

Imagine The Possibilities:
Elastollan[®] TPU For
Consumer Applications



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Footwear



The broad portfolio of our **Elastollan®** products caters to customers' constantly changing needs in footwear technology. Our materials provide excellent properties, such as mechanical strength, abrasion resistance and a wide hardness range (due to its availability in both polyester and polyether-based formulations). The product range covers soft grades for damping elements or brand tacks, medium hardness grades for compact or combi soles and hard grades for heels and heel tops. Antistatic agents could be added to **Elastollan®** to be used for safety shoes. The **Elastollan®** product range offers enormous possibilities for design freedom. Colour – from transparent to black - and the shape of the sole can be chosen depending on the shoe design & purpose (sports, casual, business, safety). Additionally, different sole shapes are possible, resulting in good slip resistance. **Elastollan®** adheres to Elastopan® PU systems which offer designers an outstanding combination of comfort and fashion. **Elastollan®** – the high performance TPU which is shaping the world around you.

For footwear applications, mainly **Elastollan®** B, S, R, C, A, 600, 1100, 1200, Hotbond, Bondura and Impress grades are used.

Sports & Leisure



Sports articles which are subject to low temperature have to bear a high stress load. With **Elastollan®** however, sports equipment like ski boots and ski goggles stay strong and flexible under sub-zero temperatures. Protective equipment for a wide variety of outdoor (such as football or baseball) or extreme sports depends on **Elastollan®** to protect from heavy impact and to prevent injuries to both professional & amateur athletes. Besides fulfilling the needs for demanding sports, **Elastollan®** can be used in every day applications as well, for instance substituting metal in zippers, or hard plastics in buttons.

For sport & leisure applications, mainly **Elastollan®** B, S, 600, 1100, 1200, Hotbond and Impress grades are used.



Spandex is an elastic fiber with excellent stretchability. This makes it very suitable for garments that require high comfort such as sportswear, stockings, jeans and underwear. **Elastollan®** melt spun fibers are produced in a spinning process that is free of solvents and gives exceptionally soft touch to the fabrics. As the world's leading supplier of melt spun spandex, BASF is the preferred partner to many brands.

For applications in the fashion industry, mainly **Elastollan®** fiber grade, Bondura, Hotbond and Impress grades are used.

Consumer Electronics



Fulfilling the ever demanding requirements for functionality and comfort in consumer electronics, **Elastollan®** provides versatile properties such as soft touch, excellent adhesion, color stability, transparency, hydrolysis resistance, antimicrobial features and weather fastness. It delivers good abrasion and stain resistance and can be over-molded onto different plastic substrates to achieve a variety of structural properties. **Elastollan®** enables design freedom in form and haptics to convert the use of consumer electronics into a unique experience.

For consumer electronics mainly **Elastollan®** Aliphatic, Flame Retardant, HPM, C, B, S, R, 600, 1200, Hotbond, Bondura and Impress grades are used.

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

Physical Properties	Units	Test method	Elastollan 1160 A P	1170 A	1175 A W		1180 A	1185 A W	1185 A	1185 A M	1185 A WM ¹⁾	1190 A	1195 A	1198 A ¹⁾	1154 D	1158 D	1160 D	1164 D	1174D	
Hardness	Shore A	DIN ISO 7619-1 (3s)	63	71	75		80	83	87	88	87	92	96							
Hardness	Shore D	DIN ISO 7619-1 (3s)							36	39	39	42	48	52	53	56	60	64	73	
Density	g/cm ³	DIN EN ISO 1183-1-A	1.07	1.08	1.14		1.11	1.16	1.12	1.11	1.13	1.14	1.15	1.16	1.17	1.15	1.18	1.18	1.2	
Tensile strength	MPa	DIN 53504-S2	26	30	40		45	40	45	45	30	50	55	50	50	50	50	50	50	
Elongation at break	%	DIN 53504-S2	950	850	700		650	700	600	600	650	550	500	450	450	470	400	350	300	
Stress at 20% elongation	MPa	DIN 53504-S2	1	1.3	2		2	2.25	2.5	3.5	4	4.5	6	9	11		13	16	25	
Stress at 100% elongation	MPa	DIN 53504-S2	2.5	2	4		4.5	6	6	7	7	8.5	10	15	17		19	25	30	
Stress at 300% elongation	MPa	DIN 53504-S2	4.5	4.8	8		8	8	10	12	10	16	18	28	38		41	45	45	
Modulus of elasticity - tensile test	MPa	DIN EN ISO 527													150		200	250	560	
Tear strength	kN/m	DIN ISO 34-1Bb	40	44	40		55	50	70	60	55	85	100	125	150		170	190	220	
Abrasion loss	mm ³	DIN ISO 4649-A	45	< 50	45		30	40	25	60	65	25	25	25	20	45	20	20	20	
Compression set at room temperature, 72h	%	DIN ISO 815		24	20		25	20	25	35	25	25	30	35	40		40	40	50	
Compression set at 70°C, 24h	%	DIN ISO 815	25	50	40		45	35	45	45	43	45	45	50	50		50	50	55	
Tensile strength after storage in water at 80°C for 42 days	MPa	DIN 53504-S2			28		30	30	32	30	30	35	37	35	35		35	35	35	
Elongation at break after storage in water at 80°C for 42 days	%	DIN 53504-S2			750		700	600	600	650	600	600	500	450	450		450	400	400	
Notched impact strength (Charpy) +23°C	kJ/m ²	DIN EN ISO179-1		kB	kB		kB	kB	kB	kB	kB	kB	kB	kB	kB		kB	kB	kB	
Notched impact strength (Charpy) -30°C	kJ/m ²	DIN EN ISO179-1		kB	kB		kB	kB	kB	kB	kB	kB	kB	190	18		16	12	5	
Fire behaviour		UL 94		V0/V2 ²⁾	HB		V2	HB					HB							

