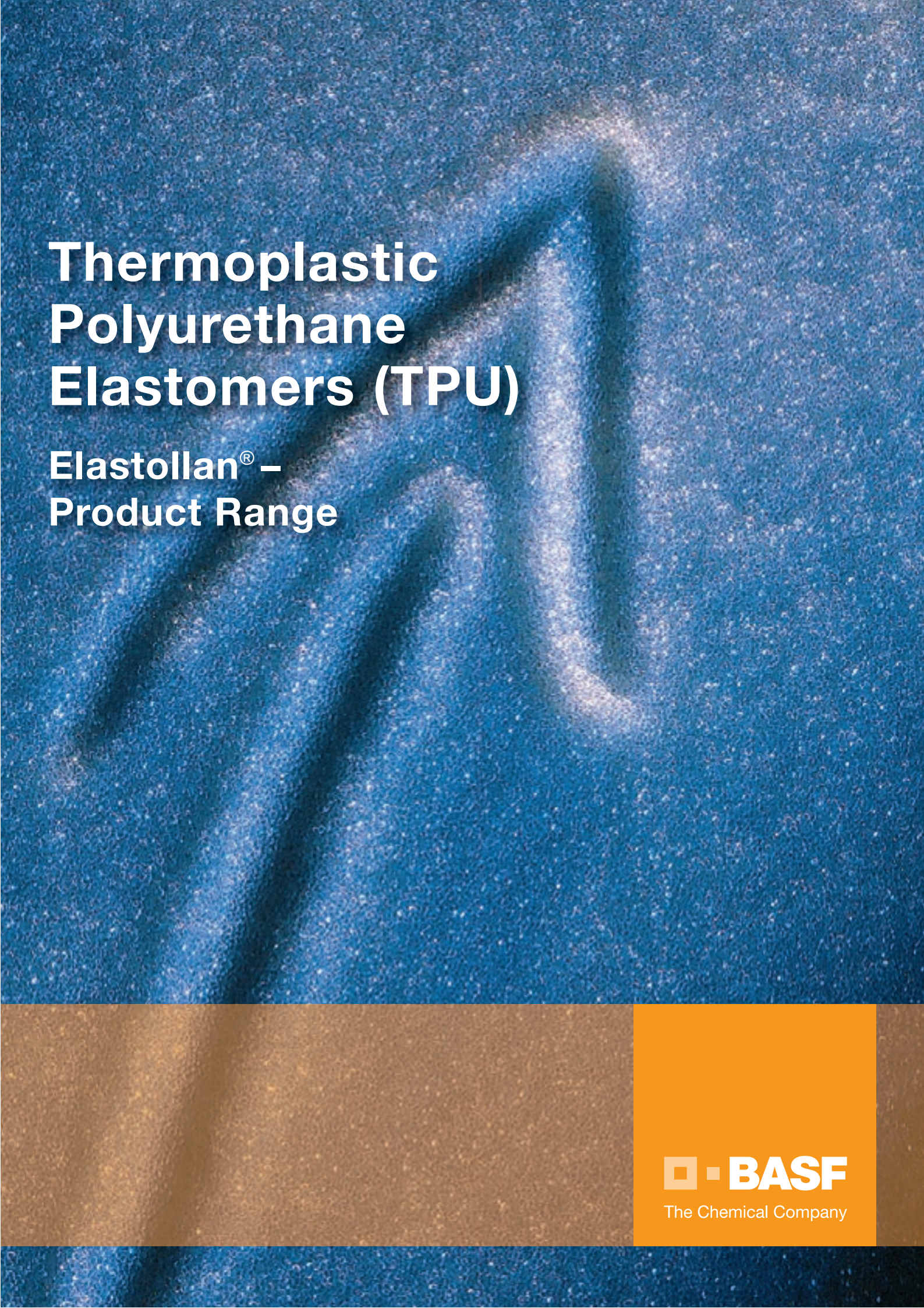

Thermoplastic Polyurethane Elastomers (TPU)

Elastollan® – Product Range

BASF
The Chemical Company

Contents

Quality Management

We are certified according to:
ISO/TS 16949
DIN EN ISO 9001
DIN EN ISO 14001

Edition: August 2013

Nomenclature for Elastollan

Elastollan 11 85 A 10 W 000

Elastollan	Grade	Hardness	Particle form	Lubricant	Additives	Additives
Elastollan is the registered trademark of BASF Polyurethanes GmbH for thermoplastic Polyurethane Elastomers. The product code consits of a letter and a number combination. **Elastollan A and L stand for aliphatic thermoplastic Polyurethanes**	The letter or number characterizes the basis polyol B, C, S, 5, 6, 7, 8 = Polyester 10, 11, 12 = Polyether R = glas-fibre reinforced grades LP-Laboratory product still in development SP-Special product, modified to meet customer's requirement N- based on renewable raw materials	A = Shore A D = Shore D	1 = cylindrical or lentil shaped pellets 5 = diced	0 = without lubricant 3, 5 = with lubricant	ESD = electronic sensitive devices FHF = flame retardant halogen free HPM = high performance material M = matt surface N = not stabilized U = UV stabilized P/W/WH = contains plasticiser T = approved for drinking water applications	000 = natural colour 100 bis 999 = code for included additive

Master-batches

Elastollan Konz and Elastollan Konz V are pigments and various additive master-batches. They can be used not only to colour, but also to improve processing and to improve stability against e.g. UV radiation, as blowing agent and for modification in various property areas.

