ETP1112

ENGINEERING THERMOPLASTICS

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All the figures reported in this publication are the result of tests and analyses carried out in our laboratories and are believed to be accurate and reliable.
Tests are performed at 23 °C unless otherwise specified.
Data may be subject to revision and are provided for general guidance only.
The user is responsible for carrying out all the tests necessary to verify the suitability of the material for the specific application. SO.F.TER. makes no warranties and assumes no liability in connection with any use of this information.

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POLIFOR® PP compounds

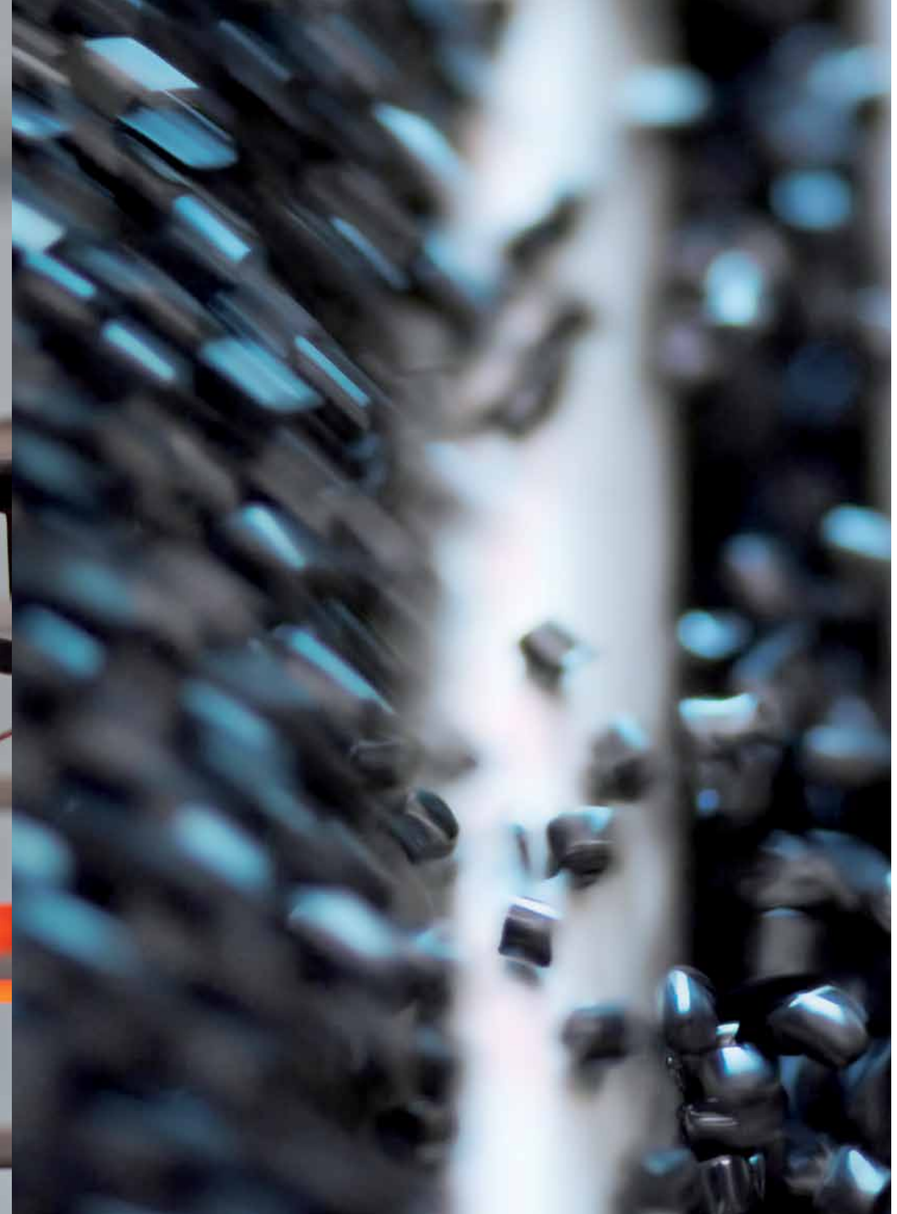
Type	Grade	Composition	Features
FILLED	12 TR/20	Polypropylene homopolymer, 20% talc	Good colourability, stiffness and toughness UL94 HB
	10 TE/30	Polypropylene homopolymer, 30% dolomitic talc	Excellent aesthetic properties and good mechanical properties
	12 TR/40	Polypropylene homopolymer, 40% talc	Good stiffness and dimensional stability UL94 HB
	12 CA/40	Polypropylene homopolymer, 40% carbonate calcium	Good aesthetic properties and good toughness UL94 HB
	C 20 TR/30	Polypropylene copolymer, 30% talc	Good mechanical properties and fluidity UL94 HB
	20 BS/25	Polypropylene homopolymer, 25% barium sulphate	Glossy surface and excellent aesthetic properties
	L15 MU/40	Polypropylene homopolymer, 40% muscovite-type mica	Excellent dimensional stability, stiffness and technical properties
ELASTOMER MODIFIED	E 3	Elastomer modified polypropylene, low fluidity	High toughness
	E 3 TR/10	Elastomer modified polypropylene, 10% mineral filler	High toughness
