Elastollan 1185 A 10 W 000

Elastollan
Elastollan is the registered trademark of Elastogran thermoplastic Polyurethane Elastomers.

The product code consists of a letter and a number combination.

Grade
The letter or number characterizes the basis polyol

B,C,S,5,6,8=Polyester

11=Polyether
21=Polyesterether

R=glass-fibre reinforced grades

LP-Laboratory product still in development

SP-Special product: Product modified to meet customer's requirement.

Hardness
A=Shore A

D=Shore D

Particle form
1=cylindrical or lentil shaped pellets

5=diced

Lubricant
0=without lubricant

3,5=with lubricant

Additives
A=antistatic

ESD=electronic sensitive devices

FHF=flame retardant halogen free

HPM= hard phase modified

M=matt surface

SPF=soft plasticizer free

U=UV stabilized

W/WH=plasticized

Additives
000=natural colour

100 bis 999= code for included additive

Elastollan 1100 grades

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

Physical properties	**Units**	**DIN**	**ISO**	**1175A W**	**1180A**	**1185A W**	**1185A**	**1185A M**	**1185A WM**
suitable for: injection moulding ▲ extrusion ■ blow moulding ●				▲■	▲■	▲■	▲■●	■	■
Hardness	Shore A	53505	868	75	80	83	87	88	87
Hardness	Shore D	53505	868				36	39	39
Density	g/cm^3	DIN EN ISO 1183-1-A		1, 14	1, 11	1,16	1,12	1,11	1,15
Tensile strength	MPa	53504	37	40	45	40	45	45	35
Elongation at break	%	53504	37	700	650	700	600	600	600
Stress at 20% elongation	MPa	53504	37	2	2	2,5	2,5	3,5	4
Stress at 100% elongation	MPa	53504	37	4	4,5	6	6	7	7
Stress at 300% elongation	MPa	53504	37	8	8	8	10	12	13
Modulus of elasticity-tensile test	MPa	DIN EN ISO 527							
Tear strength	kN/m	DIN ISO 34-1/B/b		40	55	50	70	60	55
Abrasion loss	mm^3	53516	4649	45	30	40	25	60	38
Compression set at room temperature	%	DIN ISO	815	20	25	20	25	35	20
Compression set at 70℃	%	DIN ISO	815	40	45	35	45	45	35
Tensile strength after storage in water at 80℃ for 42 days	MPa	53504	37	28	30	30	32	30	30
Elongation at break after storage in water at 80℃ for 42 days	%	53504	37	750	700	700	600	650	600
Notched impact strength (charpy) +23℃	kJ/m^2	DIN EN ISO 179		kB	kB	kB	kB	kB	kB
Notched impact strength (charpy) -30℃	kJ/m^2	DIN EN ISO 179		kB	kB	kB	kB	kB	kB
Flammability rating		UL 94		V0/V2[3)]	HB	V2	HB		

1185A FHF[1)]	1190A	1195A	1198A[≈)]	1154D	1154D FHF[1)]	1160D	1164D	1174D
▲■	▲■	▲■	▲■	▲■	▲■	▲■	▲■	▲■
89	92	96						
37	42	48	52	53	58	60	64	73
1,23	1,14	1,15	1,16	1,17	1,27	1,18	1,18	1,20
35	50	55	50	50	30	50	50	50
600	550	500	450	450	400	400	350	300
3,5	4,5	6	9	11	13	13	16	25
8	8,5	10	15	17	19	19	25	30
13	16	18	28	38	33	41	45	45
				150	160	200	250	560
60	85	100	125	150	110	170	190	220
35	25	25	25	20	30	20	20	20
25	25	30	35	40	30	40	40	50
45	45	45	50	50	45	50	50	55
20	35	37	35	35	20	35	35	35
600	600	500	450	450	400	450	400	400
kB	kB	kB	kB	kB	50	kB	kB	kB
120	kB	kB	190	18	3	16	12	5
V0		HB			V0/V2[3)]			

1)Flame retardant halogen free
2)Extrusion quality for pneumatic tubing
3)according to wall section
kB=no fracture

Typical applications

Cable sheeating,plugs and terminationgs ,spiral tubing,films,ski-boot shells,eat tags,technical mouldings,e.g.minging screens,railwan pads,seals.