Elastollan X-Flex are additives with crosslinking properties.

Delivery form, Packing, Storage and Shelf-life

Delivery form

Diced, Lentil or cylindrical shaped pellets.

Packing for all Elastollan grades excluding R grades

- Multi Layer PE bag, 25kg net
- Oktabins with PE liner bags, ca. 1000kg net
- Big Bags, ca. 900kg net
- Tanker, ca. 20t net.

Packing for R grades

- Sealed drums with PE liner bags, 125kg net
- Oktabins with PE liner bags, ca. 1000kg net
- Tanker, ca. 20t net.

Storage and shelf-life

Approximately six months from delivery date in original sealed containers with cool dry storage.

Elastollan 1100 grades

Thermoplastic Polyether Polyurethane Elastomers with outstanding hydrolysis resistance, low temperature flexibility and resistance to micro-organisms.

Physical Properties	Units	Test method	Elastollan 1170 A	1175 A W	1180 A	1185 A W	1185 A	1185 A M
Hardness	Shore A	DIN ISO 7619-1 (3s)	71	75	80	83	87	88
Hardness	Shore D	DIN ISO 7619-1 (3s)					36	39
Density	g/cm³	DIN EN ISO 1183-1-A	1,08	1,14	1,11	1,16	1,12	1,11
Tensile strength	MPa	DIN 53504-S2	30	40	45	40	45	45
Elongation at break	%	DIN 53504-S2	850	700	650	700	600	600
Stress at 20% elongation	MPa	DIN 53504-S2	1,3	2	2	2,5	2,5	3,5
Stress at 100% elongation	MPa	DIN 53504-S2	2	4	4,5	6	6	7
Stress at 300% elongation	MPa	DIN 53504-S2	4,8	8	8	8	10	12
Modulus of elasticity – tensile test	MPa	DIN EN ISO 527						
Tear strength	kN/m	DIN ISO 34-1Bb	44	40	55	50	70	60
Abrasion loss	mm³	DIN ISO 4649-A	<50	45	30	40	25	60
Compression set at room temperature, 72 h	%	DIN ISO 815	24	20	25	20	25	35
Compression set at 70°C, 24h	%	DIN ISO 815	50	40	45	35	45	45
Tensile strength after storage in water at 80°C for 42 days	MPa	DIN 53504-S2		28	30	30	32	30
Elongation at break after storage in water at 80°C for 42 days	%	DIN 53504-S2		750	700	700	600	650
Notched impact strength (Charpy) +23°C Notched impact strength (Charpy) -30°C	kJ/m² kJ/m²	DIN EN ISO 179-1 DIN EN ISO 179-1	kB kB	kB kB	kB kB	kB kB	kB kB	kB kB
Fire behaviour		UL 94		V0/V2[2)]	HB	V2	HB	

[1)] Extrusion quality for pneumatic tubing

[2)] according to wall section

kB = no fracture

Certain 1100 grades are available in uv-stabilized versions.

Typical applications

Cable jackets, plugs and terminations, spiral tubing, Films, ski-boot shells, ear tags, technical mouldings like mining screens, railway pads, seals.

Processability

Processable by injection moulding, extrusion and blow moulding

Process temperature (injectin moulding): 170 to 240 °C

Mould temperature: 20 to 70 °C

Processing temperature (extrusion): 160 to 220 °C.

1185 A WM	1190 A	1195 A	1198 A[1)]	1154 D	1160 D	1164 D	1174 D				
87	92	96									
39	42	48	52	53	60	64	73				
1,13	1,14	1,15	1,16	1,17	1,18	1,18	1,20				
30	50	55	50	50	50	50	50				
650	550	500	450	450	400	350	300				
4	4,5	6	9	11	13	16	25				
7	8,5	10	15	17	19	25	30				
10	16	18	28	38	41	45	45				
				150	200	250	560				
55	85	100	125	150	170	190	220				
65	25	25	25	20	20	20	20				
25	25	30	35	40	40	40	50				
43	45	45	50	50	50	50	55				
30	35	37	35	35	35	35	35				
600	600	500	450	450	450	400	400				
kB kB	kB kB	kB kB	kB 190	kB 18	kB 16	kB 12	kB 5				
		HB									

Please note

The stated values for individual grades are typical test results and not limiting specification values.

