



Product range Typical values

Desmopan[®]



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Desmopan® is the trade name for the thermoplastic polyurethanes (TPU) from Covestro AG.

The Desmopan® product range is adapted to the various specific requirements of the diverse fields of application. It includes nine product series based on different raw material groups.

We're there for you – with competence worldwide:

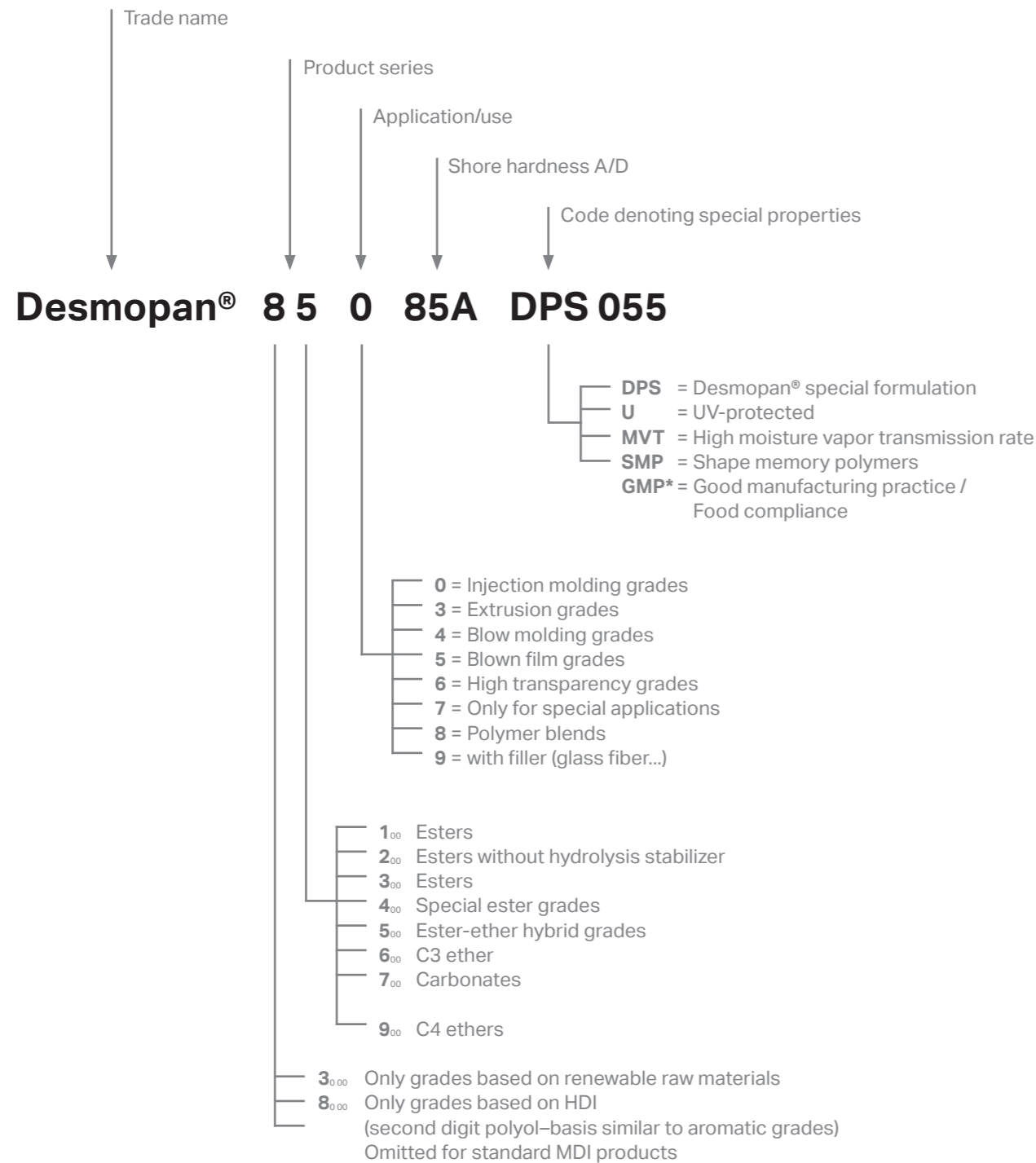
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For further information, visit our website at:
www.desmopan.com



Further information on Desmopan® TPU from Covestro:
<https://www.tpu.covestro.com/de>

Nomenclature – key to the Desmopan® grades



Comparison of properties in the Desmopan® product series

Product series	Brief description	Properties								
		Wear resistance	Dynamic load-bearing capacity	Heat deflection temperature	Oil and fat resistance	Hydrolytic stability	Hot air resistance	Light resistance (yellowing)	Microbe resistance	Low-temperature flexibility
100, esters	Injection molding and extrusion grades with high mechanical strength, hydrolysis-stabilized for products subject to high wear	++	++	+	+	0	+	0	—**	+
200, esters	Injection molding, extrusion and sintering grades, some of which can be used to manufacture commodity products for food contact applications*	++	++	0	+	—	+	0	—	+
300, esters	Injection molding and extrusion grades with high mechanical strength, improved hydrolytic stability and low-temperature flexibility	++	++	+	+	+	+	0	—**	+
400, special esters	Injection molding grades with low compression set, high heat deflection temperature, good fat and oil resistance	++	++	++	++	+	++	0	0**	+
500, ester-ether	Injection molding and extrusion grades that cost-efficiently combine the advantages of ester and ether products	0/+	0	0	+	+	—	0	+	+
600, ether	Injection molding grades with very good hydrolytic stability and microbe resistance, but reduced mechanical properties	0	—	0	+	++	—	0	++	++
700, carbonates	Injection molding and extrusion grades, microbe resistant and hydrolytically stable with low swelling in water	+	+	0	+/ ++ ¹	++	0	0	+	+
800, aliphatics	Injection molding and slush grades that do not yellow on exposure to UV radiation	+	0	0/+	+	+/ ++ ¹	+/ — ¹	++	—/ ++ ¹	+/ ++ ¹
900, ethers	Injection molding and extrusion grades with very good hydrolytic stability and microbe resistance, very good low-temperature flexibility, some of which are approved for food use	+	0	0	+	++	—	0	++	++

* The products with food compliance (GMP-suffix in the product name) can be found on our website.

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For further information, visit our website at:
www.tpu.covestro.com/Library/Certificates/Food-Contact.aspx



For further information, visit our website at:
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++ very good
 + good
 0 satisfactory
 — moderate

** Improves with increasing hardness
¹ Dependent on the grade.

Product range (by Shore hardness and raw material basis)

Raw materials group	esters			special esters	ester-ether	ether	carbonates	aliphatics	ethers	
	100	200	300	400	500	600	700	800	900	
Shore hardness	55-64A		3360A			6064A				
	65-74A		3070AU			6072A			9370A/AU	
	75-84A	1080A/AU		481	5377A 5080A	6080A			9380A/AU	
	85-89A	1085A	2586A	385E/S	487	588E		786E/S		9385A
			2786A	3385A	487 DPS 062				85085A DPS 055	9386A
			2786A DPS 045	3485A			6088A/AU		85786A	
									89785A	
	90-94A		2590A	3392A				790		9392A/AU
		192	2790A DPS 045	392						
		1092A	2792A	3690AU						
				3491A						
	45-49D	1045D			445			795U	89043D	9395AU
										9095AU
										9648DU
	50-54D	1050D			453					9650DU
		1350D			453 DPS 041					9852D/DU
	55-59D			3055D/DU 3055D/DPS066						9855DU
				3059D 3059D/DPS066						
				3856D						
	60-64D			3660DU	460					9662DU
				3860D 3864D						9864DU
	65-69D			3065D						9665DU
										9868DU
	70-74D			3072D						9873DU
75-85D									9880DU	
									9885DU	

Product series 100, ester grades

Injection molding, extrusion and blow molding grades with high mechanical strength. In extrusion applications, the grades in this product line are characterized by the fact that no melt crystallization occurs even with extended dwell times. They are used primarily for products subject to high wear, such as rollers, shoe heels, pneumatic hoses, bellows.

