- tintable with AltroColor Color Pastes
- relatively long pot life
- short demoulding times at 70 °C

Applications

- prototyping
- production of technical parts
- moulds and patterns

Product	Colour	Viscosity 25°C mPa·s	Density 20°C g/cm³
NEUKADUR high elastic A 50 Comp. A	beige	700	1.02
NEUKADUR high elastic A 50 Comp. B	yellow transp.	8,000	1.10
NEUKADUR high elastic A 65 Comp. B	yellow transp.	12,000	1.10
NEUKADUR high elastic A 75 Comp. A	beige	800	1.02
NEUKADUR high elastic A 75 Comp. B	yellow transp.	12,000	1.10
NEUKADUR high elastic A 90 Comp. B	yellow transp.	10,000	1.10
NEUKADUR high elastic D 65 Comp. A	beige	350	1.10
NEUKADUR high elastic D 65 Comp. B	yellow transp.	12,500	1.10
NEUKADUR high elastic plasticizer 10	transp. colourless	90	0.966

How to process the material Shore A ≥ A 50 in the vacuum casting chamber (e. g. Schüchl UHG 500)

We recommend preheating the components to 40°C. After that, degas component B under stirring for approx. 10 - 15 minutes at full vacuum, then add component A and mix both components intensively at full vacuum for approx. 30 - 60 seconds. Afterwards release the vacuum to 50 - 100 mbar and let the mixed material run into a preheated mould (70 °C). Then temper the mould for 1 to 1.5 hours at 70°C. After demoulding, the materials with Shore A ≥ 50 do not require any further tempering because the material nearly achieves it`s good final properties after another storage of 24 hours at room temperature.
For the materials with Shore < A 50, we recommend a further tempering of 4 hours at 70 °C.

NEUKADUR high elastic cures fast at 70 °C with a relatively long pot life

NEUKADUR high elastic ≥ Shore A 50 can also be processed at room temperature, but then both curing time and demoulding time are significantly longer.

Prior to demoulding, NEUKADUR high elastic D 65 should be tempered at 70°C for at least 3 hours.
We recommend tempering the demoulded part once again, e. g. for 8 hours at 70 °C.

Hardness Shore A ≥ 50 (values after a storage of 1 h at 70 °C and 1 day at RT)
Hardness Shore A < 50 (values after a storage of 4 h at 70 °C and 1 day at RT)
Hardness Shore D 65 (values after a storage of 3 h at 70 °C and further 8 h at 70 °C)
Mix components A + B according to the table.

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In their neutral colour (beige), NEUKADUR high elastic products turn relatively quickly yellow, particularly under the influence of sunlight. Therefore, we recommend coloring NEUKADUR high elastic products with series 5000 of AltroColor in order to reduce the influence of yellowing. According to present knowledge, the yellowing has no significant influence on the mechanics. Regarding the influence of a longer UV radiation on the elastomers/rubbers, we have no experience.

The main applications, however, constitute the black colored elastomers/rubbers. Here, we recommend as standard color AltroColor 5036 black or for jet black colorings AltroColor PU 3037 black.

As a rule, 2 % of the color paste of series 5000 or 1 % of AltroColor PU 3037 black are added to the respective Comp. A and homogenized thoroughly. After that, proceed according to the processing advice.

Shore A		50	65	75	90	
Shore D						65
NEUKADUR high elastic A 50 Comp. A		100 p.b.w.	100 p.b.w.			
NEUKADUR high elastic A 50 Comp. B		100 p.b.w.				
NEUKADUR high elastic A 65 Comp. B			80 p.b.w.			
NEUKADUR high elastic A 75 Comp. A				100 p.b.w.	100 p.b.w.	
NEUKADUR high elastic A 75 Comp. B				120 p.b.w.		
NEUKADUR high elastic A 90 Comp. B					85 p.b.w.	
NEUKADUR high elastic D 65 Comp. A						34 p.b.w.
NEUKADUR high elastic D 65 Comp. B						100 p.b.w.
Mixed viscosity (room temperature) Mixed viscosity 40 °C	mPa·s mPa·s	5,000 1,200	6,500 1,350	8,500 1,600	6,100 1,250	7,500 --
Pot life Comp. A/B preheatet to 40 °C	minutes	14	12	12	12	--
Max. castable layer thickness	mm	20	20	20	20	10
Demouldable (70°C)	minutes	90 - 120	60 - 90	60 - 90	60 - 90	2 - 3 days
Rebound resilience DIN 53512	%	53	56	50	50	not measur-able
Linear dimensional change (500 x 50 x 5 mm)	%	0.2	0.2	0.2	0.2	0.2**
Tensile elongation	%	560	690	590	300	250
Tensile strength	MPa	2	8	7,5	5	38
Resistance to tear propagation (with cut-in)	N/mm	10	35	50	39	*