Quoted results are from measurements on injection moulded test platens, post tempered for 20 h at 100 °C.

Specialist application areas

Please contact our technical department for further regulatory information and approvals in the case of food contact, drinking water or medical applications.

Elastollan 1200 grades

Highly transparent thermoplastic Polyether Polyurethane Elastomer with good hydrolysis resistance, low temperature flexibility and resistance to micro-organismus

Physical Properties	Units	Test method	Elastollan 1298 A U	1254 D U	1260 D U	1264 D U
Hardness	Shore D	DIN ISO 7619-1 (3s)	50	57	61	64
Density	g/cm³	DIN EN ISO 1183-1-A	1,16	1,17	1,2	1,2
Tensile strength	MPa	DIN 53504-S2	60	60	45	50
Elongation at break	%	DIN 53504-S2	460	470	350	350
Stress at 20% elongation	MPa	DIN 53504-S2	9	16,5	15	17
Stress at 100% elongation	MPa	DIN 53504-S2	16	23	22,5	25
Stress at 300% elongation	MPa	DIN 53504-S2	28	35	36,5	35
Modulus of elasticity – tensile test	MPa	DIN EN ISO 52-7	90	180	225	330
Tear strenth	kN/m	DIN ISO 34-1Bb	130	165	165	170
Abrasion loss	mm³	DIN ISO 4649-A	25	30	40	40
Compression set at room temperature, 72h	%	DIN ISO 815	28	42	45	48
Compression set at 70°C, 24h	%	DIN ISO 815	45	54	52	48
Tensile strength after storage in water at 80°C for 42 days	MPa	DIN 53504-S2	50	53	51	46
Elongation at break after storage in water at 80°C for 42 days	%	DIN 53504-S2	550	520	500	450
Notched impact strength (Charpy) +23°C	kJ/m²	DIN EN ISO 179-1	kB	kB	kB	kB
Notched impact strength (Charpy) - 30°C	kJ/m²	DIN EN ISO 179-1	171	14	13	11,5

kB = no fracture

Typical applications

Ski boot shells, ski components, Films.

Processability

Processable by injection moulding as well as by extrusion

Process temperature (injection moulding): 215 to 240 °C

Mould temperature: 20 to 70°C

Process temperature (extrusion): 200 to 230°C.

1278 D U										
77										
1,2										
50										
350										
29										
33										
43										
808										
220										
40										
10										

Please note

The stated values for individual grades are typical test results and not limiting specification values.

Quoted results are from measurements on injection moulded test platens, post tempered for 20 h at 100 °C.

Specialist application areas

Please contact our technical department for further regulatory information and approvals in the case of food contact, drinking water or medical applications.

Elastollan C grades

Thermoplastic Polyester Polyurethane Elastomers with excellent mechanical properties. Outstanding tensile strength and high elongation at break, good damping characteristics, a high resilience performance and very good wear resistance.

Physical Properties	Units	Test method	Elastollan C 60 AP	C 78 A	C 80 A	C 85 A	C 88 A[1)]
Hardness	Shore A	DIN ISO 7619-1 (3s)	60	80	82	87	88
Hardness	Shore D	DIN ISO 7619-1 (3s)				36	37
Density	g/cm³	DIN EN ISO 1183-1-A	1,15	1,18	1,19	1,19	1,19
Tensile strength	MPa	DIN 53504-S2	38	50	50	50	50
Elongation at break	%	DIN 53504-S2	1000	650	650	650	600
Stress at 20% elongation	MPa	DIN 53504-S2	1	2	2,5	3	3,5
Stress at 100% elongation	MPa	DIN 53504-S2	2,4	4	4,5	5,5	6
Stress at 300% elongation	MPa	DIN 53504-S2	5	7,5	8,5	9,5	13
Modulus of elasticity – tensile test	MPa	DIN EN ISO 527					
Tear strength	kN/m	DIN ISO 34-1Bb	40	60	65	70	75
Abrasion loss	mm³	DIN ISO 4649-A	50	30	30	30	30
Compression set at room temperature, 72h	%	DIN ISO 815	21	25	25	25	25
Compression set at 70°C, 24h	%	DIN ISO 815	37	35	35	35	40
Tensile strength after storage in water for 21 days at 80°C	MPa	DIN 53504-S2		35	35	38	38
Elongation at break after storage in water for 21 days at 80°C	%	DIN 53504-S2		650	650	650	650
Notched impact strength (Charpy) +23°C Notched impact strength (Charpy) - 30°C	kJ/m² kJ/m²	DIN EN ISO 179-1 DIN EN ISO 179-1		kB kB	kB kB	kB kB	kB kB
Fire behaviour		UL 94				HB	

[1)] Extrusion quality for round belts

[2)] Extrusion quality for pneumatic tubing

kB = no fracture

Typical applications

Spiral tubing, pneumatic tubing, round belting, technical mouldings e.g. bushes, dust caps, seals, joints, blow moulded bellows, fan belts.