¹⁾ Extrusion quality for pneumatic tubing

²⁾ According to wall section

kB = no fracture

Certain 1100 grades are available in UV-stabilized versions.

Food contact grades are available. Please contact our sales representatives for advise.

Typical applications

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

Processability

Processability by injection moulding, extrusion and blow moulding.
Process temperature (injection moulding): 170 to 240°C
Mould temperature: 20 to 70°C
Processing temperature (extrusion): 160 to 220°C

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.

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

Physical Properties	Units	Test method	Elastollan 1285 A U	1298 A U	1254 D U	1260 D U	1264 D U	1278 D U	1283 D U
Hardness	Shore A	DIN ISO 7619-1 (3s)	85						
Hardness	Shore D	DIN ISO 7619-1 (3s)		50	57	61	64	77	83
Density	g/cm ³	DIN EN ISO 1183-1-A	1.12	1.16	1.17	1.2	1.2	1.2	1.22
Tensile strength	MPa	DIN 53504-S2	45	60	60	45	50	50	67
Elongation at break	%	DIN 53504-S2	600	460	470	350	350	350	170
Stress at 20% elongation	MPa	DIN 53504-S2	2.5	9	16.5	15	17	29	
Stress at 100% elongation	MPa	DIN 53504-S2	6	16	23	22.5	25	33	
Stress at 300% elongation	MPa	DIN 53504-S2	10	28	35	36.5	35	43	
Modulus of elasticity - tensile test	MPa	DIN EN ISO 52-7		90	180	225	330	808	2000
Tear strength	kN/m	DIN ISO 34-1Bb	70	130	165	165	170	220	310
Abrasion loss	mm ³	DIN ISO 4649-A	35	25	30	40	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/m ²	DIN EN ISO179-1		kB	kB	kB	kB		
Notched impact strength (Charpy) -30°C	kJ/m ²	DIN EN ISO179-1		171	14	13	11.5	10	

Typical applications

Ski boot shells, ski components, films.

Processability

Processability by injection moulding as well as by extrusion.

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

Mould temperature: 20 to 70°C

Processing temperature (extrusion): 200 to 230°C

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.

kB = no fracture

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	C 85 A HPM	785 A HPM	754 D HPM
Hardness	Shore A	DIN ISO 7619-1 (3s)	63	67	71	75	85	85	
Hardness	Shore D	DIN ISO 7619-1 (3s)							55
Density	g/cm ³	DIN EN ISO 1183-1-A	1.17	1.18	1.18	1.18	1.20	1.18	1.24
Tensile strength	MPa	DIN 53504-S2	35	37	40	40	45	45	35
Elongation at break	%	DIN 53504-S2	1000	950	900	900	750	700	450
Stress at 20% elongation	MPa	DIN 53504-S2	0.85	1.5	1.5	2	3.5	3.5	15
Stress at 100% elongation	MPa	DIN 53504-S2	1.5	2.0	2.5	3.5	6.0	6	20
Stress at 300% elongation	MPa	DIN 53504-S2	2	4.0	4.5	6	11	11	40
Tear strength	kN/m	DIN ISO 34-1Bb	40	44	45	50	70	70	160
Abrasion loss	mm ³	DIN ISO 4649-A	55	55	50	50	40	40	20
Compression set at room temperature, 72h	%	DIN EN ISO 815	25	25	25	25	20	20	25
Compression set at 70°C, 24h	%	DIN EN ISO 815	43	37	35	35	30	30	35
Compression set at 100°C, 24h	%	DIN EN ISO 815	60	55	50	50	45	45	45
Tensile strength after storage in water at 80°C for 21 days	MPa	DIN 53504-S2	20	25	30	35	35	40	30
Elongation at break after storage in water at 80°C for 21 days	%	DIN 53504-S2	1100	900	850	800	800	750	550
Notched impact strength (Charpy) +23°C	kJ/m ²	DIN EN ISO 179-1	kB	kB	kB	kB	kB	kB	n. b.
Notched impact strength (Charpy) -30°C	kJ/m ²	DIN EN ISO 179-1	kB	kB	kB	kB	kB	kB	n. b.
Vicat-softening temperature A 120°C/h	°C	DIN EN ISO 306	70	80	90	100	120	120	155