1080A Shore hardness: 80A
Injection molding grade
Hard/soft composite systems,
engineering components

1085A Shore hardness: 85A
Injection molding grade
high mechanical strength,
very short cycle times
Screen/sieve elements,
engineering injection moldings

1080AU Same as 1080A,
except with special UV stabilizers

Desmopan®				Product series 100, ester grades	
Properties	Test conditions	Units	Standards	1080A/AU	1085A
Mechanical properties (23°C/50% r.h.)					
Shore hardness A	-	-	DIN ISO 7619-1 (testing period 1 s)	80	85
Shore hardness D	-	-	DIN ISO 7619-1 (testing period 1 s)	-	-
Tensile strength at break	200 mm/min	MPa	DIN 53504, S1	35	36
Elongation at break	200 mm/min	%	DIN 53504, S1	750	720
Stress at 10% elongation	200 mm/min	MPa	DIN 53504, S1	1.2	1.9
Stress at 100% elongation	200 mm/min	MPa	DIN 53504, S1	4.0	5.2
Stress at 300% elongation	200 mm/min	MPa	DIN 53504, S1	8	9
Compression set	24 h; 70°C	%	DIN ISO 815-1, method A	36	34
Compression set	24 h; 70°C	%	DIN ISO 815-1, method C	27	26
Compression set	72 h; 23°C	%	DIN ISO 815-1	22	19
Abrasion loss	-	mm³	ISO 4649, A	35	11
Rebound resilience	-	%	ISO 4662	44	41
Tear propagation resistance	500 mm/min	kN/m	ISO 34-1	56	75
Flexural modulus	2 mm/min	MPa	ISO 178	-	-
Tensile storage modulus	-20°C	MPa	ISO 6721-1, -4	170	320
Tensile storage modulus	20°C	MPa	ISO 6721-1, -4	34	31
Tensile storage modulus	60°C	MPa	ISO 6721-1, -4	24	21
Other properties (23°C)/Processing conditions					
Density	-	kg/m³	ISO 1183	1206	1208
Processing conditions					
Injection molding melt temperature	-	°C	-	185-200	190-230
Injection molding mold temperature	-	°C	-	20-40	20-40
Extrusion melt temperature	-	°C	-	-	-

Product series 100, ester grades

Injection molding, extrusion and blow molding grades with high mechanical strength. In extrusion applications, the grades in this product line are characterized by the fact that no melt crystallization occurs even with extended dwell times. They are used primarily for products subject to high wear, such as rollers, shoe heels, pneumatic hoses, bellows.

<p>192 Shore hardness: 94A/42D Injection molding grade With high mechanical strength for products subject to high wear Gear shift knobs, roller tires, coupling elements, shoe heels</p>	<p>1350D Shore hardness: 96A/50D Extrusion grade Good wear resistance, high melt stability, high burst pressure Pneumatic hoses</p>
<p>1092A Shore hardness: 92A/42D Injection molding grade high mechanical strength, very short cycle times Gear shift knobs, roller tires, coupling elements, shoe heels</p>	<p>1045D Shore hardness: 95A/46D Injection molding grade With high mechanical strength for products subject to high wear Roller tires, coupling elements, shoe heels</p> <p>1050D Shore hardness: 96A/51D Injection molding grade With high mechanical strength for products subject to high wear Roller tires, coupling elements, shoe heels</p>

Desmopan®				Product series 100, ester grades				
Properties	Test conditions	Units	Standards	192	1092A	1045D	1050D	1350D
Mechanical properties (23°C/50% r.h.)								
Shore hardness A	–	–	DIN ISO 7619-1 (testing period 1 s)	92	93	–	–	–
Shore hardness D	–	–	DIN ISO 7619-1 (Prüfzeit 1 s)	42	42	46	51	52
Tensile strength at break	200 mm/min	MPa	DIN 53504, S1	52	48	51	48	51
Elongation at break	200 mm/min	%	DIN 53504, S1	590	600	530	490	450
Stress at 10% elongation	200 mm/min	MPa	DIN 53504, S1	4.0	4.5	7.1	9.1	8.7
Stress at 300% elongation	200 mm/min	MPa	DIN 53504, S1	9.5	8.9	12.3	15.2	17.5
Spannung bei 300 % Dehnung	200 mm/min	MPa	DIN 53504, S1	17	16	23	27	32
Compression set	24 h; 70°C	%	DIN ISO 815-1, method A	40	41	39	46	46
Compression set	24 h; 70°C	%	DIN ISO 815-1, method C	29	27	25	31	27
Compression set	72 h; 23°C	%	DIN ISO 815-1	25	25	24	29	25
Abrasion loss	–	mm ³	ISO 4649, A	32	11	11	13	29
Rebound resilience	–	%	ISO 4662	37	40	40	36	35
Tear propagation resistance	500 mm/min	kN/m	ISO 34-1	85	100	120	150	135
Flexural modulus	2 mm/min	MPa	ISO 178	–	–	–	–	–
Tensile storage modulus	–20°C	MPa	ISO 6721-1, -4	450	875	710	1220	2340
Tensile storage modulus	20°C	MPa	ISO 6721-1, -4	93	74	120	200	300
Tensile storage modulus	60°C	MPa	ISO 6721-1, -4	48	40	50	75	120
Other properties (23°C)/Processing conditions								
Density	–	kg/m ³	ISO 1183	1230	1210	1220	1230	1240
Processing conditions								
Injection molding melt temperature	–	°C	–	210–225	190–230	210–230	210–230	210–230
Injection molding mold temperature	–	°C	–	20–40	20–40	20–40	20–40	20–40
Extrusion melt temperature	–	°C	–	–	–	–	–	195–215

Product series 200, ester grades

Blown film and coating grades

Some of the following products [GMP] can be used for the production of consumer products for use with food (see page 27).

<p>2586A [GMP] Extrusion grades 2590A [GMP] Specially for manufacturing blown films without support film</p>	<p>2786A [GMP] Special grades 2792A [GMP] Specially for powder sintering and textile coating</p>	<p>2786A Special grades DPS 045 [GMP045] Specially for textile coating by extrusion and calendering</p>	<p>2790A Special grades DPS 045 [GMP045] Specially for textile coating by extrusion and calendering</p>
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Desmopan®				Product series 200, ester grades					
Properties	Test conditions	Units	Standards	2586A	2590A	2786A	2792A	2786A DPS 045	2790A DPS 045
Mechanical properties (23°C/50% r.h.)									
Shore hardness A	–	–	DIN ISO 7619-1 (testing period 1 s)	85	93	86	93	84	92
Shore hardness D	–	–	DIN ISO 7619-1 (Prüfzeit 1 s)	–	–	–	–	–	–
Tensile strength at break	200 mm/min	MPa	DIN 53504, S1	48	47	27	30	30	42
Elongation at break	200 mm/min	%	DIN 53504, S1	620	500	660	530	650	560
Stress at 10% elongation	200 mm/min	MPa	DIN 53504, S1	1.6	4.1	2.0	4.5	1.7	3.7
Stress at 100% elongation	200 mm/min	MPa	DIN 53504, S1	5.4	11.4	6.1	11.1	5.9	10.1
Stress at 300% elongation	200 mm/min	MPa	DIN 53504, S1	13	26	10	18	10	19
Compression set	24 h; 70°C	%	DIN ISO 815-1, method A	40	52	60	62	60	58
Compression set	24 h; 70°C	%	DIN ISO 815-1, method C	25	39	47	44	–	44
Compression set	72 h; 23°C	%	DIN ISO 815-1	25	25	35	25	28	36
Abrasion loss	–	mm ³	ISO 4649, A	47	50	90	65	25	35
Rebound resilience	–	%	ISO 4662	50	30	40	30	46	34
Tear propagation resistance	500 mm/min	kN/m	ISO 34-1	65	92	52	85	70	85
Flexural modulus	2 mm/min	MPa	ISO 178	–	–	–	–	–	–
Tensile storage modulus	–20°C	MPa	ISO 6721-1, -4	190	1710	400	1340	500	1100
Tensile storage modulus	20°C	MPa	ISO 6721-1, -4	50	130	40	95	40	95
Tensile storage modulus	60°C	MPa	ISO 6721-1, -4	35	60	25	45	20	40
Other properties (23°C)/Processing conditions									
Density	–	kg/m ³	ISO 1183	1190	1205	1205	1205	1200	1210
Processing conditions									
Injection molding melt temperature	–	°C	–	210–230	210–230	200–220	200–220	210–230	210–230
Injection molding mold temperature	–	°C	–	20–40	20–40	20–40	20–40	20–40	20–40
Extrusion melt temperature	–	°C	–	190–210	190–210	190–210	180–210	180–200	190–210