Processability

Processable by injection moulding, extrusion and blow moulding

Process temperature (injection moulding): 170 to 240 °C

Mould temperature: 20 to 70 °C

Process temperature (extrusion): 150 to 230°C.

C 90 A	C 95 A	C 98 A[2)]	C 59 D	C 60 D	C 64 D	C 74 D			
93	96								
41	47	52	57	60	63	73			
1,20	1,21	1,22	1,23	1,23	1,24	1,25			
55	55	50	50	50	45	45			
550	550	550	500	450	400	350			
7	8	11	12	16	17	28			
9	11	14	17	20	24	30			
15	22	26	30	35	35	35			
		160	250	330	390	730			
95	120	130	160	180	200	240			
25	25	30	20	20	20	20			
25	30	30	30	40	40	40			
40	45	50	50	50	55	60			
40	40	40	43	43	43	45			
550	500	550	480	450	420	380			
kB kB	kB kB	kB 25	kB 12	kB 8	kB 7	120 4			
	HB	HB	HB			HB			

Please note

The stated values for individual grades are typical test results and not limiting specification values.

Quoted results are from measurements on injection moulded test platens, post tempered for 20 h at 100 °C.

Specialist application areas

Please contact our technical department for further regulatory information and approvals in the case of food contact, drinking water or medical applications.

Elastollan HPM grades

Thermoplastic Polyester Polyurethane Elastomers with excellent mechanical properties, very good damping and resilience performance, heat resistance and improved cycle times.

Physical Properties	Units	Test method	Elastollan C 60 A HPM	C 65 A HPM	C 70 A HPM	C 75 A HPM
Hardness	Shore A	DIN ISO 7619-1 (3s)	63	67	71	75
Hardness	Shore D	DIN ISO 7619-1 (3s)				
Density	g/cm³	DIN EN ISO 1183-1-A	1,17	1,18	1,18	1,18
Tensile strength	MPa	DIN 53504-S2	35	37	40	40
Elongation at break	%	DIN 53504-S2	1000	950	900	900
Stress at 20% elongation	MPa	DIN 53504-S2	0,85	1,5	1,5	2
Stress at 100% elongation	MPa	DIN 53504-S2	1,5	2,0	2,5	3,5
Stress at 300% elongation	MPa	DIN 53504-S2	2	4,0	4,5	6
Tear strength	kN/m	DIN ISO 34-1Bb	40	44	45	50
Abrasion loss	mm³	DIN ISO 4649-A	55	55	50	50
Compression set at room temperature, 72h	%	DIN ISO 815	25	25	25	25
Compression set at 70°C, 24h	%	DIN ISO 815	43	37	35	35
Compression set at 100°C, 24h	%	DIN ISO 815	60	55	50	50
Tensile strength after storage in water for 21 days at 80°C	MPa	DIN 53504-S2	20	25	30	35
Elongation at break after storage in water for 21 days at 80°C	%	DIN 53504-S2	1100	900	850	800
Notched impact strength (Charpy) +23°C Notched impact strength (Charpy) - 30°C	kJ/m² kJ/m²	DIN EN ISO 179-1 DIN EN ISO 179-1	kB kB	kB kB	kB kB	kB kB
Vicat-softening temperature A 120°C/h	°C	DIN EN ISO 306	70	80	90	100

kB = no fracture

Typical applications

(Automotive)
e.g. sealings, stop dampers, cable jackets.

Processability

Processable by injection moulding, extrusion and blow moulding

Process temperature (injection moulding): 190 to 220°C

Mould temperature: 20 to 50°C

Process temperature (extrusion): 180 to 230°C.

C 85 A HPM	785 A HPM	754 D HPM						
85	85							
		55						
1,20	1,18	1,24						
45	45	35						
750	700	450						
3,5	3,5	15						
6,0	6	20						
11	11	40						
70	70	160						
40	40	20						
20	20	25						
30	30	35						
45	45	45						
35	40	30						
800	750	550						
kB kB	kB kB	n. b. n. b.						
120	120	155						

Please note

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Specialist application areas

Please contact our technical department for further regulatory information and approvals in the case of food contact, drinking water or medical applications.

Elastollan B grades

Thermoplastic Polyester Polyurethane Elastomers with excellent mechanical properties, outstanding wear resistance, good tensile strength, good damping and resilience performance and superior low temperature flexibility.