Processability

Processable by injectiong moulding,extrusion and blow moulding

Process temperature(injectiong moulding):170 to 240℃

Mould temperature:20 to 70℃

Processing temperature (extrusion):160 to 220℃

Please note

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

Quoted results are from measurements on injection moulded test platens,post tempered for 20 hours at 100℃.

Specialist application ateas

Please contact our technical dipartment for advice on acceptablilty and approvals for use in areas such as potable water and foodstuff contact and medical applications.

Elastollan C grades

Thermoplastic Polyether Polyurethane Elastomers with excellent mechanical properties and chemical resistance,outstanding wear resistance,high tear and tensile strength,good damping characteristics and a high resilience performance.

Physical properties	**Units**	**DIN**	**ISO**	**C65A HPM**	**C70A HPM**	**C75A HPM**	**C85A HPM**	**C78A**
suitable for: injection moulding ▲ extrusion ■ blow moulding ●				▲■●	▲■●	▲■●	▲■	▲■
Hardness	Shore A	53505	868	65	70	75	85	80
Hardness	Shore D	53505	868					
Density	g/cm^3	DIN EN ISO 1183-1-A		1,19	1,17	1,20	1,23	1,18
Tensile strength	MPa	53504	37	40	45	50	50	50
Elongation at break	%	53504	37	800	750	700	650	650
Stress at 20% elongation	MPa	53504	37	1,5	1,5	2	3,5	2
Stress at 100% elongation	MPa	53504	37	2,0	2,5	3,5	6,0	4
Stress at 300% elongation	MPa	53504	37	4,0	4,5	6	11	7,5
Modulus of elasticity-tensile test	MPa	DIN EN ISO 527						
Tear strength	kN/m	DIN ISO 34-1/B/b		40	40	45	70	60
Abrasion loss	mm^3	53516	4649	40	35	35	40	30
Compression set at room temperature	%	DIN ISO	815	20	15	15	15	25
Compression set at 70℃	%	DIN ISO	815	30	25	25	25	35
Tensile strength after storage in water at 80℃ for 21 days	MPa	53504	37	25	30	35	35	35
Elongation at break after storage in water at 80℃ for 21 days	%	53504	37	900	850	800	800	650
Notched impact strength (charpy) +23℃	kJ/m^2	DIN EN ISO 179		kB	kB	kB	kB	kB
Notched impact strength (charpy) -30℃	kJ/m^2	DIN EN ISO 179		kB	kB	kB	kB	kB
Flammability rating		UL 94						

C80A	C85A	C88A[1)]	C90A	C95A	C98A[2)]	C59D	C60D	C64D	C74D
▲■	▲■●	■	▲■●	▲■	■	▲	▲	▲	▲
82	87	88	93	96					
	36	37	41	47	52	57	60	63	73
1,19	1,19	1,19	1,20	1,21	1,22	1,23	1,23	1,24	1,25
50	50	50	55	55	50	50	50	45	45
650	650	600	550	550	550	500	450	400	350
2,5	3	3,5	7	8	11	12	16	17	28
4,5	5,5	6	9	11	14	17	20	24	30
8,5	9,5	13	15	22	26	30	35	35	35
					160	250	330	390	730
65	70	75	95	120	130	160	180	200	240
30	30	30	25	25	30	20	20	20	20
25	25	25	25	30	30	30	40	40	40
35	35	40	40	45	50	50	50	55	60
35	38	38	40	40	40	43	43	43	45
650	650	650	550	500	550	480	450	420	380
kB	kB	kB	kB	kB	kB	50	kB	kB	kB
kB	kB	kB	kB	kB	25	12	8	7	4
	HB				HB	HB			HB

1)Extrusion quality for round belt

2)Extrusion quality for pneumatic tubing

kB=no fracture

Characteristic properties

Spiral tubing,pneumatic tubing,round and v-belting,technical mouldings,e.g. bushes,dust caps,seals,blow moulded bellows,mining screens.