Product series 300, ester grades

Injection molding and extrusion grades with high mechanical strength, improved hydrolytic stability and low-temperature flexibility. Low swelling in oils, fats and solvents. This is the most commonly used product series for extruded products of all kinds and structural parts subject to high stresses.

3360A Shore hardness: 62A
Extrusion and injection molding grade
Hard/soft composite systems, soles for athletic footwear, films

385E/S Shore hardness: 85A
Extrusion and injection molding grade
Films, non-reinforced hoses, screen/sieve elements, engineering components, hard/soft composite systems

3070AU Shore hardness: 70A
Injection molding grade
Hard/soft composite systems, engineering injection moldings and with special UV stabilizers

Product series 300, ester grades

Injection molding and extrusion grades with high mechanical strength, improved hydrolytic stability and low-temperature flexibility. Low swelling in oils, fats and solvents. This is the most commonly used product series for extruded products of all kinds and structural parts subject to high stresses.

3385A Shore hardness: 85A
Extrusion and injection molding grade
Good wear resistance, short cycle times, high melt stability
Hard/soft composite systems, non-reinforced hoses, profiles, engineering injection moldings

3491A Shore hardness: 92A/40D
Extrusion and injection molding grade
Suitable for extrusion blow molding, high melt stability

3485A Shore hardness: 85A
Extrusion and injection molding grade
Suitable for extrusion blow molding, with mold release agent, high melt stability
Bellows, engineering injection moldings

3392A Shore hardness: 92A/40D
Extrusion and injection molding grade
Toothed belts, sections, non-reinforced hoses

Desmopan®	Product series 300, ester grades						
	Properties	Test conditions	Units	Standards	3360A	3070AU	385E/S
Mechanical properties (23°C/50% r.h.)							
Shore hardness A	–	–	DIN ISO 7619-1 (testing period 1 s)	60 (15s)	70	85	
Shore hardness D	–	–	DIN ISO 7619-1 (testing period 1 s)	–	–	–	
Tensile strength at break	200 mm/min	MPa	DIN 53504, S1	31	27	53	
Elongation at break	200 mm/min	%	DIN 53504, S1	920	850	600	
Stress at 10% elongation	200 mm/min	MPa	DIN 53504, S1	0.5	0.7	1.7	
Stress at 100% elongation	200 mm/min	MPa	DIN 53504, S1	2.1	2.8	5.3	
Stress at 300% elongation	200 mm/min	MPa	DIN 53504, S1	4	5	13	
Compression set	24 h; 70°C	%	DIN ISO 815-1, method A	45	43	40	
Compression set	24 h; 70°C	%	DIN ISO 815-1, method C	28	29	25	
Compression set	72 h; 23°C	%	DIN ISO 815-1	20	24	20	
Abrasion loss	–	mm³	ISO 4649, A	40	50	30	
Rebound resilience	–	%	ISO 4662	50	47	50	
Tear propagation resistance	500 mm/min	kN/m	ISO 34-1	40	46	70	
Flexural modulus	2 mm/min	MPa	ISO 178	–	–	–	
Tensile storage modulus	–20°C	MPa	ISO 6721-1, -4	52	55	186	
Tensile storage modulus	20°C	MPa	ISO 6721-1, -4	11	17	51	
Tensile storage modulus	60°C	MPa	ISO 6721-1, -4	8	12	37	
Other properties (23°C)/Processing conditions							
Density	–	kg/m³	ISO 1183	1154	1148	1200	
Processing conditions							
Injection molding melt temperature	–	°C	–	185–215	185–215	210–230	
Injection molding mold temperature	–	°C	–	20–40	20–40	20–40	
Extrusion melt temperature	–	°C	–	180–210	–	200–220	

Desmopan®	Product series 300, ester grades							
	Properties	Test conditions	Units	Standards	3385A	3485A	3491A	3392A
Mechanical properties (23°C/50% r.h.)								
Shore hardness A	–	–	DIN ISO 7619-1 (testing period 1 s)	85	85	91	91	
Shore hardness D	–	–	DIN ISO 7619-1 (testing period 1 s)	–	–	40	40	
Tensile strength at break	200 mm/min	MPa	DIN 53504, S1	53	53	55	56	
Elongation at break	200 mm/min	%	DIN 53504, S1	590	590	560	560	
Stress at 10% elongation	200 mm/min	MPa	DIN 53504, S1	1.7	1.7	3.1	3.3	
Stress at 100% elongation	200 mm/min	MPa	DIN 53504, S1	5.6	5.5	8.1	8.4	
Stress at 300% elongation	200 mm/min	MPa	DIN 53504, S1	14	14	19	20	
Compression set	24 h; 70°C	%	DIN ISO 815-1, method A	42	42	45	40	
Compression set	24 h; 70°C	%	DIN ISO 815-1, method C	35	35	35	27	
Compression set	72 h; 23°C	%	DIN ISO 815-1	20	20	20	20	
Abrasion loss	–	mm³	ISO 4649, A	30	30	25	20	
Rebound resilience	–	%	ISO 4662	50	50	42	44	
Tear propagation resistance	500 mm/min	kN/m	ISO 34-1	70	70	90	95	
Flexural modulus	2 mm/min	MPa	ISO 178	–	–	–	–	
Tensile storage modulus	–20°C	MPa	ISO 6721-1, -4	85	140	515	455	
Tensile storage modulus	20°C	MPa	ISO 6721-1, -4	30	40	95	85	
Tensile storage modulus	60°C	MPa	ISO 6721-1, -4	20	30	60	50	
Other properties (23°C)/Processing conditions								
Density	–	kg/m³	ISO 1183	1200	1200	1200	1200	
Processing conditions								
Injection molding melt temperature	–	°C	–	190–210	200–230	200–230	210–240	
Injection molding mold temperature	–	°C	–	20–40	20–40	20–40	20–40	
Extrusion melt temperature	–	°C	–	175–205	200–220	200–220	200–220	

Product series 300, ester grades

Injection molding grades with high mechanical strength, particularly outstanding abrasion and wear resistance, and faster cycle times in processing.

3055DU *Shore hardness: 96A/56D*
Injection molding grade
With high mechanical strength for products subject to high wear, good wear resistance, very short cycle times
Rollers, engineering injection moldings

3055D
DPS 066
3059D
DPS066
Exceptionally short cycle times with comparable mechanical properties.