	E 12 TR/20	Elastomer modified polypropylene, 20% mineral filler	High toughness and good stiffness
	E 8 TR/30	Elastomer modified polypropylene, 30% mineral filler	High toughness and good stiffness
REINFORCED	6 GF/20	Polypropylene homopolymer, 20% glass fibre	High stiffness, good thermal and mechanical properties
	6 GF/30	Polypropylene homopolymer, 30% glass fibre	High stiffness and good thermal and mechanical properties
	L3 GF/30	Polypropylene homopolymer, 30% chemically coupled glass fibre	High stiffness and good thermal and mechanical properties UL94 HB
	L6 GF/20	Polypropylene homopolymer, 20% chemically coupled glass fibre	Good stiffness, impact resistance, load and thermal properties UL94 HB
	L6 GF/30	Polypropylene homopolymer, 30% chemically coupled glass fibre	Good stiffness, impact resistance, load and thermal properties UL94 HB
	L6 GF/40	Polypropylene homopolymer, 40% chemically coupled glass fibre	Excellent mechanical properties even at high temperatures UL94 HB
	L6 GF/50	Polypropylene homopolymer, 50% chemically coupled glass fibre	Excellent mechanical properties even at high temperatures UL94 HB
	L30 GF/30	Polypropylene homopolymer, 30% chemically coupled glass fibre	Good stiffness, impact resistance, load and thermal properties UL94 HB
	C L6 GF/30	Polypropylene copolymer, 30% chemically coupled glass fibre	UL94 HB
	C L30 GF/30	High fluidity polypropylene copolymer, 30% chemically coupled glass fibre	High fluidity, impact resistance and good creep resistance UL94 HB
	8 GB/20	Polypropylene homopolymer, 20% glass beads	Good aesthetical properties, isotropic behaviour, excellent moulding properties and dimensional stability

