



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
<p>Key</p> <p>Excellent / Good</p>			<p>Good / Average</p>			<p>Average / Poor</p>		

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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