3059D *Shore hardness: 97A/59D*
Injection molding grade
Excellent abrasion resistance, good wear resistance, very short cycle times
Replacement heel tips, rollers, shoe shells, engineering injection moldings

3065D *Shore hardness: 98A/65D*
Injection molding grade
High mechanical strength, excellent abrasion resistance, good wear resistance, very short cycle times
Engineering components

3072D *Shore hardness: 98A/72D*
Injection molding grade
High mechanical strength, excellent abrasion resistance, good wear resistance, very short cycle times
Engineering components

Desmopan®				Product series 300, ester grades				
Properties	Test conditions	Units	Standards	3055DU	3055D DPS 066	3059D	3065D	3072D
Mechanical properties (23°C/50% r.h.)								
Shore hardness A	–	–	DIN ISO 7619-1 (testing period 1 s)	–	–	–	–	–
Shore hardness D	–	–	DIN ISO 7619-1 (testing period 1 s)	55	54	58	66	69
Tensile strength at break	200 mm/min	MPa	DIN 53504, S1	55	53	60	59	65
Elongation at break	200 mm/min	%	DIN 53504, S1	400	420	400	360	340
Stress at 10% elongation	200 mm/min	MPa	DIN 53504, S1	9.0	9.5	12.4	20.9	29.6
Stress at 100% elongation	200 mm/min	MPa	DIN 53504, S1	18.8	18.1	23.2	31.9	37.7
Stress at 300% elongation	200 mm/min	MPa	DIN 53504, S1	39	36	44	49	65
Compression set	24 h; 70°C	%	DIN ISO 815-1, method A	35	47	42	51	49
Compression set	24 h; 70°C	%	DIN ISO 815-1, method C	26	27	24	44	40
Compression set	72 h; 23°C	%	DIN ISO 815-1	21	31	24	30	29
Abrasion loss	–	mm³	ISO 4649, A	30	30	18	18	20
Rebound resilience	–	%	ISO 4662	40	40	35	45	47
Tear propagation resistance	500 mm/min	kN/m	ISO 34-1	135	135	160	180	250
Flexural modulus	2 mm/min	MPa	ISO 178	130	–	180	350	800
Tensile storage modulus	–20°C	MPa	ISO 6721-1, -4	1200	1180	2430	2620	3330
Tensile storage modulus	20°C	MPa	ISO 6721-1, -4	260	350	580	950	1270
Tensile storage modulus	60°C	MPa	ISO 6721-1, -4	120	140	180	260	380
Other properties (23°C)/Processing conditions								
Density	–	kg/m³	ISO 1183	1220	1220	1230	1220	1240
Processing conditions								
Injection molding melt temperature	–	°C	–	220–240	220–240	220–240	220–240	220–240
Injection molding mold temperature	–	°C	–	30–60	30–60	30–60	30–60	30–60
Extrusion melt temperature	–	°C	–	–	–	–	–	–

Product series 300, ester grades (transparent grades)

All of the high-transparency grades listed here are hydrolysis-stabilized and treated with special UV protection. They therefore can be used to fabricate clear, transparent injection moldings with wall thicknesses of up to six millimeters. However, hoses, flat films and profiles can also be extruded from these formulations.

More detailed information on the optical properties can be obtained on the Internet or on request.



Desmopan®				Product series 300, ester grades	
Properties	Test conditions	Units	Standards	3690AU	3660DU
Mechanical properties (23°C/50% r.h.)					
Shore hardness A	–	–	DIN ISO 7619-1 (testing period 1 s)	92	–
Shore hardness D	–	–	DIN ISO 7619-1 (testing period 1 s)	40	61
Tensile strength at break	200 mm/min	MPa	DIN 53504, S1	60	53
Elongation at break	200 mm/min	%	DIN 53504, S1	500	330
Stress at 10% elongation	200 mm/min	MPa	DIN 53504, S1	3.3	11.9
Stress at 100% elongation	200 mm/min	MPa	DIN 53504, S1	9.8	28.8
Stress at 300% elongation	200 mm/min	MPa	DIN 53504, S1	24	42
Compression set	24 h; 70°C	%	DIN ISO 815-1, method A	45	45
Compression set	24 h; 70°C	%	DIN ISO 815-1, method C	25	35
Compression set	72 h; 23°C	%	DIN ISO 815-1	20	25
Abrasion loss	–	mm³	ISO 4649, A	25	25
Rebound resilience	–	%	ISO 4662	40	35
Tear propagation resistance	500 mm/min	kN/m	ISO 34-1	85	170
Flexural modulus	2 mm/min	MPa	ISO 178	–	110
Tensile storage modulus	–20°C	MPa	ISO 6721-1, -4	940	2600
Tensile storage modulus	20°C	MPa	ISO 6721-1, -4	100	450
Tensile storage modulus	60°C	MPa	ISO 6721-1, -4	50	130
Other properties (23°C)/Processing conditions					
Density	–	kg/m³	ISO 1183	1210	1230
Processing conditions					
Injection molding melt temperature	–	°C	–	210–230	220–240
Injection molding mold temperature	–	°C	–	30–60	30–60
Extrusion melt temperature	–	°C	–	180–210	210–230

Product series 300, ester grades (impact-modified grades)

The impact-modified ester grades of the new generation are injection molding products with improved initial color and a lower tendency towards yellowing. The main field of application is ski boot shells. However, the high-level properties also make these products an interesting option for numerous parts subject to mechanical loads.



Desmopan®				Impact-modified ester grades		
Properties	Test conditions	Units	Standards	3856D	3860D	3864D
Mechanical properties (23°C/50% r.h.)						
Shore hardness A	–	–	DIN ISO 7619-1 (testing period 1 s)	–	–	–
Shore hardness D	–	–	DIN ISO 7619-1 (testing period 1 s)	55	59	64
Tensile strength at break	200 mm/min	MPa	DIN 53504, S1	51	52	54
Elongation at break	200 mm/min	%	DIN 53504, S1	450	430	400
Stress at 10% elongation	200 mm/min	MPa	DIN 53504, S1	8.0	13.0	20.0
Stress at 100% elongation	200 mm/min	MPa	DIN 53504, S1	20.0	25.0	30.0
Stress at 300% elongation	200 mm/min	MPa	DIN 53504, S1	35	44	46
Compression set	24 h; 70°C	%	DIN ISO 815-1, method A	58	59	61
Compression set	24 h; 70°C	%	DIN ISO 815-1, method C	45	46	47
Compression set	72 h; 23°C	%	DIN ISO 815-1	27	30	35
Abrasion loss	–	mm³	ISO 4649, A	37	39	44
Rebound resilience	–	%	ISO 4662	39	40	45
Tear propagation resistance	500 mm/min	kN/m	ISO 34-1	140	175	210
Flexural modulus	2 mm/min	MPa	ISO 178	150	230	400
Tensile storage modulus	–20°C	MPa	ISO 6721-1, -4	1120	1700	1910
Tensile storage modulus	20°C	MPa	ISO 6721-1, -4	230	420	670
Tensile storage modulus	60°C	MPa	ISO 6721-1, -4	100	150	230
Other properties (23°C)/Processing conditions						
Density	–	kg/m³	ISO 1183	1200	1200	1200
Processing conditions						
Injection molding melt temperature	–	°C	–	235–245	235–245	240–250
Injection molding mold temperature	–	°C	–	50–70	50–70	50–70
Extrusion melt temperature	–	°C	–	–	–	–

Product series 400, special ester grades

This line offers several special features thanks to the use of special raw materials and auxiliaries. For certain grades, properties like compression set (CS), heat deflection temperature, hydrolytic stability and oil/fat resistance are superior to those found in the ester product series 100 and 300.