Physical Properties	Units	Test method	Elastollan B 60 AWH TSG	B 60 A ESD[1),2)]	B 60 A ESD M[1)]	B 80 A
Hardness	Shore A	DIN ISO 7619-1 (3s)	60	63	63	82
Hardness	Shore D	DIN ISO 7619-1 (3s)				
Density	g/cm³	DIN EN ISO 1183-1-A	1,18	1,17	1,17	1,19
Tensile strength	MPa	DIN 53504-S2	25	30	30	50
Elongation at break	%	DIN 53504-S2	800	800	800	600
Stress at 20 % elongation	MPa	DIN 53504-S2	1	1	1	2
Stress at 100 % elongation	MPa	DIN 53504-S2	2,5	2,5	2,5	5
Stress at 300 % elongation	MPa	DIN 53504-S2	6,5	6,5	6,5	14,5
Modulus of elasticity – tensile test	MPa	DIN EN ISO 527				
Tear strength	kN/m	DIN ISO 34-1Bb	40	50	50	85
Abrasion loss	mm³	DIN ISO 4649-A	100	60	60	35
Compression set at room temperature, 72h	%	DIN ISO 815	25	20	20	20
Compression set at 70°C, 24h	%	DIN ISO 815	40	30	30	30
Tensile strength after storage in water at 80°C for 21 days	MPa	DIN 53504-S2		25	25	40
Elongation at break after storage in water at 80°C for 21 days	%	DIN 53504-S2		900	900	600
Notched impact strength (Charpy) +23°C Notched impact strength (Charpy) - 30°C	kJ/m² kJ/m²	DIN EN ISO 179-1 DIN EN ISO 179-1	kB kB	kB kB	kB kB	kB kB
Specific volume resistivity	Ohm x cm	IEC60093		5x10⁷	5x10⁷	

Certain UV stabilised B grades are available on request

1) for safety shoes

2) transparent

Typical applications

Sport-shoe soles and accessories, Skiboot shells, technical mouldings, e.g. seals, castor tyres, tubing.

Processability

Processable by injection moulding, extrusion and blow moulding

Process temperature (injection moulding): 190 to 220 °C

Mould temperature: 20 to 50 °C

Process temperature (extrusion): 180 to 230 °C.

B 85 A	B 90 A	B 95 A	B 98 A	B 60 D	B 64 D				
83	91	96							
	42	48	50	60	64				
1,20	1,21	1,22	1,22	1,23	1,24				
55	55	55	55	55	55				
600	550	550	500	500	450				
2	4	7	8	13	17				
4	7	10	12	16	19				
15	20	22	30	30	35				
			140	240	320				
75	90	100	130	150	180				
35	30	30	25	25	25				
25	25	30	35	35	35				
35	40	40	45	45	50				
40	40	40	40	40	40				
600	550	500	500	450	400				
kB kB	kB kB	kB 200	kB 18	kB 10	kB 8				

Please note

The stated values for individual grades are typical test results and not limiting specification values.

Quoted results are from measurements on injection moulded test platens, post tempered for 20 h at 100 °C.

Specialist application areas

Please contact our technical department for further regulatory information and approvals in the case of food contact, drinking water or medical applications.

Elastollan 600 and 800 grades

Transparent, Thermoplastic Polyester Polyurethane Elastomers with excellent mechanical properties, outstanding wear resistance, good damping and resilience performance.

Physical Properties	Units	Test method	Elastollan 670 AWHU	685 A	690 A	695 A
Hardness	Shore A	DIN ISO 7619-1 (3s)	70	86	90	
Hardness	Shore D	DIN ISO 7619-1 (3s)				50
Density	g/cm³	DIN EN ISO 1183-1-A	1,19	1,21	1,21	1,22
Tensile strength	MPa	DIN 53504-S2	35	50	50	50
Elongation at break	%	DIN 53504-S2	650	600	550	500
Stress at 20% elongation	MPa	DIN 53504-S2	1	2,8	4	6
Stress at 100% elongation	MPa	DIN 53504-S2	3	5,5	7	10
Stress at 300% elongation	MPa	DIN 53504-S2				
Tear strength	kN/m	DIN ISO 34-1Bb	40	75	85	100
Abrasion loss	mm³	DIN ISO 4649-A	40	40	40	40
Compression set at room temperature, 72h	%	DIN ISO 815	25	25	25	25
Compression set at 70°C, 24h	%	DIN ISO 815	40	45	45	40
Tensile strength after storage in water at 80°C for 21 days	MPa	DIN 53504-S2	30	40	40	40
Elongation at break after storage in water at 80°C for 21 days	%	DIN 53504-S2	700	650	600	550
Notched impact strength +23°C Notched impact strength -30°C	kJ/m² kJ/m²	DIN EN ISO 179-1 DIN EN ISO 179-1	kB kB	kB kB	kB kB	kB 200

Materials in the 600 series are available with UV stabilisation

kB = no fracture

Typical applications

Decorative parts and damping elements for the sport shoe industry, Ski tips, tubes and Films.

Processability

Processable by injection moulding, extrusion and blow moulding

Process temperature (injection moulding): 175 to 230°C

Mould temperature: 20 to 50°C

Process temperature (extrusion): 175 to 220°C.