Processability

Processable by injectiong moulding,extrusion and blow moulding

Process temperature(injectiong moulding):170 to 240℃

Mould temperature:20 to 70℃

Processing temperature (extrusion):150 to 230℃

Please note

The stated values for individual grades are typical test results and not limiting specificationg values. Quoted results are from measurements on injection moulded test platens,post tempered for 20 hours at 100℃.

Specialist application ateas

Please contact our technical dipartment for advice on acceptablilty and approvals for use in areas such as potable water and foodstuff contact and medical applications.

Elastollan B grades

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

Physical properties	**Units**	**DIN**	**ISO**	**B60A WHA[1)]**	**B60A ESD[1)]**	**B80A**	**B85A**	**B90A**
suitable for: injection moulding ▲ extrusion ■ blow moulding ●				▲	▲	▲	▲■	▲■
Hardness	Shore A	53505	868	60	65	82	83	91
Hardness	Shore D	53505	868					42
Density	g/cm^3	DIN EN ISO 1183-1-A		1,17	1,17	1,19	1,20	1,21
Tensile strength	MPa	53504	37	35	20	50	55	55
Elongation at break	%	53504	37	900	800	600	600	550
Stress at 20% elongation	MPa	53504	37	1	1	2	2	4
Stress at 100% elongation	MPa	53504	37	2,5	2,5	5	4	7
Stress at 300% elongation	MPa	53504	37	6,5	6,5	14,5	15	20
Modulus of elasticity-tensile test	MPa	DIN EN ISO 527						
Tear strength	kN/m	DIN ISO 34-1/B/b		50	40	85	75	90
Abrasion loss	mm^3	53516	4649	40	120	35	35	30
Compression set at room temperature	%	DIN ISO	815	20	20	20	25	25
Compression set at 70℃	%	DIN ISO	815	30	30	30	35	40
Tensile strength after storage in water at 80℃ for 21 days	MPa	53504	37	20	20	40	40	40
Elongation at break after storage in water at 80℃ for 21 days	%	53504	37	1000	900	600	600	550
Notched impact strength (charpy) +23℃	kJ/m^2	DIN EN ISO 179		kB	kB	kB	kB	kB
Notched impact strength (charpy) -30℃	kJ/m^2	DIN EN ISO 179		kB	kB	kB	kB	kB

B95A	B98A	B60D	B64D				
▲■	▲■	▲■	▲				
96							
48	50	60	64				
1,22	1,22	1,23	1,24				
55	55	55	55				
550	500	500	450				
7	8	13	17				
10	12	16	19				
22	30	30	35				
	140	240	320				
100	130	150	180				
30	25	25	25				
30	35	35	35				
40	45	45	50				
40	40	40	40				
500	500	450	400				
kB	kB	kB	kB				
200	18	10	8				

Selected types in the B range are available on request, with included UV stabilisation.

1)for safety shoes,volume resistivity(IEC 60093):

B 60 A WHA=10^9 Ohm×cm

B 60 A ESD=10^7 Ohm×cm

kB=no break

Typical applications

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

Processing

Processable by injection moulding and extrusion.

Process temperature (injection moulding):175 to 230℃

Mould temperature:20 to 70℃

Processing temperature (extrusion):175 to 230℃

Please note

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

Quoted results are from measurements on injection moulded test platens,post tempered for 20 hours at 100℃.

Specialist application ateas

Please contact our technical dipartment for advice on acceptablilty and approvals for use in areas such as potable water and foodstuff contact and medical applications.

Elastollan 600 grades

Transparent,thermoplastic Polyether Polyurethane Elastomers with excellent mechanical properties and wear resistance,good damping characteristics and a high resiliance performance.