- 481** *Shore hardness: 80A, Injection molding grade*
Fat and oil resistant, low compression set, high elasticity, high heat deflection temperature, easily demolded
Rollers, seals, membranes, automotive parts
- 487** *Shore hardness: 86A, Injection molding grade*
Fat and oil resistant, low compression set, high heat deflection temperature, short cycle times
Automotive engineering, rollers, seals, membranes, damping elements
- 487 DPS062** *Shore hardness: 86A, Injection molding grade*
Additionally improved scratch resistance and optimized fogging and migration behavior
Automotive interior parts
- 445** *Shore hardness: 93A/44D, Injection molding grade*
Fat and oil resistant, high heat deflection temperature, low compression set
Automotive engineering, engineering injection moldings
- 453** *Shore hardness: 97A/52D, Injection molding grade*
Fat and oil resistant, low compression set, good wear resistance
Engineering injection moldings, automotive engineering, coupling elements
- 453 DPS041** *Shore hardness: 97A/52D, Injection molding grade*
Additionally hydrolysis-stabilized
Engineering injection moldings, automotive engineering, coupling elements
- 460** *Shore hardness: 97A/58D, Injection molding grade*
Fat and oil resistant, low compression set, high heat deflection temperature, short cycle times
Automotive engineering, engineering components

Desmopan®				Product series 400, special ester grades				
Properties	Test conditions	Units	Standards	481	487 487 DPS 062	445	453 453 DPS 041	460
Mechanical properties (23°C/50% r.h.)								
Shore hardness A	–	–	DIN ISO 7619-1 (testing period 1 s)	80	86	93	–	–
Shore hardness D	–	–	DIN ISO 7619-1 (testing period 1 s)	–	–	43	50	59
Tensile strength at break	200 mm/min	MPa	DIN 53504, S1	38	46	48	40	41
Elongation at break	200 mm/min	%	DIN 53504, S1	620	570	530	510	400
Stress at 10% elongation	200 mm/min	MPa	DIN 53504, S1	1.3	1.9	4.4	7.2	14.8
Stress at 100% elongation	200 mm/min	MPa	DIN 53504, S1	4.8	6.0	12.1	16.6	24.0
Stress at 300% elongation	200 mm/min	MPa	DIN 53504, S1	9	15	26	28	32
Compression set	24 h; 70°C	%	DIN ISO 815-1, method A	38	26	26	25	33
Compression set	24 h; 70°C	%	DIN ISO 815-1, method C	28	20	17	22	25
Compression set	72 h; 23°C	%	DIN ISO 815-1	15	15	15	15	25
Abrasion loss	–	mm³	ISO 4649, A	25	25	25	30	40
Rebound resilience	–	%	ISO 4662	50	50	40	40	40
Tear propagation resistance	500 mm/min	kN/m	ISO 34-1	50	70	95	110	150
Flexural modulus	2 mm/min	MPa	ISO 178	–	–	–	–	170
Tensile storage modulus	–20°C	MPa	ISO 6721-1, -4	106	225	790	1780	1760
Tensile storage modulus	20°C	MPa	ISO 6721-1, -4	33	60	100	240	450
Tensile storage modulus	60°C	MPa	ISO 6721-1, -4	29	46	58	110	130
Other properties (23°C)/Processing conditions								
Dichte	–	kg/m³	ISO 1183	1200	1210	1220	1230	1220
Processing conditions								
Spritzgieß-Massetemperatur	–	°C	–	220–240	230–240	210–240	220–240	230–250
Spritzgieß-Werkzeugtemperatur	–	°C	–	20–40	20–40	20–40	20–40	20–40
Extrudier-Massetemperatur	–	°C	–	–	–	–	–	–

Product series 500, ester-ether hybrid grades

This product series cost-efficiently unites the advantages of ether and ester raw material classes. These formulations are used wherever mechanical loads occur combined with the risk of damage from microorganisms. Fields of application include extrusion coatings, seals, engineering injection moldings and watch bands.

- 5377A** *Shore hardness: 77A*
Extrusion and injection molding grade
 Improved microbe resistance,
 improved hydrolytic stability
 Fabric coating, watch band
- 5080A** *Shore hardness: 80A, Injection molding grade*
 Improved microbe resistance,
 improved hydrolytic stability
 Seals, hard/soft composite systems,
 membranes

- 588E** *Shore hardness: 88A*
Extrusion and injection molding grade
 Improved microbe resistance,
 improved hydrolytic stability
 Cable sheathing, hoses (non-reinforced),
 roofing membranes

Desmopan®				Product series 500, ether-ester grades		
Properties	Test conditions	Units	Standards	5377A	5080A	588E
Mechanical properties (23°C/50% r.h.)						
Shore hardness A	–	–	DIN ISO 7619-1 (testing period 1 s)	80	80	85
Shore hardness D	–	–	DIN ISO 7619-1 (testing period 1 s)	–	–	–
Tensile strength at break	200 mm/min	MPa	DIN 53504, S1	30	22	43
Elongation at break	200 mm/min	%	DIN 53504, S1	780	900	640
Stress at 10% elongation	200 mm/min	MPa	DIN 53504, S1	1.1	1.2	1.8
Stress at 100% elongation	200 mm/min	MPa	DIN 53504, S1	4.9	4.5	5.9
Stress at 300% elongation	200 mm/min	MPa	DIN 53504, S1	8	7	10
Compression set	24 h; 70°C	%	DIN ISO 815-1, method A	42	50	35
Compression set	24 h; 70°C	%	DIN ISO 815-1, method C	32	42	25
Compression set	72 h; 23°C	%	DIN ISO 815-1	20	25	23
Abrasion loss	–	mm³	ISO 4649, A	80	70	60
Rebound resilience	–	%	ISO 4662	45	50	45
Tear propagation resistance	500 mm/min	kN/m	ISO 34-1	50	30	55
Flexural modulus	2 mm/min	MPa	ISO 178	–	–	–
Tensile storage modulus	–20°C	MPa	ISO 6721-1, -4	180	100	170
Tensile storage modulus	20°C	MPa	ISO 6721-1, -4	30	30	30
Tensile storage modulus	60°C	MPa	ISO 6721-1, -4	21	23	20
Other properties (23°C)/Processing conditions						
Density	–	kg/m³	ISO 1183	1140	1140	1150
Processing conditions						
Injection molding melt temperature	–	°C	–	180–200	190–210	210–230
Injection molding mold temperature	–	°C	–	20–40	20–40	20–40
Extrusion melt temperature	–	°C	–	170–190	–	190–210

Product series 600, C3 ether grades

The grades in the 600 product line are low-cost C3 ether grades with very good hydrolytic stability and microbe stability. They can be injection molded quickly and easily, allow long flow paths and are perfectly suited to hard/soft combinations with many engineering thermoplastics.

They are thus an attractive alternative to other thermoplastic elastomers (TPE).



Desmopan®				Product series 600, ether grades			
Properties	Test conditions	Units	Standards	6064A	6072A	6080A	6088A/U
Mechanical properties (23°C/50% r.h.)							
Shore hardness A	–	–	DIN ISO 7619-1 (testing period 1 s)	67	73	82	89
Shore hardness D	–	–	DIN ISO 7619-1 (testing period 1 s)	–	–	–	–
Tensile strength at break	200 mm/min	MPa	DIN 53504, S1	23	25	30	28
Elongation at break	200 mm/min	%	DIN 53504, S1	970	930	730	610
Stress at 10% elongation	200 mm/min	MPa	DIN 53504, S1	0.6	0.8	1.5	2.7
Stress at 100% elongation	200 mm/min	MPa	DIN 53504, S1	3.2	3.8	5.8	8.3
Stress at 300% elongation	200 mm/min	MPa	DIN 53504, S1	6	7	10	14
Compression set	24 h; 70°C	%	DIN ISO 815-1, method A	41	37	38	55
Compression set	24 h; 70°C	%	DIN ISO 815-1, method C	35	32	34	45
Compression set	72 h; 23°C	%	DIN ISO 815-1	19	16	18	23
Abrasion loss	–	mm³	ISO 4649, A	33	30	43	31
Rebound resilience	–	%	ISO 4662	45	45	43	43
Tear propagation resistance	500 mm/min	kN/m	ISO 34-1	29	32	36	46
Flexural modulus	2 mm/min	MPa	ISO 178	–	–	–	–
Tensile storage modulus	–20°C	MPa	ISO 6721-1, -4	42	66	153	338
Tensile storage modulus	20°C	MPa	ISO 6721-1, -4	7	10	21	53
Tensile storage modulus	60°C	MPa	ISO 6721-1, -4	5	7	13	28
Other properties (23°C)/Processing conditions							
Density	–	kg/m³	ISO 1183	1090	1100	1110	1130
Processing conditions							
Injection molding melt temperature	–	°C	–	200–220	200–220	200–220	205–225
Injection molding mold temperature	–	°C	–	20–40	20–40	20–40	20–40
Extrusion melt temperature	–	°C	–	–	–	–	–