885 AN	890 AN								
87	93								
1,21	1,22								
45	45								
600	480								
	5,7								
	10								
	22,5								
85	110								
35	45								
	32								
	43								
	kB 200								

Please note

The stated values for individual grades are typical test results and not limiting specification values.

Quoted results are from measurements on injection moulded test platens, post tempered for 20h at 100°C.

Specialist application areas

Please contact our technical department for further regulatory information and approvals in the case of food contact, drinking water or medical applications.

Elastollan S grades

Thermoplastic Polyester Polyurethane Elastomers with excellent mechanical properties, outstanding wear resistance, good damping and resilience performance and excellent tear strength.

Physical Properties	Units	Test method	Elastollan S 60 AP	S 70 A	S 80 A	S 85 A
Hardness	Shore A	DIN ISO 7619-1 (3s)	63	70	81	85
Hardness	Shore D	DIN ISO 7619-1 (3s)				
Density	g/cm³	DIN EN ISO 1183-1-A	1,19	1,22	1,22	1,23
Tensile strength	MPa	DIN 53504-S2	35	34	50	55
Elongation at break	%	DIN 53504-S2	750	720	750	650
Stress at 20% elongation	MPa	DIN 53504-S2	1	1	2	2
Stress at 100% elongation	MPa	DIN 53504-S2	3	3	4	5
Stress at 300% elongation	MPa	DIN 53504-S2	6,5	5	8	8
Modulus of elasticity – tensile test	MPa	DIN EN ISO 527				
Tear strength	kN/m	DIN ISO 34-1Bb	45	55	60	70
Abrasion loss	mm³	DIN ISO 4649-A	35	42	40	35
Compression set at room temperature, 72h	%	DIN ISO 815			25	25
Compression set at 70°C, 24h	%	DIN ISO 815			35	35
Notched impact strength (Charpy) +23°C Notched impact strength (Charpy) - 30°C	kJ/m² kJ/m²	DIN EN ISO 179-1 DIN EN ISO 179-1			kB kB	kB kB
Fire behaviour		UL 94				

kB = no fracture

Typical applications

Shoe soles, top pieces, tubes, technical parts e.g. castor tyres.

Processability

Processable by injection moulding, extrusion and blow moulding

Process temperature (injection moulding): 175 to 240°C

Mould temperature: 20 to 70°C

Process temperature (extrusion): 175 to 220°C.

S 90 A	S 95 A	S 98 A	S 60 D	S 64 D					
93	96								
41	48	55	60	64					
1,24	1,24	1,25	1,25	1,26					
55	50	45	45	45					
600	550	500	500	450					
6	8	13	15	22					
9	11	16	18	23					
13	20	23	34	38					
		200	250	410					
95	120	150	170	200					
30	30	25	25	25					
25	25	30	40	45					
45	45	45	50	55					
kB kB	kB 14	kB 13	kB 4	140 4					
HB									

Please note

The stated values for individual grades are typical test results and not limiting specification values.

Quoted results are from measurements on injection moulded test platens, post tempered for 20 h at 100 °C.

Specialist application areas

Please contact our technical department for further regulatory information and approvals in the case of food contact, drinking water or medical applications.

Elastollan 500 grades

Thermoplastic Polyester Polyurethane Elastomers with excellent mechanical properties and in particular, good abrasion resistance.

Physical Properties	Units	Test method	Elastollan 560 A P TSG	565 A P	585 A	590 A
Hardness	Shore A	DIN ISO 7619-1 (3s)	50	66	83	94
Hardness	Shore D	DIN ISO 7619-1 (3s)				41
Density	g/cm³	DIN EN ISO 1183-1-A	1,22	1,22	1,25	1,25
Tensile strength	MPa	DIN 53504-S2	24	40	40	50
Elongation at break	%	DIN 53504-S2	830	850	650	600
Tear strength	kN/m	DIN ISO 34-1Bb	44	65	95	100
Abrasion loss	mm³	DIN ISO 4649-A	100	45	35	35

Typical applications

Shoes, parts subject to regular wear and tear, castor tyres and films.

Processability

Processable by injection moulding, and extrusion

Process temperature (injection moulding): 175 to 230 °C

Mould temperature: 20 to 70 °C

Process temperature (extrusion): 175 to 220°C.

598 A	560 D								
53	61								
1,26	1,28								
50	45								
500	450								
150	180								
30	30								

Please note

The stated values for individual grades are typical test results and not limiting specification values.

Quoted results are from measurements on injection moulded test platens, post tempered for 20 h at 100 °C.

Specialist application areas

Please contact our technical department for further regulatory information and approvals in the case of food contact, drinking water or medical applications.

Elastollan Aliphatic grades

Aliphatic, thermoplastic Polyurethane with excellent colour fastness, good flow characteristics, detailed reproduction of surface structures, resistance to hydrolysis and low fogging values.