Physical properties	**Units**	**DIN**	**ISO**	**670 AWHU**	**685 AU**	**690 AU**	**695 AU**	**660 DU**
suitable for: injection moulding ▲ extrusion ■ blow moulding ●				▲	▲■	▲■	▲■	▲
Hardness	Shore A	53505	868	70	86	90		
Hardness	Shore D	53505	868				50	60
Density	g/cm^3	DIN EN ISO 1183-1-A		1,19	1,21	1,21	1,22	1,23
Tensile strength	MPa	53504	37	35	50	50	50	50
Elongation at break	%	53504	37	650	600	550	500	400
Stress at 20% elongation	MPa	53504	37	1	2,8	4	6	8
Stress at 100% elongation	MPa	53504	37	3	5,5	7	10	14
Tear strength	kN/m	DIN ISO 34-1/B/b		40	75	85	100	120
Abrasion loss	mm^3	53516	4649	40	40	40	40	40
Compression set at room temperature	%	DIN ISO	815	25	25	25	25	30
Compression set at 70℃	%	DIN ISO	815	40	45	45	40	40
Tensile strength after storage in water at 80℃ for 21 days	MPa	53504	37	30	40	40	40	40
Elongation at break after storage in water at 80℃ for 21 days	%	53504	37	700	650	600	550	450
Notched impact strength (charpy) +23℃	kJ/m^2	DIN EN ISO 179		kB	kB	kB	kB	kB
Notched impact strength (charpy) -30℃	kJ/m^2	DIN EN ISO 179		kB	kB	kB	200	7

664 DU						
▲						
65						
1,23						
40						
350						
12						
20						
130						
30						
35						
40						
40						
400						
kB						
9						

Materials in the 600 series are available with omission of the standard UV stabilisation.

kB=no break

Typical applications

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

Processing

Processable by injection moulding and extrusion.

Process temperature (injection moulding):175 to 230℃

Mould temperature:20 to 70℃

Process temperature extrusion:175 to 220℃.

Please note

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

Quoted results are from measurements on injection moulded test platens,post tempered for 20 hours at 100℃.

Specialist application ateas

Please contact our technical dipartment for advice on acceptablilty and approvals for use in areas such as potable water and foodstuff contact and medical applications.

Elastollan S grades

Thermoplastic Polyether Polyurethane Elastomers with excellent mechanical properties and wear resistance, good damping characteristics and a high resiliance performance.

Physical properties	**Units**	**DIN**	**ISO**	**S50A SPF**	**S60A SPF**	**S70A SPF**	**S60A WH[1)]**	**S70A WH[1)]**
suitable for: injection moulding ▲ extrusion ■ blow moulding ●				▲■	▲■	▲■	▲■●	■
Hardness	Shore A	53505	868	55	60	70	60	68
Hardness	Shore D	53505	868					
Density	g/cm^3	DIN EN ISO 1183-1-A		1,2	1,2	1,2	1,19	1,20
Tensile strength	MPa	53504	37	35	40	40	30	30
Elongation at break	%	53504	37	900	850	750	800	850
Stress at 20% elongation	MPa	53504	37	0,8	1	1,4	1	1,2
Stress at 100% elongation	MPa	53504	37	1,1	2,4	3,3	2,5	2,9
Stress at 300% elongation	MPa	53504	37	3,3	4,2	5,9	5	5,3
Modulus of elasticity-tensile test	MPa	DIN EN ISO 527						
Tear strength	kN/m	DIN ISO 34-1/B/b		40	50	60	35	50
Abrasion loss	mm^3	53516	4649	35	30	30	50	65
Compression set at room temperature	%	DIN ISO	815	30	25	25	20	20
Compression set at 70℃	%	DIN ISO	815	45	40	35	35	35
Notched impact strength (charpy) +23℃	kJ/m^2	DIN EN ISO 179		kB	kB	kB	kB	kB
Notched impact strength (charpy) -30℃	kJ/m^2	DIN EN ISO 179		kB	kB	kB	kB	kB
Flammability rating		UL 94						