Type	Grade	Composition	Features
FLAME RETARDANT	5000/V0-AF-EP	Flame retardant polypropylene copolymer, halogen and antimony trioxide free	Good impact resistance, stiffness and electrical properties Low smoke emissions UL94 V0
	5000/V0-EP Y2	Flame retardant polypropylene copolymer	Outstanding moulding, aesthetic and electrical properties UL94 V0
	5000/V2	Flame retardant polypropylene homopolymer	Outstanding moulding, aesthetic and electrical properties UL94 V2
	5000/V2-EP	Flame retardant polypropylene copolymer	Excellent toughness. Higher flexibility compared to 5000/V2 UL94 V2
	5003/V2	Flame retardant polypropylene, very low halogen level, antimony trioxide free	Excellent aesthetic properties UL94 V2
	5003/V2-EP	Flame retardant polypropylene copolymer, low halogen content	Good moulding, aesthetic, electrical properties and impact resistance Higher flexibility compared to 5003/V2 UL94V2
	5020/V2	Flame retardant polypropylene homopolymer, halogen and antimony trioxide free	Medium moulding properties UL94 V2
	5020/V2-EP	Flame retardant polypropylene copolymer, halogen and antimony trioxide free	Low smoke emissions, good resilience Higher flexibility compared to 5020/V2 UL94 V2
	5210/V2	Flame retardant polypropylene homopolymer, with talc-type mineral filler	High stiffness and dimensional stability UL94 V2
	5220/V0-EP	Flame retardant polypropylene copolymer, 20% mineral filler	Good stiffness and electrical properties UL94 V0
	5220/V0-EP WOD	Flame retardant polypropylene copolymer, 20% mineral filler	PBDE free
	FR 7B01	Flame retardant polypropylene copolymer	Good moulding and electrical properties. Available in LASER PRINTING version UL94 V2 - RTI at 110 °C.
	FR 7B02	Flame retardant polypropylene copolymer	UL 94 V2 - RTI at 105 °C.
	QD 813 Y001	Polypropylene copolymer, 30% glass fibre	High toughness and stiffness UL94 V0 and 5VA
	QD 813 Y001 WOD	Polypropylene copolymer, 30% glass fibre	High toughness and stiffness UL94 V0 and 5VA PBDE free
	QD 818 Y001	Polypropylene homopolymer, 30% glass fibre	UL94 V0 and 5VA
CONDUCTIVE	25 CF/20 H	Heat-stabilized polypropylene homopolymer, 20% carbon fibre	High stiffness, low electrical surface resistivity
	E 16 SSF8	Polypropylene copolymer, 8% steel fibre	Low electrical surface resistivity
HIGH DENSITY	20 BS/70	Polypropylene homopolymer, 70% barium sulphate	High specific gravity, excellent finishing
SOUND DAMPENING	C 40 CAMU/40	Polypropylene copolymer, 40% mica and calcium carbonate	Dimensional stability, good sound dampening properties