Physical Properties	Units	Test method	LP 9277	LP 9307	A C 85 A HPM	A C 85 A
Hardness	Shore A	DIN ISO 7619-1 (3s)	69	80	85	84
Hardness	Shore D	DIN ISO 7619-1 (3s)				
Density	g/cm³	DIN EN ISO 1183-1-A	1,17	1,18	1,19	1,14
Tensile strength	MPa	DIN 53504-S2	10	15	18	18
Elongation at break	%	DIN 53504-S2	1300	900	1100	750
Tear resistance	kN/m	DIN ISO 34-1Bb	40	45	50	50
Compression set at room temperature, 72 h	%	DIN ISO 815	25	22		36
Compression set at 70 °C, 24 h	%	DIN ISO 815	35	30		39
Compression set at 100 °C, 24 h	%	DIN ISO 815	50	45		
Vicat-softening temperature A 120 °C/h	°C	DIN EN ISO 306	70	90		

Typical applications

Applications in the automotive interior, e.g. inner door handles, instrument panels, cover centre consoles, lever wheels, slider covers, tubes, films.

Processability

Processable by injection moulding, extrusion and slush moulding

Process temperature (injection moulding): 190 to 235 °C

Process temperature (extrusion): 180 to 230 °C

Mould temperature: 20 to 60 °C.

A 1185 AN	A 1154 DN	L 785 A	L 765 D	L 1160 D					
86		86							
	54		63	56					
1,05	1,11	1,12	1,13	1,1					
18	30	28	30	30					
650	550	500	350	400					
35	100	65	130	70					
	27								
	46								
	142								

Please note

The stated values for individual grades are typical test results and not limiting specification values.

Quoted results are from measurements on injection moulded test platens, post tempered for 20 h at 100 °C.

Specialist application areas

Please contact our technical department for further regulatory information and approvals in the case of food contact, drinking water or medical applications.

Elastollan Typreihe R

Glass fibre reinforced thermoplastic Polyester Polyurethane Elastomers with excellent mechanical properties, outstanding impact strength, high stiffness whilst maintaining good elongation, low coefficiant of expansion similar to Aluminium, low shrinkage, good paintability.

Physical Properties	Units	Test method	Elastollan R 1001	R 1000	R 2000	R 3000
Modulus of elasticity – tensile test	MPa	DIN EN ISO 527	350	1000	2000	2800
Density	g/cm³	DIN EN ISO 1183-1-A	1,27	1,36	1,37	1,38
Hardness	Shore D	DIN ISO 7619-1 (3s)	50	60	67	73
Glass-fibre content	%		10	20	20	20
Tensile strength (test specimen type 1A) strain rate at 50mm/min	MPa	DIN EN ISO 527	30	50	65	80
Elongation at break (test specimen type 1A) strain rate at 50mm/min	%	DIN EN ISO 527	65	40	25	10
Impact strength (Charpy) +23°C	kJ/m²	DIN EN ISO 179-1	kB*	kB*	140	120
Impact strength (Charpy) - 30°C	kJ/m²	DIN EN ISO 179-1	160	130	110	70
Notched impact strength (Charpy) +23°C	kJ/m²	DIN EN ISO 179-1	70	70	50	30
Notched impact strength (Charpy) - 30°C	kJ/m²	DIN EN ISO 179-1	30	20	10	10
Deflection temperature	°C	DIN EN ISO 75-2/A	65	90	115	120
Deflection temperature	°C	DIN EN ISO 75-2/B	125	120	138	155
Coefficient of linear expansion between 23°C and 80°C	$10^{-6} \cdot K^{-1}$	DIN 53752-A	28	20	20	20
Colour			natural	natural	natural	natural
Fire behaviour		UL 94				HB

Typical applications

Automotive body and panels and structural door trim parts, under body sealants, technical mouldings e.g. plugs, ski tips.

Processability

Processable by injection moulding

Process temperature (injection moulding): 225 to 245°C

Process temperature: 50 to 70°C.

R 3001	R 6000								
3000	6400								
1,32	1,40								
75	n. b.								
15	26								
65	115								
25	7								
100 70	84 67								
30 6	21 12								
110 155									
30									
black	natural								

Please note

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Specialist application areas

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Elastollan/flame retardant grades

Thermoplastic Polyether Polyurethane special products,
halogenfree flame retardant.