S80A	S85A	S90A	S95A	S98A	S60D	S64D	S74D
■	▲■	▲■	▲■	▲■	▲■	▲■	▲■
81	85	93	96				
		41	48	55	60	64	75
1,22	1,23	1,24	1,24	1,25	1,25	1,26	1,26
50	55	55	50	45	45	45	40
750	650	600	550	500	500	450	300
2	2	6	8	13	15	22	25
4	5	9	11	16	18	23	30
8	8	13	20	23	34	38	40
				200	250	410	800
60	70	95	120	150	170	200	240
40	35	30	30	25	25	25	25
25	25	25	25	30	40	45	55
35	35	45	45	45	50	55	60
kB	kB	kB	kB	kB	kB	50	kB
kB	kB	kB	14	13	4	4	3
	HB						

1)for Combi-sole

kB=no fracture

Typical applications

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

Processing

Processable by injectiong moulding and extrusion.

Process temperature(injectiong moulding):175 to 240℃

Mould temperature:20 to 70℃

Processing temperature (extrusion):175 to 220℃

Please note

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

Quoted results are from measurements on injection moulded test platens,poat tempered for 20 hours at 100℃。

Specialist application areas

Please contact our technical department for advice on acceptability and approvals for use in areas such as potable water and foodstuff congtact and medical applications.

Elastollan 500 grades

Thermoplastic Polyether Polyurethane Elastomers with excellent mechanical properties and a high abrasion resistance.

Physical properties	**Units**	**DIN**	**ISO**	**590A**	**598A**	**560D**	**564D**		
suitable for: injection moulding ▲									
Hardness	Shore A	53505	868	94					
Hardness	Shore D	53505	868	41	53	61	64		
Density	g/cm^3	DIN EN ISO 1183-1-A		1,25	1,26	1,28	1,28		
Tensile strength	MPa	53504	37	50	50	45	45		
Elongation at break	%	53504	37	600	500	450	350		
Tear strength	kN/m	DIN ISO 34-1/B/b		100	150	180	200		
Abrasion loss	mm^3	53516	4649	35	30	30	30		

Typical application

Heel top-pieces,castor tyres and parts rpquiring a high durability.

Processing

Processable by injection moulding
Process temperature:175 to 230℃
Mould temperature:20 to 70℃.

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 hours at 100℃.

Specialist application areas

Please contact our technical dipartment for advice on acceptability and approvals for use in areas such as potable water and foodstuff contact and medical applications.

Elastollan R grades

Glass Fibre Reinforced Thermoplastic Polyester Polyurethane Elastomers with exceptional properties,very high impact resistance,high modulus with at the same time elasticity,low coefficent of thermal expansion comparable with steel amd aluminium,low mould shrinkage and ease of painting.

Physical properties	**Units**	**DIN**	**ISO**	**R 1001**	**R 1000**	**R 2000**	**R 3000**	**R 2001**	**R 2005/1**
suitable for: injection moulding ▲				▲	▲	▲	▲	▲	▲
Modul of elasticity-tensile test	MPa	DIN EN ISO	527	350	1000	2000	2800	1800	1900
Density	g/cm3	DIN EN ISO	1183-1-A	1,27	1,36	1,37	1,38	1,37	1,35
Hardness	Shore D	53505	868	50	60	67	73	67	64
Glass-fibre content	%			10	20	20	20	20	20
Tensile strength (test specimen type 1A) strain rate 50 mm/min	MPa	DIN EN ISO	527	30	50	65	80	60	65
Elongation at break (test specimen type 1A strain rate 50 mm/min	%	DIN EN ISO	527	65	40	25	10	30	20
Impact strength (Charpy) +23℃	kJ/m^2	DIN EN ISO	179	kB*	kB*	140	120	180	140
Impact strength (Charpy) -30℃	kJ/m^2	DIN EN ISO	179	160	130	110	70	110	100
Notched impact strength (charpy) +23℃	kJ/m^2	DIN EN ISO	179	70	70	50	30	50	50
Notched impact strength (charpy) -30℃	kJ/m^2	DIN EN ISO	179	30	20	10	10	10	10
Deflection temperature	℃	DIN EN ISO	75-2/Ae	65	90	115	120	120	120
Deflection temperature	℃	DIN EN ISO	75-2/Be	125	120	138	155	150	150
Coefficient of linear expansion between 23℃ and 80℃R	$10^{-6} \cdot K^{-1}$	53752-A		28	20	20	20	22	20
Colour				natural	natural	natural	natural	black	black
Flammability rating		UL 94					HB		

R 2006[1)]	R 2002	R 3001						
▲	▲	▲						
2000	2300	3000						
1,35	1,38	1,32						
64	70	75						
20	25	15						
65	70	65						
20	15	25						
130	130	100						
80	90	70						
40	40	30						
10	10	6						
120	130	110						
150	170	155						
20	15	30						
black	black	black						

1)Paintable with water-based lacquers.

