



Technical Data Sheet: Neuthane 700 / 700HR / 700AW Series

MDI – Ester Prepolymers

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Neuthane 700 Series MDI – Ester Prepolymers (80 – 95 Shore A)

Properties			Processing			Special Considerations		
<p>The Neuthane 700 series are high performance MDI - ester prepolymers designed to produce items for use in arduous application areas.</p> <p>They offer:</p> <ul style="list-style-type: none"> • a high level of physical properties • good cut and abrasion resistance • good chemical resistance • extended hardness range with CA curatives <p>Typical Applications</p> <ul style="list-style-type: none"> • Mining and quarrying (e.g. screen decks, scraper blades) • Medium load roller coverings (e.g. steel industry – dry applications) • Oil and gas industry (e.g. gaskets, pipe pigs) • Wheels (e.g. pallet truck) 			<p>Processing can be by hand or by dispensing machine.</p> <p>Hand Processing</p> <ul style="list-style-type: none"> • Melt prepolymer at 60-70°C for 12-24 hours (as a guide the grades with the lower NCO value will take longer to melt than those with higher NCO values) • Heat the prepolymer and curative to the recommended temperature • Ensure 1:4 Butanediol is dry by applying vacuum at 115°C • Add pigments and Antifoam, as applicable, whilst mixing • It is recommended that air be removed from the prepolymer under vacuum prior to addition of the curative • 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) • Remove air under vacuum • Cast into moulds, preheated to the recommended temperature • Cure as recommended 			<p>Processing</p> <ul style="list-style-type: none"> • 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 • Development of cure is long compared to TDI-MOCA systems. Rapid temperature change during the early stages of cure should be avoided. <p>Alternatives</p> <ul style="list-style-type: none"> • Humid / Wet – PTMEG ether based systems should be considered: Neuthane 100 [TDI], Neuthane 600 [MDI] or Neuthane 500 [Aliphatic] • Dynamic / Resilience – PTMEG ether based materials should be considered: Neuthane 100 [TDI], Neuthane 600 [MDI] or Neuthane 801 [MDI Quasi] • Temperature – Neuthane 100 [TDI PTMEG] or Neuthane 500 [Aliphatic Isocyanate] 		
COST	PROCESSING	ABRASION	DYNAMIC	RESILIENCE	SOLVENT	HUMID/WET	TEMPERATURE	UV STABILITY

Key

Excellent / Good

Good / Average

Average / Poor

Neuthane 700 Series MDI – Ester Prepolymers (80 – 95 Shore A)

Neuthane		760	765	766	775	795
%NCO (mid-point)	%	6.0	6.5	6.5	7.5	9.5
Curative		1,4 - Butanediol	1,4 - Butanediol	1,4 - Butanediol	1,4 - Butanediol	1,4 - Butanediol
Recommended Stoichiometry	%	98.5	98.5	98.5	98.5	98.5
Mix Ratio Curative per 100 Parts Resin	by weight	6.33	6.86	6.86	7.92	10.03
Resin Temperature	°C	80	80	80	75	75
Curative Temperature	°C	60	60	60	60	60
Recommended Mould Temperature	°C	105	105	105	105	105
Viscosity @ 100°C	cps	830	700	635	500	245
Pot life (on a 500g mix)	minutes	10	9	8	7	6
Recommended Cure Temperature / Time	°C / hrs	105 / 16 + 24 at RT	105 / 16 + 24 at RT	105 / 16 + 24 at RT	105 / 16 + 24 at RT	105 / 16 + 24 at RT

Hardness	DIN 2240-91	Shore A	80	85	85	90	95
	DIN 2240-91	Shore D	-	-	-	-	-
100% Modulus	BS 903 Pt A2 - ISO 37	lb/in ² (Mpa)	780 (5.4)	900 (6.2)	880 (6.1)	950 (6.6)	2200 (15.2)
300% Modulus	BS 903 Pt A2 - ISO 37	lb/in ² (Mpa)	1380 (9.6)	1750 (12.1)	2300 (15.9)	2760 (19.0)	4020 (27.7)
Tensile Strength	BS 903 Pt A2 - ISO 37	lb/in ² (Mpa)	6380 (44.0)	6650 (45.9)	7400 (51.0)	7400 (51.0)	6590 (45.4)
Elongation at Break	BS 903 Pt A2 - ISO 37	%	630	650	480	480	600
Tear Strength	BS 903 Pt A3 - ISO 34-1	lb/in (KN/m)	485 (85.1)	555 (97.2)	490 (85.8)	490 (85.8)	730 (128)
Compression Set	BS903 Pt A6 - ISO 815	%	59	53	41	36	32
Abrasion loss	DIN 53516	mm ³	23	20	19	22	34
Resilience	ASTM D 2632-92	%	38	36	16	20	30
Specific Gravity		g/cm ³	1.23	1.24	1.24	1.24	1.25

