NEUTHANE 300 Series

TDI –PPG Ether Prepolymers

Published October 2023 Version 3

The NEUTHANE 300 series of TDI-PPG ether prepolymers are designed to offer a reasonable level of physical properties at a price advantage over TDI–PTMEG systems.

- a reasonable level of physical properties
- low cost
- good hydrolysis resistance
- ease of use
- low viscosity

Typical Applications

Dunnage
Non-dynamic roller coverings (e.g. conveyor rollers for the steel industry)
Scraper blades (e.g. snow plough blades)
Wheels (low load)

Processing can be carried out by hand or by dispensing machine

- Avoid prolonged storage of prepolymers at elevated temperatures. This will result in low hardness and lower properties of the cured material
- Avoid moisture contamination of all materials
- Part used containers should be flushed with dry nitrogen and resealed immediately after use
- The development of cure is longer than for PTMEG systems. Rapid temperature changes during the early stage of cure should be avoided

Hand Processing

1. Melt prepolymer at 50-60°C for 12-24 hours
2. Heat the prepolymer and curative to the recommended temperature
3. Add pigments and Antifoam, as applicable, whilst mixing
4. It is recommended that air be removed from the prepolymer under vacuum prior to addition of the curative
5. Add the curative and thoroughly mix ensuring that no unmixed material is left on the container sides (if necessary the mix can be transferred to a second clean container and mixed again)
6. Remove air under vacuum
7. Cast into moulds, preheated to the recommended temperature
8. Cure as recommended

Alternatives

Dynamic Resilience	- PTMEG ether-based systems should be considered	NEUTHANE 100 [TDI], 600 [MDI], NEUTHANE 801 [Quasi]
Solvents / Abrasion	- Ester-based systems should be considered	NEUTHANE 200 [TDI], 700 [MDI]
Humid / Wet	-MDI or Aliphatic Isocyanate based systems should be considered	NEUTHANE 600 [MDI] or NEUTHANE 500 [Aliphatic]

NEUTHANE 300 Series –TDI –Ether Prepolymers (60 - 75 Shore A)

NEUTHANE GRADE		320	325	330
%NCO (mid-point)	%	2.0	2.5	3.0
Curative		**MOCA**	**MOCA**	**MOCA**
Recommended Stoichiometry	%	95	95	95
Mix Ratio Curative per 100 Parts Resin	by weight	6.0	7.6	9.1
Resin Temperature	°C	75	75	70
Curative Temperature	°C	110	110	110
Recommended Mould Temperature	°C	90	90	90
Resin Viscosity (100°C / Process Temperature)	cPs	180 / n.a	225 / n.a	225 / n.a
Pot life (on a 500g mix)	minutes	20	20	15
Recommended Cure Temperature / Time	°C / hrs	95 / 20	95 / 20	95 / 20

Hardness	ISO 48-4	Shore A	60	70	75
	ISO 48-4	Shore D	-	-	-
100% Modulus	ISO 37	MPa (lb/in²)	1.4 (195)	1.7 (250)	2.1 (300)
300% Modulus	ISO 37	MPa (lb/in²)	1.9 (270)	2.8 (400)	3.5 (500)
Tensile Strength	ISO 37	MPa (lb/in²)	6.6 (950)	7.9 (1150)	8.6 (1250)
Elongation at Break	ISO 37	%	980	1000	800
Tear (Die C)	ISO 34-1	kN/m (lbf/in)	21.9 (125)	31.6 (180)	35.1 (200)
Compression Set	ISO 815-1	%	-	-	-
Abrasion loss	ISO 4649	mm^3	-	-	-
Resilience	ASTM D 2632-92	%	-	-	-
Specific Gravity		g / cm^3	1.08	1.04	1.12

notedome™ URETHANE SYSTEMS

NEUTHANE 300 Series –TDI –Ether Prepolymers (80 - 95 Shore A)