Typical applications

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

Processability

Processability by injection moulding, extrusion and blow moulding.

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

Mould temperature: 20 to 50°C

Processing temperature (extrusion): 180 to 230°C

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.

kB = no fracture

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⁾	C 90 A	C 95 A	C 98 A ²⁾	C 59 D	C 60 D	C 64 D	C 74 D
Hardness	Shore A	DIN ISO 7619-1 (3s)	60		80	82	87	88	93	96					
Hardness	Shore D	DIN ISO 7619-1 (3s)					36	37	41	47	52	57	60	63	73
Density	g/cm ³	DIN EN ISO 1183-1-A	1.15		1.18	1.19	1.19	1.19	1.20	1.21	1.22	1.23	1.23	1.24	1.25
Tensile strength	MPa	DIN 53504-S2	38		50	50	50	50	55	55	50	50	50	45	45
Elongation at break	%	DIN 53504-S2	1000		650	650	650	600	550	550	550	500	450	400	350
Stress at 20% elongation	MPa	DIN 53504-S2	1		2	2.5	3	3.5	7	8	11	12	16	17	28
Stress at 100% elongation	MPa	DIN 53504-S2	2.4		4	4.5	5.5	6	9	11	14	17	20	24	30
Stress at 300% elongation	MPa	DIN 53504-S2	5		7.5	8.5	9.5	13	15	22	26	30	35	35	35
Modulus of elasticity – tensile test	MPa	DIN EN ISO 527									160	250	330	390	730
Tear strength	kN/m	DIN ISO 34-1Bb	40		60	65	70	75	95	120	130	160	180	200	240
Abrasion loss	mm ³	DIN ISO 4649-A	50		30	30	30	30	25	25	30	20	20	20	20
Compression set at room temperature, 72h	%	DIN EN ISO 815	21		25	25	25	25	25	30	30	30	40	40	40
Compression set at 70°C, 24h	%	DIN EN ISO 815	37		35	35	35	40	40	45	50	50	50	55	60
Tensile strength after storage in water at 80°C for 21 days	MPa	DIN 53504-S2			35	35	38	38	40	40	40	43	43	43	45
Elongation at break after storage in water at 80°C for 21 days	%	DIN 53504-S2			650	650	650	650	550	500	550	480	450	420	380
Notched impact strength (Charpy) +23°C	kJ/m ²	DIN EN ISO 179-1			kB	kB	kB	kB	kB	kB	kB	kB	kB	kB	120
Notched impact strength (Charpy) -30°C	kJ/m ²	DIN EN ISO 179-1			kB	kB	kB	kB	kB	kB	25	12	8	7	4
Fire behaviour		UL 94					HB			HB	HB	HB			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, fans belts.

Processability

Processability by injection moulding, extrusion and blow moulding.

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

Mould temperature: 20 to 70°C

Processing temperature (extrusion): 150 to 230°C

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.