Product series 700, carbonate grades

The products in this line of raw materials were specifically developed for special applications and have proven their worth in these fields for many years. They display good microbe resistance and hydrolytic stability, swell less in water compared to ether grades and offer a level of mechanical properties comparable to that of the ester grades.

786E/S Shore hardness: 88A
Extrusion and injection molding grade

High mechanical strength, very good hydrolytic stability and microbe resistance, good low-temperature flexibility
Fire-extinguishing hoses, films, sections, engineering components

795U Shore hardness: 94A/43D
Injection molding grade

With special UV stabilizers, good hydrolytic stability and microbe resistance, short cycle times
Animal ID tags

790 Shore hardness: 92A/40D
Extrusions and injection molding grade

Good hydrolytic stability and microbe resistance, high mechanical strength, good low-temperature flexibility
Toothed belts, sections, engineering injection moldings

Desmopan®				Product series 700, carbonate grades		
Properties	Test conditions	Units	Standards	786E/S	790	795U
Mechanical properties (23°C/50% r.H.)						
Shore hardness A	–	–	DIN ISO 7619-1 (testing period 1 s)	88	90	94
Shore hardness D	–	–	DIN ISO 7619-1 (testing period 1 s)	–	40	48
Tensile strength at break	200 mm/min	MPa	DIN 53504, S1	40	54	48
Elongation at break	200 mm/min	%	DIN 53504, S1	540	480	480
Stress at 10% elongation	200 mm/min	MPa	DIN 53504, S1	2.6	2.8	8.1
Stress at 100% elongation	200 mm/min	MPa	DIN 53504, S1	8.2	10.6	14.6
Stress at 300% elongation	200 mm/min	MPa	DIN 53504, S1	16	28	28
Compression set	24 h; 70°C	%	DIN ISO 815-1, method A	42	45	45
Compression set	24 h; 70°C	%	DIN ISO 815-1, method C	30	34	29
Compression set	72 h; 23°C	%	DIN ISO 815-1	25	25	20
Abrasion loss	–	mm ³	ISO 4649, A	40	30	25
Rebound resilience	–	%	ISO 4662	32	32	35
Tear propagation resistance	500 mm/min	kN/m	ISO 34-1	65	85	100
Flexural modulus	2 mm/min	MPa	ISO 178	–	–	–
Tensile storage modulus	–20°C	MPa	ISO 6721-1, -4	400	630	1040
Tensile storage modulus	20°C	MPa	ISO 6721-1, -4	35	100	145
Tensile storage modulus	60°C	MPa	ISO 6721-1, -4	20	55	50
Other properties (23°C)/Processing conditions						
Density	–	kg/m ³	ISO 1183	1150	1210	1200
Processing conditions						
Injection molding melt temperature	–	°C	–	210–230	210–230	210–230
Injection molding mold temperature	–	°C	–	20–40	20–40	20–60
Extrusion melt temperature	–	°C	–	190–210	205–225	–

Product series 800, aliphatics

Products based on an aliphatic isocyanate combine the known properties of TPUs with resistance to yellowing resulting from UV exposure. Therefore, these products are particularly suited to colored applications in the automotive sector.

85085A Shore hardness: 85A
DPS 055 Injection molding grade

Improved scratch resistance, low abrasion loss, optimized fogging and migration behavior
Automotive interior parts

89785A Shore hardness: 85A

Very good hydrolytic stability and microbe resistance, good low-temperature flexibility, high resilience, low abrasion loss
Fabric coating

85786A Shore hardness: 90A
Good low-temperature flexibility, high resilience, improved hydrolytic stability, easily melted
Fabric coating

89043D Shore hardness: 43D
Very good hydrolytic stability and microbe resistance, good low-temperature flexibility, high resilience, low abrasion loss
Engineering injection moldings

Desmopan®				Product series 800, aliphatics			
Properties	Test conditions	Units	Standards	85085A DPS 055	85786A	89785A	89043D
Mechanical properties (23°C/50% r.H.)							
Shore hardness A	–	–	DIN ISO 7619-1 (testing period 1 s)	87	88	86	95
Shore hardness D	–	–	DIN ISO 7619-1 (testing period 1 s)	–	–	–	43
Tensile strength at break	200 mm/min	MPa	DIN 53504, S1	44	27	23	44
Elongation at break	200 mm/min	%	DIN 53504, S1	920	890	870	670
Stress at 10% elongation	200 mm/min	MPa	DIN 53504, S1	2.3	2.8	2.2	6.3
Stress at 100% elongation	200 mm/min	MPa	DIN 53504, S1	6.0	7.2	6.0	12
Stress at 300% elongation	200 mm/min	MPa	DIN 53504, S1	10	11	9	18
Compression set	24 h; 70°C	%	DIN ISO 815-1, method A	42	44	40	41
Compression set	24 h; 70°C	%	DIN ISO 815-1, method C	40	32	35	33
Compression set	72 h; 23°C	%	DIN ISO 815-1	20	20	20	20
Abrasion loss	–	mm ³	ISO 4649, A	30	30	60	11
Rebound resilience	–	%	ISO 4662	63	62	65	56
Tear propagation resistance	500 mm/min	kN/m	ISO 34-1	60	60	75	96
Flexural modulus	2 mm/min	MPa	ISO 178	–	–	–	80
Tensile storage modulus	–20°C	MPa	ISO 6721-1, -4	210	260	230	230
Tensile storage modulus	20°C	MPa	ISO 6721-1, -4	85	65	65	143
Tensile storage modulus	60°C	MPa	ISO 6721-1, -4	55	50	50	100
Other properties (23°C)/Processing conditions							
Density	–	kg/m ³	ISO 1183	1130	1130	1080	1080
Processing conditions							
Injection molding melt temperature	–	°C	–	180–210	170–190	200–220	230–260
Injection molding mold temperature	–	°C	–	20–40	20–40	20–40	40–60
Extrusion melt temperature	–	°C	–	–	170–190	–	–

Product series 900, ether grades

The products in this line have very good hydrolytic stability and microbe resistance. An additional feature is very good low temperature flexibility. The products in the 900 series are used in applications requiring good flexibility or impact resistance at very low temperatures. Some of the following products [GMP] can be used for the production of consumer products for use with food (see page 27).