POLIFOR® PP compounds

			MINERAL FILLED							ELASTOMER MODIFIED				REINFORCED											FLAME RETARDANT														CONDUCTIVE		HIGH DENSITY	SOUND DEAD.			
			Polifor 12 TR/20	Polifor 10 TE/30	Polifor 12 TR/40	Polifor 12 CA/40	Polifor C 20 TR/30	Polifor 20 BS/25	Polifor L15 MU/40	Polifor E 3	Polifor E 3 TR/10	Polifor E 12 TR/20	Polifor E 8 TR/30	Polifor 6 GF/20	Polifor 6 GF/30	Polifor L3 GF/30	Polifor L6 GF/20	Polifor L6 GF/30	Polifor L6 GF/40	Polifor L6 GF/50	Polifor L30 GF/30	Polifor C L6 GF/30	Polifor C L30 GF/30	Polifor 8 GB/20	Polifor 5000/V0 AF-EP	Polifor 5000/V0 EP1Y2	Polifor 5000/ V2	Polifor 5000/ V2 EP	Polifor 5003/ V2	Polifor 5003/ V2 EP	Polifor 5020/ V2	Polifor 5020/V2 EP	Polifor 5210/V2	Polifor 5220/V0 EP	Polifor 5220/V0 EP WOD	Polifor FR 7B01	Polifor FR 7B02	Polifor QD 813 Y001	Polifor QD 813 Y001 WOD	Polifor QD 818 Y001	Polifor 25 CF/ 20 H	Polifor E 16 SSF 8	Polifor 20 BS/70	Polifor C40 CAMU/40			
Physical properties	*Method*	*Unit*																																									*Unit*	*Method*	*Physical properties*
density	ASTM D1505	g/cm³	1,05	1,15	1,22	1,22	1,15	1,13	1,27	0,90	0,95	1,02	1,12	1,05	1,13	1,13	1,05	1,13	1,20	1,27	1,13	1,12	1,13	1,02	1,05	1,03	0,93	0,93	0,92	0,92	0,99	0,99	1,01	1,35	1,35	0,94	0,95	1,40	1,46	1,40	0,98	1,00	1,98	1,24	g/cm³	ASTM D1505	**density**
mould shrinkage	ASTM D955	%	1-1,3	0,9-1,2	0,8-1,1	0,8-0,9	0,9-1,2	1,1-1,5	0,5-0,8	1,4-1,7	1,3-1,6	1,3-1,6	1,2-1,5	0,3-0,5	0,2-0,4	0,2-0,4	0,3-0,5	0,2-0,4	0,1-0,3	0,1-0,3	0,2-0,4	0,2-0,4	0,2-0,4	0,9-1,2	1,3-1,8	1,1-1,5	1,5-1,8	1,4-1,7	1,5-2,0	1,5-2,0	1,1-1,4	1,0-1,3	1,2-1,5	0,8-1,2	0,8-1,2	1,2-1,6	1,2-1,6	0,1-0,5	0,1-0,5	0,1-0,5	0,1-0,3	1,4-1,7	0,5-0,9	0,8-0,9	%	ASTM D955	**mould shrinkage**
MFI melt flow index 230 °C/2.16 kg	ASTM D1238	g/10'	10	8	10	10	20	20	10	2	3	11	7	3	2,5	1,1	3	2,5	2	2	13	2,5	9	6	15	22	12	12	12	12	10	10	12	10	10	15	15	3	3	5	8	14	20	35	g/10'	ASTM D1238	**MFI melt flow index 230 °C/2.16 kg**
Mechanical properties																																														*Mechanical properties*
tensile strenght at yield	ASTM D638	MPa	32	26	30	26	22	28	25	-	23	10	23	45	50	71	70	85	95	94	82	67	70	28	23	26	30	27	30	27	30	25	30	22	22	35	30	65	62	75	39	20	15	20	MPa	ASTM D638	**tensile strenght at yield**
elongation at break	ASTM D638	%	25	>50	10	20	45	>50	4	-	150	>600	50	4	3	3,5	3	3	2	1,5	3,5	3	3	>50	22	>20	50	>50	40	100	40	40	10	20	20	100	150	5	7	3	5	40	40	15	%	ASTM D638	**elongation at break**
flexural modulus	ASTM D790	MPa	2800	2500	4000	2900	2600	1800	4000	1000	1200	250	1900	3600	4800	5100	4000	5500	7000	9000	5600	5000	5000	1700	1600	1300	1400	1200	1400	1200	2100	1700	1700	2700	2700	1400	1300	6000	5100	7500	6100	1100	3100	2500	MPa	ASTM D790	**flexural modulus**
IZOD impact strength, nothed 23 °C	ASTM D256	J/m	30	30	25	30	45	40	25	no break	500	no break	120	55	65	120	80	100	100	80	90	145	140	30	35	60	35	70	35	70	30	40	30	40	40	40	50	110	145	65	40	130	25	30	J/m	ASTM D256	**IZOD impact strength, notched 23 °C**
IZOD impact strength, nothed 0 °C	ASTM D256	J/m	25	20	20	25	-	20	-	-	-	-	-	40	45	-	60	90	80	-	-	-	110	-	-	-	15	35	26	40	22	25	20	-	-	-	-	-	-	-	-	-	-	-	-	J/m	ASTM D256I	**ZOD impact strength, notched 0 °C**
Thermal properties																																														*Thermal properties*