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

Physical Properties	Units	Test method	Elastollan 685 A	690 A	695 A	660 D	664 D
Hardness	Shore A	DIN ISO 7619-1 (3s)	86	90			
Hardness	Shore D	DIN ISO 7619-1 (3s)			50	62	64
Density	g/cm ³	DIN EN ISO 1183-1-A	1.21	1.21	1.22	1.23	1.23
Tensile strength	MPa	DIN 53504-S2	50	50	50	50	40
Elongation at break	%	DIN 53504-S2	600	550	500	400	350
Stress at 20% elongation	MPa	DIN 53504-S2	2.8	4	6	8	12
Stress at 100% elongation	MPa	DIN 53504-S2	5.5	7	10	14	20
Stress at 300% elongation	MPa	DIN 53504-S2					
Tear strength	kN/m	DIN ISO 34-1Bb	75	85	100	120	130
Abrasion loss	mm ³	DIN ISO 4649-A	40	40	40	40	30
Compression set at room temperature, 72h	%	DIN ISO 815	25	25	25		
Compression set at 70°C, 24h	%	DIN ISO 815	45	45	40	40	40
Tensile strength after storage in water at 80°C for 21 days	MPa	DIN 53504-S2	40	40	40	40	30
Elongation at break after storage in water at 80°C for 21 days	%	DIN 53504-S2	650	600	550	450	400
Notched impact strength +23°C	kJ/m ²	DIN EN ISO179-1	kB	kB	kB	kB	kB
Notched impact strength -30°C	kJ/m ²	DIN EN ISO179-1	kB	kB	200	7	9

Typical applications

Decorative parts and damping elements for the sport shoe industry, ski tips, tubes and films.

Materials in the 600 series are available with UV stabilisation

kB = no fracture

Processability

Processability by injection moulding as well as by extrusion.

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

Mould temperature: 20 to 50°C

Processing temperature (extrusion): 175 to 220°C

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.

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	S 90 A	S 95 A	S 98 A	S 60 D	S 64 D
Hardness	Shore A	DIN ISO 7619-1 (3s)	63	70	81	85	93	96			
Hardness	Shore D	DIN ISO 7619-1 (3s)					41	48	55	60	64
Density	g/cm ³	DIN EN ISO 1183-1-A	1.19	1.22	1.22	1.23	1.25	1.24	1.25	1.25	1.26
Tensile strength	MPa	DIN 53504-S2	35	34	50	55	55	50	45	45	45
Elongation at break	%	DIN 53504-S2	750	720	750	650	600	550	500	500	450
Stress at 20% elongation	MPa	DIN 53504-S2	1	1	3	2	6	8	13	15	22
Stress at 100% elongation	MPa	DIN 53504-S2	3	3	4	5	9	11	16	18	23
Stress at 300% elongation	MPa	DIN 53504-S2	65	5	8	8	13	20	23	34	38
Modulus of elasticity – tensile test	MPa	DIN EN ISO 527							200	250	410
Tear strength	kN/m	DIN ISO 34-1Bb	45	55	60	70	95	120	150	170	200
Abrasion loss	mm ³	DIN ISO 4649-A	35	42	40	35	30	30	25	25	25
Compression set at room temperature, 72h	%	DIN EN ISO 815			25	25	25	25	30	40	45
Compression set at 70°C, 24h	%	DIN EN ISO 815			35	35	45	45	45	50	55
Notched impact strength (Charpy) +23°C	kJ/m ²	DIN EN ISO 179-1			kB	kB	kB	kB	kB	kb	140
Notched impact strength (Charpy) -30°C	kJ/m ²	DIN EN ISO 179-1			kB	kB	kB	14	13	4	4
Fire behaviour		UL 94					HB				

Typical applications

Shoe soles, top pieces & tubes.

Processability

Processability by injection moulding as well as by extrusion.

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

Mould temperature: 20 to 50°C

Processing temperature (extrusion): 175 to 220°C

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.