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Neuthane 700 Series MDI – Ester Prepolymers (80 – 95 Shore A - High Resilience)

Neuthane		760HR	765HR	775HR	795HR
%NCO (mid-point)	%	6.0	6.5	7.5	9.5
Curative		1,4 - Butanediol	1,4 - Butanediol	1,4 - Butanediol	1,4 - Butanediol
Recommended Stoichiometry	%	98.5	98.5	98.5	98.5
Mix Ratio Curative per 100 Parts Resin	by weight	3.66	6.86	7.92	10.03
Resin Temperature	°C	80	80	75	75
Curative Temperature	°C	60	60	60	60
Recommended Mould Temperature	°C	105	105	105	105
Viscosity @ 100°C	cps	810	700	560	280
Pot life (on a 500g mix)	minutes	11	10	8	7
Recommended Cure Temperature / Time	°C / hrs	105 / 16 + 24 at RT	105 / 16 + 24 at RT	105 / 16 + 24 at RT	105 / 16 + 24 at RT

Hardness	DIN 2240-91	Shore A	80	85	90	95
	DIN 2240-91	Shore D	-	-	-	-
100% Modulus	BS 903 Pt A2 - ISO 37	lb/in ² (Mpa)	900 (6.20)	730 (5.0)	900 (6.20)	1050 (7.20)
300% Modulus	BS 903 Pt A2 - ISO 37	lb/in ² (Mpa)	1530 (10.6)	1655 (11.4)	1800 (12.3)	2500 (14.4)
Tensile Strength	BS 903 Pt A2 - ISO 37	lb/in ² (Mpa)	7020 (48.3)	6810 (46.9)	5440 (37.5)	5300 (36.6)
Elongation at Break	BS 903 Pt A2 - ISO 37	%	515	550	570	590
Tear Strength	BS 903 Pt A3 - ISO 34-1	lb/in (KN/m)	470 (82.5)	500 (87.7)	600 (105.2)	730 (128)
Compression Set	BS903 Pt A6 - ISO 815	%	42	30	30	28
Abrasion loss	DIN 53516	mm ³	23	22	22	30
Resilience	ASTM D 2632-92	%	44	49	49	40
Specific Gravity		g/cm ³	1.23	1.24	1.24	1.25

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Neuthane 700AW Series MDI – Ester Prepolymers (85 – 95 Shore A)

Properties			Processing			Special Considerations		
<p>The Neuthane 700AW series are high performance MDI - ester prepolymers designed to produce items requiring a combination of high resilience and excellent tear strength</p> <p>Compared to other prepolymers the 'AW' materials are characterised by not only impressive DIE C tear strength but also Trouser tear.</p> <p>They offer:</p> <ul style="list-style-type: none"> • a high level of physical properties • good cut and abrasion resistance • high resilience <p>Typical Applications</p> <ul style="list-style-type: none"> • Mining and quarrying (e.g. screen decks, scraper blades) • Medium load roller coverings (e.g. steel industry – dry applications) • Wheels (e.g. pallet truck) 			<p>Processing can be by hand or by dispensing machine.</p> <p>Hand Processing</p> <ul style="list-style-type: none"> • Melt prepolymer at 60-70°C for 12-24 hours (as a guide the grades with the lower NCO value will take longer to melt than those with higher NCO values) • Heat the prepolymer and curative to the recommended temperature • Ensure 1:4 Butanediol is dry by applying vacuum at 115°C • Add pigments and Antifoam, as applicable, whilst mixing • It is recommended that air be removed from the prepolymer under vacuum prior to addition of the curative • 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) • Remove air under vacuum • Cast into moulds, preheated to the recommended temperature • Cure as recommended 			<p>Processing</p> <ul style="list-style-type: none"> • 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 • Development of cure is long compared to TDI-MOCA systems. Rapid temperature change during the early stages of cure should be avoided. <p>Alternatives</p> <ul style="list-style-type: none"> • Humid / Wet – PTMEG ether based systems should be considered: Neuthane 100 [TDI], Neuthane 600 [MDI] or Neuthane 500 [Aliphatic] • Dynamic / Resilience – PTMEG ether based materials should be considered: Neuthane 100 [TDI], Neuthane 600 [MDI] or Neuthane 801 [MDI Quasi] • Temperature – Neuthane 100 [TDI] or Neuthane 500 [Aliphatic Isocyanate] should be considered 		
COST	PROCESSING	ABRASION	DYNAMIC	RESILIENCE	SOLVENT	HUMID/WET	TEMPERATURE	UV STABILITY