VICAT method B (50 °C/h - 50 N)	ASTM D1525	°C	100	95	102	96	75	92	98	-	65	106	57	105	110	138	128	135	136	140	138	115	115	92	77	70	93	70	93	70	95	75	93	78	78	88	85	125	135	135	107	59	100	70	°C	ASTM D1525	**VICAT method B (50 °C/h - 50 N)**
H.D.T. method A (1.82 MPa)	ASTM D648	°C	68	60	85	66	65	55	-	-	52	-	55	100	125	150	135	150	150	150	150	145	145	65	60	52	55	45	55	45	65	55	65	-	-	-	-	130	125	146	-	-	-	-	°C	ASTM D648	**H.D.T. method A (1.82 MPa)**
ball pressure test	IEC 335	°C	125	125	125	125	-	125	-	-	-	-	>115	125	125	125	125	125	125	>125	>125	125	125	125	125	-	125	125	125	125	125	125	125	125	125	125	125	125	125	125	-	-	-	-	°C	IEC 335	**ball pressure test**
Flammability properties																																														*Flammability properties*
limited oxigen index	ASTM D2863	%	21	21	21	21	-	21	21	-	-	-	21	21	21	-	21	21	21	-	-	-	21	-	30	-	23	23	27	27	26	26	23	-	-	23	23	-	-	-	-	-	-	-	%	ASTM D2863	**limited oxigen index**
flame rating 0.8 mm	UL 94	Class	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	V2	V2	-	-	V2	-	V2	-	-	V2	V2	-	V0	-	-	-	-	-	Class	UL 94	**flame rating 0.8 mm**
flame rating 1.6 mm	UL 94	Class	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	V0	V0	V2	V2	V2	V2	V2	V2	V2	V0	V0	V2	V2	V0	V0	V0	HB	HB	HB	HB	Class	UL 94	**flame rating 1.6 mm**
flame rating 3.2 mm	UL 94	Class	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	V0	V0	V2	V2	V2	V2	V2	V2	V2	V0	V0	V2	V2	V0 5VA	V0 5VA	V0 5VA	HB	HB	HB	HB	Class	UL 94	**flame rating 3.2 mm**
needle flame test	IEC 695-2-2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	OK	-	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	-	OK	-	-	-	-	-	IEC 695-2-2	**needle flame test**
GWIT glow wire flammability index 3 mm	IEC 60695-2-12	°C/mm	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650	650	960	-	960	960	960	960	960	960	960	960	960	960	960	960	960/3	960	-	-	650	-	°C	IEC 695-2-1	**GWIT glow wire flammability index 3 mm**
comparative tracking index	IEC 112	Volt	> 600	> 600	> 600	> 600	> 600	> 600	> 600	> 600	> 600	> 600	> 600	> 600	> 600	> 600	> 600	> 600	> 600	> 600	> 600	> 600	> 600	> 600	600	-	600	600	600	600	600	600	600	>600	>600	>600	>600	600	-	600	-	-	>600	-	Volt	IEC 112	**comparative tracking index**
Processing condition																																														*Processing condition*
cylinder temperature	-	°C	190 230	190 230	190 230	190 230	190 230	180 220	200 240	180 220	180 220	170 200	190 230	210 240	220 250	220 250	210 250	220 250	220 250	220 260	210 240	210 250	210 240	190 230	190 220	180 220	180 200	180 200	180 220	180 220	180 200	180 200	180 200	190 220	190 220	180 220	180 220	190 240	190 240	180 240	190 230	-	200 240	190 230	°C	-	**cylinder temperature**
mould temperature	-	°C	50-70	50-70	50-70	50-70	50-70	40-60	40-70	30-50	40-60	40-60	40-60	50-70	50-70	50-70	50-70	50-70	50-70	60-80	50-70	50-70	50-70	40-60	40-60	40-50	20-40	20-40	20-40	20-40	20-40	20-40	20-40	40-60	40-60	40-60	20-40	50-70	50-70	50-70	40-60	-	40-60	40-60	°C	-	**mould temperature**
drying	-	h /°C	-	-	-	-	-	-	2h 90°C	-	-	-	-	-	-	-	-	-	-	-	-	2h 80°C	-	-	2h 80°C	2h 80°C	2h 60°C	2h 60°C	2h 60°C	2h 60°C	2h 60°C	2h 60°C	2h 60°C	2h 80°C	2h 80°C	2h 60°C	2h 60°C	2h 80°C	2h 80°C	2h 80°C	-	-	-	-	h /°C	-	**drying**