kB = no fracture

Thermoplastic Polyether 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 A ESD ^{1), 2)}	B 80 A	B 85 A	B 90 A		B 95 A	B 98 A	B 60 D	B 64 D	B 80 ACF ³⁾	B 85 ACF ³⁾	B 90 ACF	B 95 ACF	B 98 ACF	B 60 DCF ³⁾	B 64 DCF ³⁾	B 95 ACFU	B 98 ACFU
Hardness	Shore A	DIN ISO 7619-1 (3s)	63	82	83	91		96				80	85	91	96				96	
Hardness	Shore D	DIN ISO 7619-1 (3s)				42		48	50	60	64				48	53	57	61	48	53
Density	g/cm ³	DIN EN ISO 1183-1-A	1.17	1.19	1.20	1.21		1.22	1.22	1.23	1.24	1.21	1.22	1.22	1.23	1.24	1.25	1.25	1.23	1.24
Tensile strength	MPa	DIN 53504-S2	30	50	55	55		55	55	55	55	50	55	55	55	55	55	47	55	55
Elongation at Break	%	DIN 53504-S2	800	600	600	550		550	500	500	450	600	600	550	550	500	500	450	550	500
Stress at 20% elongation	MPa	DIN 53504-S2	1	2	2	4		7	8	13	17	2	3	4	7	9	14	17	7	9
Stress at 100% elongation	MPa	DIN 53504-S2	2.5	5	4	7		10	12	16	19	5	5.5	7	10	13	17	19	10	13
Stress at 300% elongation	MPa	DIN 53504-S2	6.5	14.5	15	20		22	30	30	35	9	11	20	22	30	30	35	22	30
Modulus of elasticity - tensile test	MPa	DIN EN ISO 527							140	240	320									
Tear Sstrength	kN/m	DIN ISO 34-1Bb	50	85	75	90		100	130	150	180	65	70	90	100	130	150	172	100	130
Abrasion loss	mm ³	DIN ISO 4649-A	60	35	35	30		30	25	25	25	40	50	35	38	35	30	30	38	35
Compression set at room temperature, 72h	%	DIN ISO 815	20	20	25	25		30	35	35	35									
Compression set at 70°C, 24h	%	DIN ISO 815	30	30	35	40		40	45	45	50									
Tensile strength after storage in water at 80°C for 21 days	MPa	DIN 53504-S2	25	40	40	40		40	40	40	40				40				40	
Elongation at break after storage in water at 80°C for 21 days	%	DIN 53504-S2	900	600	600	550		500	500	450	400				500				500	
Notched impact strength (Charpy) +23°C	kJ/m ²	DIN EN ISO179-1	kB	kB	kB	kB		kB	kB	kB	kB									
Notched impact strength (Charpy) -30°C	kJ/m ²	DIN EN ISO179-1	kB	kB	kB	kB		200	18	10	8									
Specific Volume Resistivity	Ohm x cm	IEC60093	5x10 ⁷																	

¹⁾ For safety shoes

²⁾ Transparent

³⁾ Preliminary data

Certain UV-stabilised B grades are available on request

Food contact grades are available. Please contact our sales representative for advice.

Typical applications

Sport-shoe soles, accessories and ski boot shells.

Processability

Processability by injection moulding, extrusion and blow moulding.

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

Mould temperature: 20 to 50°C

Processing temperature (extrusion): 180 to 230°C

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.

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	Elastollan LP 9307	A C 70 A HPM	A C 85 A HPM	A C 85 A	A 1185 AN	A 1154 DN	L 785 A	L 765 D	L 1160 D
Hardness	Shore A	DIN ISO 7619-1 (3s)	80	69	85	84	86		86		
Hardness	Shore D	DIN ISO 7619-1 (3s)						54		63	56
Density	g/cm ³	DIN EN ISO 1183-1-A	1.18	1.17	1.19	1.14	1.05	1.11	1.12	1.13	1.1
Tensile strength	MPa	DIN 53504-S2	15	10	18	18	18	30	28	30	30
Elongation at break	%	DIN 53504-S2	900	1300	1100	750	650	550	500	350	400
Tear resistance	kN/m	DIN ISO 34-1Bb	45	40	50	50	35	100	65	130	70
Compression set at room temperature, 72h	%	DIN EN ISO 815	22	25		36		27			
Compression set at 70°C, 24h	%	DIN EN ISO 815	30	35		39		46			
Compression set at 100°C, 24h	%	DIN EN ISO 815	45	50							
Vicat-softening temperature A 120°C/h	°C	DIN EN ISO 306	90	70				142			

Typical applications

Application in consumer electronics, e.g. wearable devices.

Processability

Processability by injection moulding and slush moulding.

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

Process temperature (extrusion): 180 to 230°C

Mould temperature (extrusion): 20 to 60°C

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.

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

Physical Properties	Units	Test method	Elastollan R 1001	R 1000	R 2000	R 3000	R 3001	R 6000	R 17000
Module of elasticity – tensile test	MPa	DIN EN ISO 527	350	1000	2000	2800	3000	6400	17000
Density	g/cm ³	DIN EN ISO 1183-1-A	1.27	1.36	1.37	1.38	1.32	1.4	1.65
Hardness	Shore D	DIN ISO 7619-1 (3s)	50	60	67	73	75	n.b.	
Glass – fibre content	%		10	20	20	20	15	26	52.5
Tensile strength (test specimen type 1A) strain rate at 50mm/min	MPa	DIN EN ISO 527	30	50	65	80	65	115	
Elongation at break (test specimen type 1A) strain rate at 50mm/min	%	DIN EN ISO 527	65	40	25	10	25	7	
Impact strength (Charpy) +23°C	kJ/m ²	DIN EN ISO 179-1	kB*	kB*	140	120	100	84	107
Impact strength (Charpy) -30°C	kJ/m ²	DIN EN ISO 179-1	160	130	110	70	70	67	95
Notched impact strength (Charpy) +23°C	kJ/m ²	DIN EN ISO 179-1	70	70	50	30	30	21	45
Notched impact strength (Charpy) -30°C	kJ/m ²	DIN EN ISO 179-1	30	20	10	10	6	12	54
Deflection temperature	°C	DIN EN ISO 75-2/A	65	90	115	120	110		
Deflection temperature	°C	DIN EN ISO 75-2/B	125	120	138	155	155		
Coefficient of linear expansion between 23°C and 80°C	10 ⁻⁶ .K ⁻¹	DIN 53752-A	28	20	20	20	30		
Colour			natural	natural	natural	natural	black	natural	
Fire behaviour		UL 94				HB			