Physical Properties	Units	Test method	Elastollan 1177 A FHF	1185 A FHF	1190 A FHF	1191 A FHF
Hardness	Shore A	DIN ISO 7619-1 (3s)	77	89	90	91
Hardness	Shore D	DIN ISO 7619-1 (3s)		37		
Density	g/cm³	DIN EN ISO 1183-1-A	1,2	1,23	1,25	1,26
Tensile strength	MPa	DIN 53504-S2	22	35	25	24
Elongation at break	%	DIN 53504-S2	800	600	550	550
Stress at 20% elongation	MPa	DIN 53504-S2	2	3,5	4,8	4,8
Stress at 100% elongation	MPa	DIN 53504-S2	3	8	8,4	8,5
Stress at 300% elongation	MPa	DIN 53504-S2	5	13	10,5	11,6
Modulus of elasticity – tensile test	MPa	DIN EN ISO 527				
Tear resitance	kN/m	DIN ISO 34-1Bb	53	60	60	60
Abrasion loss	mm³	DIN ISO 4649-A	75	35	30	40
Compression set at room temperature, 72h	%	DIN EN ISO 815		25	26	24
Compression set at 70°C, 24h	%	DIN EN ISO 815		45	43	43
Notched impact strength (Charpy) +23°C Notched impact strength (Charpy) -30°C	kJ/m² kJ/m²	DIN EN ISO 179-1 DIN EN ISO 179-1		kB 120	kB 46	
Tensile strength after storage in water at 80 °C for 42 days	MPa	DIN 53504-S2		20	15	
Elongation at break after storage in water at 80 °C for 42 days	%	DIN 53504-S2		600	640	
Fire behaviour		UL 94		V0	V0	

[1] according to wall section

Typical applications

Cable jackets, Films

Processability

Processable by extrusion

Process temperature: 175 to 220 °C.

1147 D FHF	1154 D FHF	1185 A HFFR							
94		86							
48	58								
1,29	1,27	1,42							
13	30	20							
400	400	580							
7	13	3,6							
9	19	6							
10	33	7,8							
	160								
60	110	55							
60	30								
38	30								
50	45								
kB 21	50 3								
7	20	12							
270	400	750							
	V0/V2[1)]								

Please note

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Specialist application areas

Please contact our technical department for further regulatory information and approvals in the case of food contact, drinking water or medical applications.

Elastollan/Special products

Thermoplastic Polyether and Polyester Polyurethane Special products with excellent mechanical properties, outstanding wear resistance, good damping and resilience performance and excellent tear strength.

Physical Properties	Units	Test method	**Elastollan 1075 AU** Ether based alternative	**1085 A** Ether based alternative	**Soft 35 AP**[1)] Ester based	**Soft 45 AP**[2)] Ester based
Hardness	Shore A	DIN ISO 7619-1 (3s)	78	87	40	50
Hardness	Shore D	DIN ISO 7619-1 (3s)				
Density	g/cm³	DIN EN ISO 1183-1-A	1,13	1,15	1,18	1,18
Tensile strength	MPa	DIN 53504-S2	15	35	12	34
Elongation at break	%	DIN 53504-S2	900	700	1150	950
Stress at 20 % elongation	MPa	DIN 53504-S2	2	4,8	0,5	0,6
Stress at 100 % elongation	MPa	DIN 53504-S2	4,6	7,3	1	1,5
Stress at 300 % elongation	MPa	DIN 53504-S2	7,8	16,5	2,5	3
Tear resistance	kN/m	DIN ISO 34-1Bb	30	55	27	42
Abrasion	mm³	DIN ISO 4649-A	200	50	165	39
Compression set at room temperature, 72 h	%	DIN EN ISO 815	20	22		34
Compression set at 70 °C, 24 h	%	DIN EN ISO 815	35	34		53
Notched impact strength (Charpy) +23 °C	kJ/m²	DIN EN ISO 179-1	kB	kB		
Notched impact strength (Charpy) -30 °C	kJ/m²	DIN EN ISO 179-1	kB	kB		

[1)] Suitable for foaming

[2)] Available as ESD-version

kB = no fracture

Typical applications

Application specific formulations.

Processability

Processable by injection moulding and extrusion

Process temperature (injection moulding): 175 to 240 °C

Mould temperature: 20 to 70 °C

Process temperature (extrusion): 175 to 220 °C.

	SP 806 Ether based for opaque films	**SP 883** Ester based for opaque films	**1385 A** water vapour permeable								
	87	85	85								
	1,12	1,19	1,21								
	45	40	30								
	550	550	750								
	2,5	2	2,5								
	6	5	4,6								
	11,5	10,5									
	60	60	45								
	30	40	50								
	26	22	26								
	43	37	46								
	kB kB	kB kB	kB kB								

Please note

The stated values for individual grades are typical test results and not limiting specification values.

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Specialist application areas

Please contact our technical department for further regulatory information and approvals in the case of food contact, drinking water or medical applications.

Competence in Polyurethanes

With top quality products, a reputation for good customer service and continous progress and development, Elastollan has secured a firm position in numerous markets.

We want to share our know how and experience to contribute to your own success: The versatile Elastollan is the ideal material to fulfill your requirements.

For further information, the following detailed brochures are available on request:

- Thermoplastic Polyurethane Elastomers: Elastollan

- Elastollan – Materialproperties
- Elastollan – Processing Recommendations
  hinweise
- Elastollan – Elektrical Properties

- Elastollan – Chemical Resistance

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