Typical applications

Automotive body and rocker panels, underbody sealants,echnical mouldings e.g. plugs,ski tips.

Processing

Processable by injection moulding

Process temperature:225 to 245℃

Mould temperature:50 to 70℃.

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 hours at 100℃.

Specialist application areas

Please contact our technical department for advice on acceptability and approvals for use in areas such as potable water and foodstuff contact and medical appl-ications.

Elastollan/Elastoblend

Thermoplastic Polyurethane Elastomers Special Products with excellent mechanical properties,outstanding wear resistance,high tear and tensile strength,good damping characteristics and a high resiliance performance.

Physical properties	**Units**	**DIN**	**ISO**	**LP 9192** Polyether based for matt surfaces	**1085 A** Alternative Polyether basis	**SP 806** Polyether based for opaque films	**SP 883** Polyester based for opaque films	**880 AN** Polyester based for transparent films	**890 AN** Polyester basedfor transparent films
suitable for: injection moulding ▲ extrusion ■				▲■	▲	■	■	■	■
Hardness	Shore A	53505	868	75	89	87	85	78	94
Hardness	Shore D	53505	868						
Density	g/cm^3	DIN EN ISO 1183-1-A		1,11	1,15	1,12	1,19	1,21	1,22
Tensile strength	MPa	53504	37	20	35	45	40	40	50
Elongation at break	%	53504	37	750	700	550	550	650	550
Stress at 20% elongation	MPa	53504	37	0,8	4,8	2,5	2	2,8	5,7
Stress at 100% elongation	MPa	53504	37	2,7	7,3	6	5	5,5	10
Stress at 300% elongation	MPa	53504	37	7,7	16,5	11,5	10,5	9,5	22,5
Tear strength	kN/mm	DIN ISO 34-1/B/b		35	60	60	60	60	120
Abrasion loss	mm^3	53516	4649	100	70	30	40	45	45
Compression set at room temperature	%	DIN EN ISO 815		27	22	26	22	23	32
Compression set at 70℃	%	DIN EN ISO 815		53	34	43	37	58	43
Notched impact strength (charpy) +23℃	kJ/m^2	DIN EN ISO 179		kB	kB	kB	kB	kB	kB
Notched impact strength (charpy) -30℃	kJ/m^2	DIN EN ISO 179		kB	kB	kB	kB	kB	200

2180 A Polyester/ Polyether based for fibres/films	**SP 9213** Polyether based easy flow	**SP 852** Polyester based easy flow	**1154D KFFC** Polyether based for flexible flat cabies					
■	▲■	▲■	■					
77	80	81						
			62					
1,13	1,11	1,23	1,23					
45	26	50	40					
450	700	680	400					
1	2,5	2,3	16,5					
4,5	5,5	5	22					
10	9	8,5	31,5					
40	40	70	150					
45	70	30	30					
14	22	23	30					
23	45	42	45					
kB	kB	kB	90					
kB	kB	kB	5					

kB=no break

Typical applications

Application specific formulations.

Processing

Processable by injection moulding and extrusion

Process temperature (injection moulding):175 to 240℃

Mould temperature:20 to 70℃

Process temperature(extrusion):175 to 220℃.

Please note

The stated values for individual grades are typical test results and not limiting specificationg values. Quoted results are from measurements on injection moulded test platens,post tempered for 20 hours at 100℃.

Specialist application areas

Please contact our technical department for advice on acceptablilty and approvals for use in areas such as potable water and foodstuff contact and medical applications.