9370A [GMP]	<i>Shore hardness: 70A</i> <i>Extrusion and injection molding grade</i> Good low-temperature flexibility, increased water vapor permeability Roofing membranes, seals, membranes, films, soles for athletic footwear, hard/soft composite systems	9380AU	<i>Same as 9380A,</i> except with UV stabilizer
9370AU	<i>Same as 9370A,</i> except with special UV stabilizers	9385A [GMP]	<i>Shore hardness: 86A</i> <i>Extrusion and injection molding grade</i> Good low-temperature flexibility, complies with DIN VDE 0282-10 Cable sheathing, non-reinforced hoses
9380A [GMP]	<i>Shore hardness: 82A</i> <i>Extrusion and injection molding grade</i> Good low-temperature flexibility, complies with DIN VDE 0282-10 Cable sheathing, non-reinforced hoses	9386A	<i>Shore hardness: 86A</i> <i>Extrusion grade</i> Good low-temperature flexibility, complies with DIN VDE 0282-10 Cable sheathing, non-reinforced hoses

Desmopan®				Product series 900, ether grades			
Properties	Test conditions	Units	Standards	9370A/AU	9380A/AU	9385A	9386A
Mechanical properties (23°C/50% r.h.)							
Shore hardness A	–	–	DIN ISO 7619-1 (testing period 1 s)	72	83	87	86
Shore hardness D	–	–	DIN ISO 7619-1 (testing period 1 s)	–	–	–	–
Tensile strength at break	200 mm/min	MPa	DIN 53504, S1	26	43	45	39
Elongation at break	200 mm/min	%	DIN 53504, S1	830	630	610	650
Stress at 10% elongation	200 mm/min	MPa	DIN 53504, S1	0.6	1.5	2.1	1.8
Stress at 100% elongation	200 mm/min	MPa	DIN 53504, S1	2.9	5.3	6.9	6.5
Stress at 300% elongation	200 mm/min	MPa	DIN 53504, S1	5	9	12	11
Compression set	24 h; 70°C	%	DIN ISO 815-1, method A	49	40	46	44
Compression set	24 h; 70°C	%	DIN ISO 815-1, method C	35	25	33	37
Compression set	72 h; 23°C	%	DIN ISO 815-1	22	25	22	23
Abrasion loss	–	mm ³	ISO 4649, A	70	25	25	30
Rebound resilience	–	%	ISO 4662	63	50	49	49
Tear propagation resistance	500 mm/min	kN/m	ISO 34-1	40	50	60	60
Flexural modulus	2 mm/min	MPa	ISO 178	–	–	–	–
Tensile storage modulus	–20°C	MPa	ISO 6721-1, -4	110	70	160	150
Tensile storage modulus	20°C	MPa	ISO 6721-1, -4	10	40	40	45
Tensile storage modulus	60°C	MPa	ISO 6721-1, -4	5	25	25	35
Other properties (23°C)/Processing conditions							
Density	–	kg/m ³	ISO 1183	1060	1110	1120	1110
Processing conditions							
Injection molding melt temperature	–	°C	–	190–210	200–230	200–230	205–225
Injection molding mold temperature	–	°C	–	20–40	20–40	20–40	20–40
Extrusion melt temperature	–	°C	–	175–210	195–215	195–215	180–210

Product series 900, ether grades

The products in this line have very good hydrolytic stability and microbe resistance. An additional feature is very good low temperature flexibility. The products in the 900 series are used in applications requiring good flexibility or impact resistance at very low temperatures. Some of the following products [GMP] can be used for the production of consumer products for use with food (see page 27).

9392A [GMP]	<i>Shore hardness: 92A/42D</i> <i>Extrusion and injection molding grade</i> Good low-temperature flexibility Non-reinforced hoses, cable sheathing, profiles, engineering components	9095AU	<i>Shore hardness: 95A/43D</i> <i>Injection molding grade</i> With UV stabilizers, good wear resistance, low tendency to warp, short cycle times Animal ID tags
9392AU	<i>Same as 9392A,</i> except with special UV stabilizers	9395AU	<i>Shore hardness: 95A/46D</i> <i>Extrusion and injection molding grade</i> Good low-temperature flexibility, with UV stabilizer Pneumatic hoses, cable sheathing, sections, engineering injection moldings

Desmopan®				Product series 900, ether grades		
Properties	Test conditions	Units	Standards	9392A/AU	9095AU	9395AU
Mechanical properties (23°C/50% r.h.)						
Shore hardness A	–	–	DIN ISO 7619-1 (testing period 1 s)	92	–	93
Shore hardness D	–	–	DIN ISO 7619-1 (testing period 1 s)	42	50	46
Tensile strength at break	200 mm/min	MPa	DIN 53504, S1	49	52	49
Elongation at break	200 mm/min	%	DIN 53504, S1	540	470	500
Stress at 10% elongation	200 mm/min	MPa	DIN 53504, S1	3.8	6.9	5.0
Stress at 100% elongation	200 mm/min	MPa	DIN 53504, S1	10.6	15.1	12.2
Stress at 300% elongation	200 mm/min	MPa	DIN 53504, S1	20	29	24
Compression set	24 h; 70°C	%	DIN ISO 815-1, method A	56	47	56
Compression set	24 h; 70°C	%	DIN ISO 815-1, method C	36	30	43
Compression set	72 h; 23°C	%	DIN ISO 815-1	22	24	22
Abrasion loss	–	mm ³	ISO 4649, A	25	30	40
Rebound resilience	–	%	ISO 4662	32	33	37
Tear propagation resistance	500 mm/min	kN/m	ISO 34-1	85	110	90
Flexural modulus	2 mm/min	MPa	ISO 178	–	–	–
Tensile storage modulus	–20°C	MPa	ISO 6721-1, -4	700	790	440
Tensile storage modulus	20°C	MPa	ISO 6721-1, -4	130	160	105
Tensile storage modulus	60°C	MPa	ISO 6721-1, -4	70	80	55
Other properties (23°C)/Processing conditions						
Density	–	kg/m ³	ISO 1183	1150	1150	1150
Processing conditions						
Injection molding melt temperature	–	°C	–	210–230	200–220	210–230
Injection molding mold temperature	–	°C	–	20–40	20–40	20–40
Extrusion melt temperature	–	°C	–	195–215	–	200–220

Product series 900, ether grades (impact-modified grades)

The impact-modified ether grades cover a wide flexural modulus range from 150 to 2,000 megapascals and can be used over a wide temperature range. In addition to injection molding applications for winter sports products and industrial applications, the high-stiffness formulations in particular are ideal for extruding flat films and hoses. They also are an interesting alternative to special polyamides.

Product series 900, ether grades (transparent grades)

The high-transparency ether grades listed here are treated with special UV protection. They can be used to fabricate clear, transparent injection moldings with wall thicknesses of up to six millimeters in short cycle times. However, flat films, hoses and profiles can also be extruded from these formulations.

More detailed information on the optical properties can be obtained on the Internet or on request.



Desmopan®				Product series 900, ether grades						
Properties	Test conditions	Units	Standards	9852DU	9855DU	9864DU	9868DU	9873DU	9880DU	9885DU
Mechanical properties (23°C/50% r.h.)										
Shore hardness A	–	–	DIN ISO 7619-1 (testing period 1 s)	–	–	–	–	–	–	–
Shore hardness D	–	–	DIN ISO 7619-1 (testing period 1 s)	52	56	61	66	72	73	75
Tensile strength at break	200 mm/min	MPa	DIN 53504, S1	53	52	54	52	52	48	54
Elongation at break	200 mm/min	%	DIN 53504, S1	460	440	420	370	310	250	150
Stress at 10% elongation	200 mm/min	MPa	DIN 53504, S1	9.5	11.3	14.0	22.0	34.5	45.9	52.8
Stress at 100% elongation	200 mm/min	MPa	DIN 53504, S1	17.9	20.6	24.0	29.3	36.6	39.9	43.9
Stress at 300% elongation	200 mm/min	MPa	DIN 53504, S1	31	35	37	43	49	n. a.	n. a.
Compression set	24 h; 70°C	%	DIN ISO 815-1, method A	46	46	47	57	65	n. a.	n. a.
Compression set	24 h; 70°C	%	DIN ISO 815-1, method C	29	29	–	–	–	–	–
Compression set	72 h; 23°C	%	DIN ISO 815-1	25	30	46	n. a.	n. a.	n. a.	n. a.
Abrasion loss	–	mm ³	ISO 4649, A	30	46	28	50	54	65	60
Rebound resilience	–	%	ISO 4662	41	42	55	53	65	68	70
Tear propagation resistance	500 mm/min	kN/m	ISO 34-1	110	125	142	155	185	270	285
Flexural modulus	2 mm/min	MPa	ISO 178	160	185	310	540	950	1410	1550
Tensile storage modulus	–20°C	MPa	ISO 6721-1, -4	830	970	1280	1610	1850	–	–
Tensile storage modulus	20°C	MPa	ISO 6721-1, -4	310	370	610	920	1260	1450	1380
Tensile storage modulus	60°C	MPa	ISO 6721-1, -4	110	135	220	320	560	960	1050
Other properties (23°C)/Processing conditions										
Density	–	kg/m ³	ISO 1183	1150	1150	1160	1160	1180	1190	1200
Processing conditions										
Injection molding melt temperature	–	°C	–	240	220–265	220–265	220–260	220–260	230–260	240–260
Injection molding mold temperature	–	°C	–	60	60	60	65	65	70	70
Extrusion melt temperature	–	°C	–	220	220	225	225	225	230	230