UL94 listed



Tecnoprene®

TECNOPRENE® PP/GF compounds

Type	Product Code	Characteristics
STANDARD	A60K4	20%GF
	A60K6	30%GF
HIGH PERFORMANCES (HIGH CRYSTALLINITY)	AK7HCT	35%GF
	AK10HC	50%GF
HIGH IMPACT	AK6HI	30%GF
	VK6HI	30%GF
HIGH FLUIDITY	F60K5	25%GF
	H60K6	30%GF
	V60K6	30%GF
DETERGENT RESISTANT	AK6D	30%GF
	FK5D	26%GF
	HK3D	15%GF
GLASS + MINERAL	AKM43	20%GF+15%Talc
	AKM24	10%GF+20%Talc
	HKM41	20%GF+5%Talc
	VKM24	10%GF+20%Talc
COPOLYMER	3K3	15% GF
	3K6	30% GF
	3K8	40% GF
ELASTOMER MODIFIED	3K4EL	20% GF
	3K6EL9	30% GF
	3K8EL9	40% GF
FOOD APPROVED	A60K6F	30%GF

TECNOPRENE® PP/GF compounds

			STANDARD		HIGH PERFORMANCE		HIGH IMPACT		HIGH FLUIDITY			DETERGENT RESISTANT			GLASS+MINERAL				COPOLYMER			ELASTOMER MODIFIED			FOOD APPROVED
			Tecnoprene A60K4	Tecnoprene A60K6	Tecnoprene AK7HCT	Tecnoprene AK10HC	Tecnoprene AK6HI	Tecnoprene VK6HI	Tecnoprene F60K5	Tecnoprene H60K6	Tecnoprene V60K6	Tecnoprene AK6D	Tecnoprene FK5D	Tecnoprene HK3D	Tecnoprene AKM43	Tecnoprene AKM24	Tecnoprene HKM41	Tecnoprene VKM24	Tecnoprene 3K3	Tecnoprene 3K6	Tecnoprene 3K8	Tecnoprene 3K4EL	Tecnoprene 3K6EL9	Tecnoprene 3K8EL9	Tecnoprene A60K6F
Physical properties	*Method*	*Unit*																							
density	ASTM D792	g/cm³	1,04	1,12	1,18	1,34	1,13	1,15	1,08	1,12	1,12	1,12	1,09	1	1,17	1,13	1,06	1,13	1	1,12	1,21	1,04	1,11	1,21	1,12
filler content	INTERNAL	%	20	30	35	50	30	31	25	30	30	30	26	15	35	30	22	30	15	30	40	20	30	40	30
water absorbtion 24 h/23 °C	ASTM D570	%	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02
mould shrinkage	INTERNAL	%	0,7	0,5	0,4	-	0,5	0,5	0,6	0,5	0,5	0,5	0,6	0,7 - 1,1	0,5	0,6	-	0,6	1	0,5	0,3	0,4 - 0,8	0,4	0,3	0,5
MFI melt flow index 230 °C/2.16 kg	ASTM D1238	g/10 '	3,8	3	1	2,5	2,8	13	5	9	12	3,2	6	9	3	4	8	15	7	11	4	2	6	3,5	3
Mechanical properties																									
tensile strength at break	ASTM D638	MPa	75	90	105	110	95	93	85	95	95	90	85	62	73	55	75	58	55	75	80	45	60	70	93
flexural strength	ASTM D790	MPa	115	135	165	190	145	145	130	145	145	140	130	95	115	90	110	90	80	115	125	65	100	110	135
flexural modulus	ASTM D790	MPa	4300	6200	8600	12000	6400	6400	5500	6500	6600	6200	5500	3400	5200	4200	4200	4200	3100	5600	7300	2900	5000	6200	6200
IZOD impact strength, notched 23 °C	ASTM D256/A	J/m	115	130	140	120	145	120	125	120	110	150	120	90	90	68	105	60	155	160	200	280	210	270	130
IZOD impact strength, notched -20 °C	ASTM D256/A	J/m	90	110	-	-	125	85	100	100	-	125	-	-	-	-	-	-	125	120	155	120	150	170	110
charpy impact strength, notched 23 °C	ISO 179/1eA	kJ/m²	11	12	12	-	13	-	-	-	11	-	-	-	-	5	10	4,3	14	-	-	22	18	-	-
charpy impact strength, unnotched 23 °C	ISO 179/1eU	kJ/m²	-	40	-	-	50	42	-	-	42	-	-	-	-	-	-	-	-	-	-	60	-	-	-
Rockwell hardness	ASTM D785	R	100	108	-	114	108	-	104	109	109	106	-	97	-	108	-	108	-	-	-	-	-	-	108
Thermal properties																									
VICAT method B (50 °C/h at 50N)	ASTM D1525	°C	128	138	139	151	138	137	133	138	138	134	132	-	-	-	-	-	-	-	-	75	-	-	138
H.D.T. method A (1,82 MPa)	ASTM D648	°C	145	150	151	154	151	148	148	150	151	149	147	137	145	134	142	136	130	146	147	120	142	145	150
thermal expansion coefficent (linear)	ASTM D696	10^{-5}/K	6 - 7	5 - 6	5 - 6	-	5 - 6	5 - 6	-	5 - 6	5 - 6	5 - 6	-	6,5 - 7,5	5 - 7	5 - 7	5 - 7	5 - 7	6 - 7	6 - 7	4 - 6	-	6 - 7	4 - 6	5 - 6
Flammability properties																									
flame rating 3.2 mm	UL 94	-	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB
Electrical properties																									
surface resistivity	ASTM D257	Ohm	10^{15}	10^{15}	10^{15}	-	10^{15}	10^{15}	10^{15}	10^{15}	10^{15}	10^{15}	10^{15}	10^{15}	10^{15}	$>10^{14}$	10^{15}	$>10^{14}$	10^{15}	10^{15}	10^{15}	-	10^{15}	10^{15}	10^{15}
dielectric constant	ASTM D150	-	2,4	2,6	2,6	-	2,6	2,6	2,5	2,6	2,6	2,6	2,5	2,3	2,5	2,5	2,4	2,5	2,3	2,5	2,5	-	2,5	2,5	2,6
CTI comparative tracking index	IEC 112	Volt	> 650	> 650	> 650	-	> 650	> 650	> 650	> 650	> 650	> 650	> 650	> 650	> 650	> 600	> 650	> 600	> 650	> 650	> 650	-	> 650	> 650	> 650