Typical applications

Consumer electronics and other technical mouldings eg. ski tips and shoe shanks.

Processability

Processability by injection moulding.

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

Processing temperature (extrusion): 50 to 70°C

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.

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	SP 806 Ether-based for opaque films	SP 883 Ether-based for opaque films	1385 A water vapour permeable	SP 9324	SP 9339	
Hardness	Shore A	DIN ISO 7619-1 (3s)	78		87	40	50	87	85	85	60	70
Hardness	Shore D	DIN ISO 7619-1 (3s)										
Density	g/cm ³	DIN EN ISO 1183-1-A	1.13		1.15	1.18	1.18	1.12	1.19	1.21	1.21	1.21
Tensile strength	MPa	DIN 53504-S2	15		35	12	34	45	40	30	30	30
Elongation at break	%	DIN 53504-S2	900		700	1150	950	550	550	750	600	500
Stress at 20% elongation	MPa	DIN 53504-S2	2		4.8	0.5	0.6	2.5	2	2.5	0.7	1
Stress at 100% elongation	MPa	DIN 53504-S2	4.6		7.3	1	1.5	6	5	4.6	1.7	3.1
Stress at 300% elongation	MPa	DIN 53504-S2	7.8		16.5	2.5	3	11.5	10.5		3.4	8.2
Tear resistance	kN/m	DIN ISO 34-1Bb	30		55	27	42	60	60	45	40	50
Abrasion	mm ³	DIN ISO 4649-A	200		50	165	39	30	40	50	50	40
Compression set at room temperature, 72h	%	DIN EN ISO 815	20		22		34	26	22	26		
Compression at 70°C, 24h	%	DIN EN ISO 815	35		34		53	43	37	46		
Notched impact strength (Charpy) +23°C	kJ/m ²	DIN EN ISO 179-1	kB		kB			kB	kB	kB		
Notched impact strength (Charpy) -30°C	kJ/m ²	DIN EN ISO 179-1	kB		kB			kB	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

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.

Thermoplastic Polyether Polyurethane special products that are halogen-free and flame retardant.

Physical Properties	Units	Test method	Elastollan 1177 F FHF	1185 A FHF	1190 A FHF	1191 A FHF	1147 D FHF	1154 D FHF	1185 A HFFR
Hardness	Shore A	DIN ISO 7619-1 (3s)	77	89	90	91	94		86
Hardness	Shore D	DIN ISO 7619-1 (3s)		37			48	58	
Density	g/cm ³	DIN EN ISO 1183-1-A	1.2	1.23	1.25	1.26	1.29	1.27	1.42
Tensile strength	MPa	DIN 53504-S2	22	35	25	24	13	30	20
Elongation at break	%	DIN 53504-S2	800	600	550	550	400	400	580
Stress at 20% elongation	MPa	DIN 53504-S2	2	3.5	4.8	4.8	7	13	3.6
Stress at 100% elongation	MPa	DIN 53504-S2	3	8	8.4	8.5	9	19	6
Stress at 300% elongation	MPa	DIN 53504-S2	5	13	10.5	11.6	10	33	7.8
Modulus of elasticity – tensile test	MPa	DIN EN ISO 527						160	
Tear resistance	kN/m	DIN ISO 34-1Bb	53	60	60	60	60	110	55
Abrasion loss	mm ³	DIN ISO 4649-A	75	35	30	40	60	30	
Compression set at room temperature, 72h	%	DIN EN ISO 815		25	26	24	38	30	
Compression set at 70°C, 24h	%	DIN EN ISO 815		45	43	43	50	45	
Notched impact strength (Charpy) +23°C	kJ/m ²	DIN EN ISO 179-1		kB	kB		kB	50	
Notched impact strength (Charpy) -30°C	kJ/m ²	DIN EN ISO 179-1		120	46		21	3	
Tensile strength after storage in water at 80°C for 42 days	MPa	DIN 53504-S2		20	15		7	20	12
Elongation at break after storage in water at 80°C for 42 days	%	DIN 53504-S2		600	640		270	400	750
Fire behaviour		UL 94		V0	V0			V0/V2 ¹⁾	

Typical applications

Cable jackets, films.