Key

Excellent / Good

Good / Average

Average / Poor

Neuthane 700AW Series MDI – Ester Prepolymers (85 – 95 Shore A)

Neuthane			766	765HR	765AW
%NCO (mid-point)	%		6.5	6.5	6.5
Curative			1,4 - Butanediol	1,4 - Butanediol	1,4 - Butanediol
Recommended Stoichiometry	%		98.5	98.5	98.5
Mix Ratio Curative per 100 Parts Resin	by weight		6.86	6.86	6.86
Resin Temperature	°C		80	80	75
Curative Temperature	°C		60	60	60
Recommended Mould Temperature	°C		105	105	105
Viscosity @ 100°C	cps		620	730	900
Pot life (on a 500g mix)	minutes		8	10	7
Recommended Cure Temperature / Time	°C / hrs		105 / 16 + 24 at RT	105 / 16 + 24 at RT	105 / 16 + 24 at RT
Hardness	DIN 2240-91	Shore A	85	85	85
100% Modulus	BS 903 Pt A2 - ISO 37	lb/in ² (Mpa)	880 (6.1)	680 (4.7)	840 (5.8)
300% Modulus	BS 903 Pt A2 - ISO 37	lb/in ² (Mpa)	2200 (15.2)	1190 (8.2)	2227 (15.4)
Tensile Strength	BS 903 Pt A2 - ISO 37	lb/in ² (Mpa)	6400 (44.2)	6500 (44.9)	7416 (51.2)
Elongation at Break	BS 903 Pt A2 - ISO 37	%	510	650	594
Tear Strength	BS 903 Pt A3 - ISO 34-1	lb/in (KN/m)	490 (85.8)	470 (82.3)	609 (106.6)
Trouser Tear		lbf/in (KN/m)	563 (98.5)	172 (30.1)	489 (85.6)
Compression Set	BS903 Pt A6 - ISO 815	%	41	35	-
Abrasion loss	DIN 53516	mm ³	19	19	-
Resilience	ASTM D 2632-92	%	16	50	38
Specific Gravity		g/cm ³	1.24	1.24	1.24

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Neuthane 700AW Series MDI – Ester Prepolymers (85 – 95 Shore A)

Neuthane			795	795HR	795AW
%NCO (mid-point)	%		9.5	9.5	9.5
Curative			1,4 - Butanediol	1,4 - Butanediol	1,4 - Butanediol
Recommended Stoichiometry	%		98.5	98.5	98.5
Mix Ratio Curative per 100 Parts Resin	by weight		10.03	10.03	10.03
Resin Temperature	°C		75	75	75
Curative Temperature	°C		60	60	60
Recommended Mould Temperature	°C		105	105	105
Viscosity @ 100°C	cps		280	280	385
Pot life (on a 500g mix)	minutes		6	7	4.5
Recommended Cure Temperature / Time	°C / hrs		105 / 16 + 24 at RT	105 / 16 + 24 at RT	105 / 16 + 24 at RT
Hardness	DIN 2240-91	Shore A	95	95	95
100% Modulus	BS 903 Pt A2 - ISO 37	lb/in ² (Mpa)	2080 (14.4)	990 (6.8)	1543 (10.6)
300% Modulus	BS 903 Pt A2 - ISO 37	lb/in ² (Mpa)	3850 (26.6)	2090 (14.4)	3144 (21.7)
Tensile Strength	BS 903 Pt A2 - ISO 37	lb/in ² (Mpa)	6180 (42.6)	5300 (36.6)	6601 (45.5)
Elongation at Break	BS 903 Pt A2 - ISO 37	%	540	650	579
Tear Strength	BS 903 Pt A3 - ISO 34-1	lb/in (KN/m)	830 (145.3)	625 (109.4)	750 (131.1)
Trouser Tear		lbf/in (KN/m)	375 (65.6)	450 (78.8)	835 (146.1)
Compression Set	BS903 Pt A6 - ISO 815	%	32	28	-
Abrasion loss	DIN 53516	mm ³	34	30	-
Resilience	ASTM D 2632-92	%	30	40	40
Specific Gravity		g/cm ³	1.25	1.25	1.25

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