Talcoprene® - Carboprene®

TALCOPRENE® PP/TALC compounds

Type	Product Code	Characteristics
STANDARD	1020TC	20% talc
	1030TC	30% talc
	1040TC	40% talc
	320TL	20% talc
	1520TL	20% talc
	1230TL	30% talc
	340TL	40% talc
	1540TL	40% talc
COPOLYMER	C340TC	40% talc
	C530M8	30% talc
SPECIAL GRADES	520TL LE	20% talc, low emission & odor
	540TL2 LE	40% talc, low emission & odor
	1540TLT1	40% talc, heat stab, low fogging

CARBOPRENE® PP/CA compounds

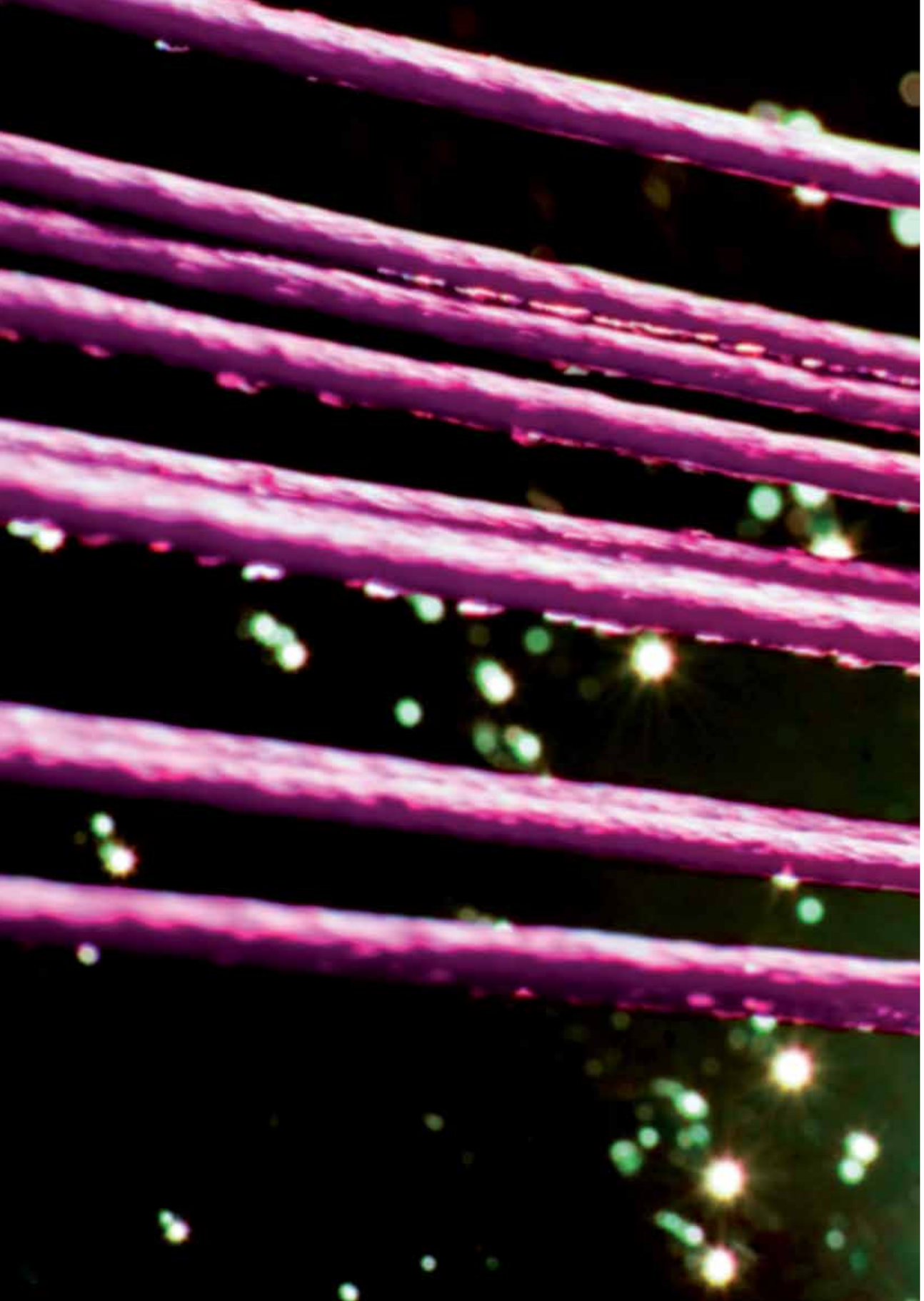
Type	Product Code	Characteristics
STANDARD HOMOPOLYMER	1040AV	40% CaCO3
	2530AV	30% CaCO3

