



# Technical Data Sheet: Neuthane 600 Series

MDI – PTMEG Ether Prepolymers

v2 03 July 2019

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## Neuthane 600 Series MDI – PTMEG Ether Prepolymers (80 – 95 Shore A)

Properties			Processing			Special Considerations		
<p>The Neuthane 600 series are high performance MDI - PTMEG prepolymers designed to produce items for use in extreme application areas.</p> <p>They offer:</p> <ul style="list-style-type: none"> <li>• a very high level of physical properties</li> <li>• good dynamic performance</li> <li>• good hydrolysis resistance</li> <li>• high resilience</li> <li>• low viscosity</li> <li>• extended hardness range with CA curatives</li> </ul> <p><b>Typical Applications</b></p> <ul style="list-style-type: none"> <li>• Wheels (e.g. fork truck, pallet truck and press on bands)</li> <li>• High performance in-line roller blade wheels (HR grades)</li> <li>• Roller coverings – wet applications (e.g. steel industry)</li> <li>• Mining and quarrying (e.g. screen decks, scraper blades)</li> <li>• Hydrocyclones</li> <li>• Oil and gas industry (e.g. gaskets)</li> <li>• Automotive (e.g. suspension bushes)</li> </ul>			<p>Processing can be by hand or by dispensing machine.</p> <p><b>Hand Processing</b></p> <ul style="list-style-type: none"> <li>• Melt prepolymer at 50-70°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)</li> <li>• Heat the prepolymer and curative to the recommended temperature</li> <li>• Ensure 1:4 Butanediol is dry by heating to 115°C and applying vacuum</li> <li>• Add pigments and Antifoam, as applicable, whilst mixing</li> <li>• It is recommended that air be removed from the prepolymer under vacuum prior to addition of the curative</li> <li>• 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)</li> <li>• Remove air under vacuum</li> <li>• Cast into moulds, preheated to the recommended temperature</li> <li>• Cure as recommended</li> </ul>			<p><b>Processing</b></p> <ul style="list-style-type: none"> <li>• Avoid prolonged storage of prepolymers at elevated temperatures. This will result in low hardness and lower properties of the cured material</li> <li>• Avoid moisture contamination of all materials</li> <li>• Part used containers should be flushed with dry nitrogen and resealed immediately after use</li> <li>• Development of cure is long compared to TDI-MOCA systems. Rapid temperature change during the early stages of cure should be avoided.</li> </ul> <p><b>Alternatives</b></p> <ul style="list-style-type: none"> <li>• <b>Solvents</b> – ester based systems should be considered Neuthane 200 [TDI] or Neuthane 700 [MDI]</li> <li>• <b>Cost</b> – Ester systems can be considered: Neuthane 700 [MDI Prepolymer] or Neuthane 802 [MDI Quasi]</li> <li>• <b>Temperature</b> – Neuthane 100 [TDI PTMEG] or Neuthane 500 [Aliphatic Isocyanate]</li> </ul>		
<b>COST</b>	<b>PROCESSING</b>	<b>ABRASION</b>	<b>DYNAMIC</b>	<b>RESILIENCE</b>	<b>SOLVENT</b>	<b>HUMID/WET</b>	<b>TEMPERATURE</b>	<b>UV STABILITY</b>