Desmopan®				Product series 900, ether grades (transparent grades)			
Properties	Test conditions	Units	Standards	9648DU	9650DU	9662DU	9665DU
Mechanical properties (23°C/50% r.h.)							
Shore hardness A	–	–	DIN ISO 7619-1 (testing period 1 s)	–	–	–	–
Shore hardness D	–	–	DIN ISO 7619-1 (testing period 1 s)	47	54	60	64
Tensile strength at break	200 mm/min	MPa	DIN 53504, S1	58	58	59	57
Elongation at break	200 mm/min	%	DIN 53504, S1	410	400	360	330
Stress at 10% elongation	200 mm/min	MPa	DIN 53504, S1	4.7	7.4	11.7	16.5
Stress at 100% elongation	200 mm/min	MPa	DIN 53504, S1	15.9	20.2	25.9	29.4
Stress at 300% elongation	200 mm/min	MPa	DIN 53504, S1	38	44	45	50
Compression set	24 h; 70°C	%	DIN ISO 815-1, method A	45	44	43	50
Compression set	24 h; 70°C	%	DIN ISO 815-1, method C	27	27	26	28
Compression set	72 h; 23°C	%	DIN ISO 815-1	30	23	26	28
Abrasion loss	–	mm ³	ISO 4649, A	35	33	36	25
Rebound resilience	–	%	ISO 4662	33	40	35	40
Tear propagation resistance	500 mm/min	kN/m	ISO 34-1	110	120	155	170
Flexural modulus	2 mm/min	MPa	ISO 178	63	110	175	285
Tensile storage modulus	–20°C	MPa	ISO 6721-1, -4	970	1270	1460	1580
Tensile storage modulus	20°C	MPa	ISO 6721-1, -4	180	340	510	670
Tensile storage modulus	60°C	MPa	ISO 6721-1, -4	55	100	140	150
Other properties (23°C)/Processing conditions							
Density	–	kg/m ³	ISO 1183	1160	1160	1175	1175
Processing conditions							
Injection molding melt temperature	–	°C	–	210–240	210–240	220–240	220–240
Injection molding mold temperature	–	°C	–	40–60	40–60	40–60	40–60
Extrusion melt temperature	–	°C	–	200–235	200–235	205–235	205–235

Blends and compounds – made of Desmopan®

Covestro AG and its partners collaborate on combining Desmopan® with various materials and on alternative types of granulate, including powders. The resulting TPU-based products are produced and marketed by partner companies. They can be used to make innovative products with new property sets and to develop new markets.

Desmovit® – custom TPU compounds

Desmovit® is the trade name for a reinforced compound based on Desmopan® thermoplastic polyurethane and additives.

The Desmovit® product range meets a variety of specific customer requirements. It is continuously tailored to highly diverse fields of application and enhanced to complement the classic and proven Desmopan® grades and fulfill new customer requests.

Compounds with different stiffnesses are available, incorporating glass and natural fibers, electrically conductive compounds and various color and function batches.



Further information
on Desmovit®:
[http://www.tpu.covestro.com/
de/Products/Desmovit.aspx](http://www.tpu.covestro.com/de/Products/Desmovit.aspx)

If you are interested in custom solutions with Desmopan® for your application ideas, please contact us. We would be happy to refer you to a specialist.

For Europa, Middle East, Africa:
info@covestro.com

Information can also be found at:
www.desmopan.com

Desmopan® – general product information

Granule pretreatment

TPU absorbs moisture from the air in varying quantities and at different rates depending on the raw material class, hardness and climate. To ensure interruption-free processing and avoid quality losses, we recommend drying to a moisture content of $\leq 0.05\%$. An elevated moisture content in the granules can cause bubbles or streaks to form on the surface of finished parts. The molded material is no longer smooth and shiny, but instead is foamy and releases gas.

Another frequent cause of defects is the use of functional concentrates that have not been dried. These batches should be separately pre-dried and have a moisture content of $\leq 0.05\%$. Commercial dry air dryers and circulating air dryers can reliably achieve a moisture content of $\leq 0.05\%$. Please refer to the technical data sheets for the recommended drying temperatures.

Dried, hot granules must not be allowed to cool in the open air. They should be stored in dry, resealable containers. The material hopper on the machine must remain covered at all times.

Coloration

Desmopan® is generally supplied in its natural color. Depending on the grade, the color ranges between yellowish transparent and whitish opaque.

Processors can easily color the material themselves. Coloring with batches based on Desmopan® as the substrate material is a simple and safe operation.

Batches containing polystyrene and SAN resin are only suitable to a limited extent. Polyethylene, polypropylene or PVC-based batches are not suited to this purpose.

Another possibility is coloring with pigments and pastes.

Common quantities (depending on wall thickness and color density) are:

Batches	1.0–4%
Pigment pastes	0.5–1%
Pigments	0.2–0.5%

It must be ensured that the colorants are dry. Even adding a batch with a 1% moisture content can influence surface quality and compromise demolding behavior.

Contact with foodstuffs

As there are different regulations for food contact in many countries which are subject to changes, we cannot give a general statement. But you can call up the latest information related to food contact on our website.

Information on industrial hygiene and environment

Extraction system

Desmopan® can be handled and processed in a wide temperature range, but like all natural and synthetic organic materials, it decomposes above a specific temperature limit.

Any smoke formation is a sign of decomposition. Depending on the Desmopan® grade, decomposition gradually begins at about 240°C. For more information, see our Safety Data Sheets.

We generally recommend the use of an effective extraction system, particularly during extrusion and welding, because the latter process in particular does not allow for a controlled temperature.

Waste disposal

Desmopan® can basically be disposed of at a community landfill if it is not contaminated with other substances. It is not hazardous to water. Disposal in a waste incineration plant is also possible and practical on account of the high caloric value, if the material can no longer be recycled.

Recycling

Moldings made of Desmopan® must be identified and marked in accordance with DIN/ISO 11469 and ISO 11469:



>TPU<

All Desmopan® grades can be stably remelted and therefore reprocessed as part of recycling programs (always pre-dry).

Injection molding

Sprus, runner waste and other clean waste can be granulated and reprocessed. Selecting the ratio of recycled to original product should always be based on the requirements of the parts. Thorough knowledge of the requirements profile can also help decide if 100% recycled material can be used. Unless the injection moldings are intended for non-critical purposes, tests must be conducted to determine if all requirements are fulfilled.

Extrusion

Process separately or as recycled content with the injection molding material.



For further information, visit our website at:
www.tpu.covestro.com/Library/Certificates/Food-Contact.aspx



You can find more information at:
www.desmopan.com