Processability

Processability by extrusion.

Process temperature
(injection moulding): 175 to 220°C

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.

¹⁾According to wall section

Abrasion resistance, flexibility, softness, high elongation, great adhesion and excellent solubility in MEK & Anone.

Physical Properties	Grades	Standard Grade						Hydrolysis Resistance Grade		
	Units	Elastollan Impress A8510H	A8510	A8510L	A8511H	A8810	A9513H	A7020	A8521H	A8521
Specific gravity	(g/cm ³)	1.18 ± 0.02	1.18 ± 0.02	1.18 ± 0.02	1.18 ± 0.02	1.18 ± 0.02	1.18 ± 0.02	1.18 ± 0.02	1.18 ± 0.02	1.18 ± 0.02
Hardness	Shore A	85 ± 2	85 ± 2	85 ± 2	85 ± 2	88 ± 2	95 ± 2	72 ± 2	85 ± 2	85 ± 2
100% Modulus	(kg/cm ²)	70	70	70	70	80	90	35	75	75
Tensile strength	(kg/cm ²)	200	150	100	200	250	350	200	300	250
Elongation	(%)	600	600	600	600	600	400	800	650	650
Viscosity range 30% S.C. in Anone	(cpa/ 25°C)	20,000 ~ 30,000	10,000 ~ 15,000	3,000 ~ 5,000	20,000 ~ 30,000	10,000 ~ 15,000	20,000 ~ 30,000	3,000 ~ 4,000 (Anone/MEK=50/50)	20,000 ~ 25,000	10,000 ~ 15,000

Typical applications

Spray, screen printing & transfer coating.

Physical Properties	Units	Elastollan Value A9610	A8230
Specific gravity	(g/cm ³)	1.20 ± 0.02	1.19 ± 0.02
Hardness	Shore A	96 ± 2 A	80 ± 2 A
100% Modulus	(kg/cm ²)	120	50
300% Modulus	(kg/cm ²)	230	115
Tensile strength	(kg/cm ²)	500	250
Elongation	(%)	500	650
Processing temperature	(°C)	210 ~ 230	180 ~ 200

Typical applications

Soles, shoe accessories, heel tips, phone cases, etc.

Excellent bonding strength for TPU, PVC, Nylon, Polyester, fabrics, oily leather and others. The melt flow index can be customized for each grade.

Physical Properties	Grades	Soft TPU Hotmelt Adhesive Grade												Hard TPU Hotmelt Adhesive Grade						Non-Yellowing Aliphatic Grade									
		Units	Elastollan Hotbond AH-530	AH-535	AH-560	AH-560T	AH-562	AH-567	AH-571	AH-571E	AH-573	AH-576	AH-579	AH-580	AH-582	AH-583	AH-588	AH-591	AH-620	AH-650	AH-652	AH-660	AH-661	AH-670	AH-780	AH-781	AH-782	AH-810	
Hardness	Shore A	72 ± 2	80 ± 2	75 ± 2	75 ± 2	75 ± 2	69 ± 2	80 ± 2	80 ± 2	78 ± 2	79 ± 2	80 ± 2	75 ± 2		79 ± 2	80 ± 2	85 ± 2	90 ± 2	95 ± 2	97 ± 2	97 ± 2	97 ± 2	97 ± 2	97 ± 2	97 ± 2	90 ± 2	85 ± 2	87 ± 2	98 ± 2
Flow beginning temperature	(°C)	95 ± 10	85 ± 10	95 ± 10	90 ± 10	90 ± 10	110 ± 10	110 ± 10	110 ± 10	140 ± 10	119 ± 10	110 ± 10	90 ± 10		119 ± 10	118 ± 10	115 ± 10	110 ± 10	80 ± 10	60 ± 10	60 ± 10	80 ± 10	65 ± 10	85 ± 10	110 ± 10	110 ± 10	118 ± 10	60 ± 10	
Melt flow index	(2.16kg, 150°C, g/10mins)	10 ± 5	20 ± 5	20 ± 5	20 ± 5	20 ± 5	7 ± 2 (177°C)	4 ± 2	4 ± 2	20 ± 5 (190°C)	7 ± 2 (177°C)	5 ± 2	20 ± 5		10 ± 5 (177°C)	7 ± 2 (177°C)	3 ± 1 (190°C)	30 ± 10	10 ± 5	10 ± 5	10 ± 3	10 ± 5	40 ± 10	10 ± 5	20 ± 5	20 ± 5	5 ± 2	10 ± 5	
Tack free time	(min)	3 ± 1	3 ± 1	15 ± 5	15 ± 5	3 ± 1	12 ± 3	8 ± 3	8 ± 3	2 ± 1	8 ± 3	3 ± 1	15 ± 5		8 ± 3	2 ± 1	2 ± 1	6 ± 2	25 ± 5	6 ± 2	4 ± 2	8 ± 3	7 ± 2	8 ± 3	3 ± 1	3 ± 1	3 ± 1	4 ± 1	