* work in progress ** 500 x 50 x 25 mm p.b.w. = parts by weight RT = room temperature

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How to process the material Shore A < 50:

Preheat all components to 40 °C. The mould temperature should be 70 °C. Mix NEUKADUR high elastic A 50 Comp. B with the NEUKADUR high elastic Plasticizer 10 depending on the desired Shore A-hardness. Degas the compound under stirring at full vacuum for at least 10 minutes. After that, add the NEUKADUR high elastic A 50 Comp. A to the mixture and mix the same intensively at full vacuum for approx. 60 - 120 seconds. Then release it to 50 - 100 mbar and pour it into the mould.

For the materials of < Shore A 50, we recommend another tempering of 4 hours at 70 °C. (For demoulding times, please refer to the following table). For bigger parts, the tempering of 1.5 hours at 70 °C may be sufficient.

The materials of < Shore A 50 are still trial products for which we do not have any final experimental values available yet. For tinting, you can proceed in the same way as with hardnesses Shore A > 50.

For the coloring process, you can proceed in the same way as with the hardnesses Shore A >50.

A premixture consisting of NEUKADUR high elastic A 50 Comp. B and NEUKADUR high elastic Plasticizer 10 may increase a little bit in viscosity after one day, but will then be stable in the viscosity (the corresponding test lasted 14 days).

Shore A		20	25	30	35	40
NEUKADUR high elastic A 50 Comp. A		100 p.b.w.	100 p.b.w.	100 p.b.w.	100 p.b.w.	100 p.b.w.
NEUKADUR high elastic A 50 Komp. B		100 p.b.w.	100 p.b.w.	100 p.b.w.	100 p.b.w.	100 p.b.w.
NEUKADUR high elastic plasticizer 10		100 p.b.w.	75 p.b.w.	50 p.b.w.	25 p.b.w.	10 p.b.w.
Mixed viscosity (room temperature) Mixed viscosity 40 °C	mPa·s	1400 550	1600 750	2400 1000	3400 1225	4000 1300
Pot life Comp. B preheated to 40 °C	minutes	16	15	14	12	13
Max. castable layer thickness	mm	25	25	25	25	25
Demouldable (70 °C)	minutes	90 - 120	75 - 100	65 - 85	60 - 75	60 - 75
Rebound resilience DIN 53512	%	48	54	55	53	54
Linear dimensional change 500 x 50 x 20 mm after 1 h at 70 °C + 30 days of storage at RT after 4 days at 70 °C	%	< 0.2 < 0.5	< 0.2 n.t.	< 0.2 n. t.	< 0.2 n. t.	< 0.2 n. t,
Dimensional stability under heat (for a short time)	HDT in °C	*	*	*	*	*
Tensile elongation	%	1	1.21	1.32	1.7	2.2
Tensile strength	MPa	550	500	450	440	470
Resistance to tear propagation (with cut-in)	N/mm	2.7	3.7	4.3	5	6.5

* work in progress n. t. = not tested p.b.w. = parts by weight RT = room temperature

Form of delivery

NEUKADUR high elastic A 50 Comp. A	1 kg	5 kg					
NEUKADUR high elastic A 50 Comp. B	1 kg	5 kg					
NEUKADUR high elastic A 65 Comp. B	0.8 kg	4 kg					
NEUKADUR high elastic A 75 Comp. A	1 kg	5 kg					
NEUKADUR high elastic A 75 Comp. B	1.2 kg	6 kg					
NEUKADUR high elastic A 90 Comp. B	0.85 kg	4.25 kg					
NEUKADUR high elastic D 65 Comp. A	0.34 kg	1.7 kg					
NEUKADUR high elastic D 65 Comp. B	1 kg	5 kg					
NEUKADUR high elastic plasticizer 10	0,1 kg	0,25 kg	0,5 kg	0,75 kg	1,25 kg	2,5 kg	5 kg

Storage

We recommend keeping the material in tightly closed original receptacles at temperatures of 20 - 25 °C. When duly stored, the material can be used within the shelf life indicated on the labels (the first 2 digits of the batch number indicate the week, the 3rd digit indicates the year).

Measure of precaution

With the aid of the current safety data sheets, which contain physical, ecological, toxicological and other data relating to safety, the user can inform himself on the safe handling and storage of the products.

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