NEUTHANE GRADE		335	335	343	343
%NCO (mid-point)	%	3.5	3.5	4.6	4.6
Curative		**MOCA**	**CA6**	**MOCA**	**CA6**
Recommended Stoichiometry	%	95	95	95	95
Mix Ratio Curative per 100 Parts Resin	by weight	10.6	8.5	13.9	11.1
Resin Temperature	°C	75	75	70	70
Curative Temperature	°C	110	20-25	110	20-25
Recommended Mould Temperature	°C	90	90	90	90
Resin Viscosity (100°C / Process Temperature)	cPs	160 / 336	160 / 336	140 / n.a	231 / 1230
Pot life (on a 500g mix)	minutes	9	9	8	3
Recommended Cure Temperature / Time	°C / hrs	95 / 20	95 / 20	95 / 20	95 / 20

Hardness	ISO 48-4	Shore A	82	80	87	93
	ISO 48-4	Shore D	-	-	-	-
100% Modulus	ISO 37	MPa (lb/in²)	4.1 (590)	5.3 (764)	6.4 (930)	11.5 (1660)
300% Modulus	ISO 37	MPa (lb/in²)	8.3 (1200)	7.0 (1010)	5.9 (860)	22.2 (3220)
Tensile Strength	ISO 37	MPa (lb/in²)	18.3 (2650)	11.7 (1700)	12.6 (1830)	27.1 (3930)
Elongation at Break	ISO 37	%	670	775	470	346
Tear (Die C)	ISO 34-1	kN/m (lbf/in)	56.0 (320)	52.4 (300)	70.3 (400)	69.9 (400)
Compression Set	ISO 815-1	%	38	49.5	36	37.9
Abrasion loss	ISO 4649	mm^3	159	133	121	139
Resilience	ASTM D 2632-92	%	40	57	30	32
Specific Gravity		g / cm^3	1.08	1.04	1.12	1.08

notedome™ URETHANE SYSTEMS

NEUTHANE 300 Series –TDI –Ether Prepolymers (80 - 95 Shore A)

NEUTHANE GRADE		353	353	363S	363	363
%NCO (mid-point)	%	5.3	5.3	6.3	6.3	6.3
Curative		**MOCA**	**CA6**	**MOCA**	**MOCA**	**CA6**
Recommended Stoichiometry	%	95	95	95	95	95
Mix Ratio Curative per 100 Parts Resin	by weight	15.9	12.8	19.0	19.0	15.3
Resin Temperature	°C	70	70	70	65	65
Curative Temperature	°C	110	20-25	110	110	20-25
Recommended Mould Temperature	°C	90	90	80	85	85
Resin Viscosity (100°C / Process Temperature)	cPs	140 /549	140 / 549	100 / n.a	100 / 575	100 / 575
Pot life (on a 500g mix)	minutes	8	8	8	5	5
Recommended Cure Temperature / Time	°C / hrs	95 / 20	95 / 20	90 / 20	90 / 20	90 / 20

Hardness	ISO 48-4	Shore A	92	92	93	95	95
	ISO 48-4	Shore D	-	-	-	-	-
100% Modulus	ISO 37	MPa (lb/in²)	10.3 (1500)	10.8 (1560)	13.2 (1910)	15.5 (2250)	13.0 (1880)
300% Modulus	ISO 37	MPa (lb/in²)	20.8 (3010)	16.1 (2330)	14.0 (2020)	16.5 (2390)	19.7 (2860)
Tensile Strength	ISO 37	MPa (lb/in²)	35.9 (5210)	32.2 (4670)	29.5 (4270)	31.5 (4570)	26.0 (3770)
Elongation at Break	ISO 37	%	420	460	400	340	346
Tear (Die C)	ISO 34-1	kN/m (lbf/in)	67.7 (385)	78.7 (450)	71.8 (410)	80.6 (460)	78.2 (460)
Compression Set	ISO 815-1	%	37	54.7	43	38	49.7
Abrasion loss	ISO 4649	mm^3	119	119	132	118	125
Resilience	ASTM D 2632-92	%	29	32	27	28	34
Specific Gravity		g / cm^3	1.13	1.09	1.14	1.14	1.08

notedome™ URETHANE SYSTEMS