Key

Excellent / Good

Good / Average

Average / Poor

## Neuthane 600 Series MDI – PTMEG Ether Prepolymers (80 – 95 Shore A)

Neuthane		660	668	675	695
%NCO (mid-point)	%	6.0	6.8	7.5	9.5
<b>Curative</b>		<b>1,4 - Butanediol</b>	<b>1,4 - Butanediol</b>	<b>1,4 - Butanediol</b>	<b>1,4 - Butanediol</b>
Recommended Stoichiometry	%	98.5	98.5	98.5	98.5
Mix Ratio Curative per 100 Parts Resin	by weight	6.33	7.18	7.92	10.03
Resin Temperature	°C	75	75	75	75
Curative Temperature	°C	25	25	25	25
Recommended Mould Temperature	°C	105	105	105	105
Viscosity @ 100°C (prepolymer)	cps	630	440	410	330
Pot life (on a 500g mix)	minutes	11	9	9	8
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 <sup>2</sup> (Mpa)	900 (6.2)	1190 (8.2)	1840 (12.7)	1880 (13.0)
300% Modulus	BS 903 Pt A2 - ISO 37	lb/in <sup>2</sup> (Mpa)	2070 (14.3)	2280 (15.7)	2980 (20.5)	3470 (23.9)
Tensile Strength	BS 903 Pt A2 - ISO 37	lb/in <sup>2</sup> (Mpa)	6100 (42.1)	5620 (38.7)	6150 (42.4)	6180 (42.6)
Elongation at Break	BS 903 Pt A2 - ISO 37	%	440	450	430	470
Tear Strength	BS 903 Pt A3 - ISO 34-1	lb/in (KN/m)	405 (71.0)	485 (84.8)	525 (92.0)	680 (119.2)
Compression Set	BS903 Pt A6 - ISO 815	%	25	22	20	16
Abrasion loss	DIN 53516	mm <sup>3</sup>	25	26	26	32
Resilience	ASTM D 2632-92	%	45	46	46	45
Specific Gravity		g/cm <sup>3</sup>	1.09	1.10	1.10	1.12

Information contained in the data above is, to the best of our knowledge, true and accurate. Since conditions of use are beyond our control, no warranty is given or implied in respect of any recommendations or suggestions made by ourselves, nor is freedom from patent infringement inferred.

## Neuthane 600 Series MDI- PTMEG Ether Prepolymers - High Resilience (80 - 87 Shore A)

Neuthane		660HR	663HR	674HR	695HR
%NCO (mid-point)	%	6.0	6.3	7.4	9.5
<b>Curative</b>		<b>1,4 - Butanediol</b>	<b>1,4 - Butanediol</b>	<b>1,4 - Butanediol</b>	<b>1,4 - Butanediol</b>
Recommended Stoichiometry	%	98.5	98.5	98.5	98.5
Mix Ratio Curative per 100 Parts Resin	by weight	6.33	6.65	7.80	10
Resin Temperature	°C	75	75	75	75
Curative Temperature	°C	25	25	25	25
Recommended Mould Temperature	°C	105	105	105	105
Viscosity @ 100°C (prepolymer)	cps	620	620	440	450
Pot life (on a 500g mix)	minutes	11	10	9	8
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	84	87	95
	DIN 2240-91	Shore D	-	-	-	-
100% Modulus	BS 903 Pt A2 - ISO 37	lb/in <sup>2</sup> (Mpa)	890 (6.1)	780 (5.4)	1050 (7.2)	1450 (10.0)
300% Modulus	BS 903 Pt A2 - ISO 37	lb/in <sup>2</sup> (Mpa)	1660 (11.5)	1700 (11.7)	2150 (14.8)	2500 (17.25)
Tensile Strength	BS 903 Pt A2 - ISO 37	lb/in <sup>2</sup> (Mpa)	5830 (40.2)	6210 (42.8)	5730 (39.4)	5000 (34.5)
Elongation at Break	BS 903 Pt A2 - ISO 37	%	590	560	540	490
Tear Strength	BS 903 Pt A3 - ISO 34-1	lb/in (KN/m)	475 (83.4)	510 (89.4)	580 (98.2)	525 (92.0)
Compression Set	BS903 Pt A6 - ISO 815	%	24	21	16	18
Abrasion loss	DIN 53516	mm <sup>3</sup>	15	12	13	33
Resilience	ASTM D 2632-92	%	68	65	59	55
Specific Gravity		g/cm <sup>3</sup>	1.09	1.10	1.10	1.12

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