Typical Applications

Hotmelt adhesive films, seam sealing tapes, counters & toe puffs, heat transfer laminations, fabric laminations and automotive industry.

Excellent bonding strength for TPU, PVC, Nylon, Polyester, fabrics, leather, and others. Excellent initial bonding strength, good solvent solubility, strong crystallization, low themoplasticity, can be used as a mono-component adhesive or with a cross-linking agent.

Physical Properties	Grades	Standard Grade								Hydrolysis Resistance Grade				Aliphatic Grade				Max. Toluene Solubility, MC Soluble							
		Units	Elastollan Bondura AS-626SH	AS-626H	AS-626	AS-626L	AS-626SL	AS-690H	AS-690	AH-620	AS-632H	AS-632	AS-632L	AS-632A	AS-632B	AS-420	AS-731	AS-733	AS-736	AS-120H	AS-120	AS-120L			
Viscosity range SC%: 15% in MEK	(cps/25~)	3600 ~ 4200	2600 ~ 3200	1600 ~ 2200	800 ~ 1200	300 ~ 600	2600 ~ 3200	1600 ~ 2200	1600 ~ 2000 (25% S.C.)	2600 ~ 3200	1600 ~ 2200					800 ~ 1200	1600 ~ 2200	1600 ~ 2200	1600 ~ 2200	1600 ~ 2000	1600 ~ 2000	1600 ~ 2000	1000 ~ 2000	70 ~ 130	70 ~ 1300 (in MC)
Max Toluene% in solvent	(%)	15 ~ 20	25 ~ 30	30 ~ 35	30 ~ 35	30 ~ 35	25 ~ 30	30 ~ 35	30 ~ 35	25 ~ 30	25 ~ 30					25 ~ 30	25 ~ 30	25 ~ 30	25 ~ 30	25 ~ 30	30 ~ 35	30 ~ 35	40 ~ 60	50 ~ 70	50 ~ 70
Crystallisation rate		very fast	very fast	very fast	very fast	very fast	very fast	very fast	very fast	fast	fast					fast	fast	fast	very slow	very fast	very fast	fast	fast	fast	fast
Activation temperature	(°C)	55 ~ 65	55 ~ 65	55 ~ 65	55 ~ 65	55 ~ 65	55 ~ 65	55 ~ 65	55 ~ 65	55 ~ 65	55 ~ 65					55 ~ 65	55 ~ 65	55 ~ 65	55 ~ 65	55 ~ 65	55 ~ 65	55 ~ 65	55 ~ 65	55 ~ 65	55 ~ 65
Tack time, PVC vs PVC	(min)	5 ~ 10	5 ~ 10	5 ~ 10	5 ~ 10	5 ~ 10	5 ~ 10	5 ~ 10	5 ~ 10	25 ~ 50	25 ~ 50					25 ~ 50	25 ~ 50	25 ~ 50	over 8 hours	5 ~ 10	5 ~ 10	7 ~ 15	5 ~ 10	15 ~ 25	15 ~ 25
Initial bonding strength, PVC vs PVC after 5 mins.	(kg/3cm)	10 ~ 16	10 ~ 16	10 ~ 16	10 ~ 16	10 ~ 16	10 ~ 16	10 ~ 16	10 ~ 16	12 ~ 18	12 ~ 18					12 ~ 18	12 ~ 18	12 ~ 18	9 ~ 15	8 ~ 12	8 ~ 12	3 ~ 5	10 ~ 16	0.5 ~ 1.0	0.1 ~ 0.3
Heat resistance 70°C	(mm)	≤ 10	≤ 15	≤ 20	≤ 25	≤ 30	≤ 15	≤ 20	≤ 50	≤ 15	≤ 20					≤ 25	≤ 20	≤ 20	≤ 25	≤ 15	≤ 30	≤ 50	≤ 15	>65	>65

Typical Applications

Suitable for shoe materials, textile lamination & furniture products (MDF board), spraying, long tack time grade and fire hose co-extrusion.



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