TALCOPRENE® PP/TALC compounds

			STANDARD HOMOPOLYMER								COPOLYMER		SPECIAL GRADES		
			Talcoprene 1020TC	Talcoprene 1030TC	Talcoprene 1040TC	Talcoprene 320TL	Talcoprene 1520TL	Talcoprene 1230TL	Talcoprene 340TL	Talcoprene 1540TL	Talcoprene C340TC	Talcoprene C530M8	Talcoprene 520TL LE	Talcoprene 540TL2 LE	Talcoprene 1540TLT1
Physical properties	*Method*	*Unit*													
density	ASTM D792	g/cm³	1,05	1,15	1,24	1,05	1,05	1,15	1,24	1,24	1,24	1,14	1,05	1,24	1,23
filler content	INTERNAL	%	20	30	40	20	20	30	40	40	40	30	20	39	38
water absorbtion 24 h/23 °C	ASTM D570	%	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05
mould shrinkage	INTERNAL	%	1,1 - 1,5	1 - 1,5	0,8 - 1,3	1,1 - 1,5	1,1 - 1,5	1,0 - 1,5	0,8 - 1,2	0,8 - 1,2	0,8 - 1,3	0,8 - 1,4	1,1 - 1,5	0,8 - 1,2	0,8 - 1,2
MFI melt flow index 230 °C /2.16 kg	ASTM D1238	g/10 '	10	10	10	3	15	12	4,5	15	3,5	5	5	5	13
Mechanical properties															
tensile strength at break	ASTM D638	MPa	30	30	29	32	32	30	30	28	21	24	32	31	30
flexural strength at yield	ASTM D790	MPa	49	48	47	50	50	50	49	50	36	40	50	51	49
flexural modulus	ASTM D790	MPa	2350	2700	3400	2600	2500	3000	3800	3900	2800	3000	2500	3900	3700
IZOD Impact strength, notched 23 °C	ASTM D256/A	J/m	30	28	27	45	30	32	32	26	60	85	32	35	26
Rockwell hardness	ASTM D785	R	70	71	72	70	70	69	72	72	63	62	70	71	72
Thermal properties															
VICAT method B (50°C/h at 50 N)	ASTM D1525	°C	96	98	98	96	96	95	95	99	80	70	96	98	93
H.D.T. method A (1,82 MPa)	ASTM D648	°C	66	69	70	68	68	66	73	71	-	57	68	80	-
thermal expansion coefficent (linear)	ASTM D696	10^{-5}/K	9 - 11	8 - 10	7 - 9	-	9 - 11	8 - 10	7 - 9	7 - 9	-	-	9 - 11	6 - 9	7 - 9
Flammability properties															
flame rating 3.2 mm	UL 94	-	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB
Electrical properties															
surface resistivity	ASTM D257	Ohm	$>10^{13}$	$>10^{13}$	$>10^{13}$	$>10^{13}$	$>10^{13}$	$>10^{13}$	$>10^{13}$	$>10^{13}$	$>10^{13}$	$>10^{13}$	$>10^{13}$	$>10^{13}$	$>10^{13}$
dielectric constant	ASTM D150	-	2,35	2,4	2,5	2,35	2,35	-	2,5	2,5	2,5	2,4	2,35	2,5	2,5
CTI comparative tracking index	IEC 112	Volt	> 600	> 600	> 600	> 600	> 600	> 600	> 600	> 600	> 600	> 600	> 600	> 600	> 600

CARBOPRENE® PP/CA compounds

			STANDARD HOMOPOLYMER	
			Carboprene 1040AV	Carboprene 2530AV
Physical properties	*Method*	*Unit*		
density	ASTM D792	g/cm³	1,24	1,16
filler content	INTERNAL	%	40	32
water absorbtion 24 h/23 °C	ASTM D570	%	0,05	0,05
mould shrinkage	INTERNAL	%	0,9 - 1,3	1 - 1,5
MFI melt flow index 230 °C/2.16 kg	ASTM D1238	g/10 '	10	25
Mechanical properties				
tensile strength at break	ASTM D638	MPa	23	25
flexural strength at yield	ASTM D790	MPa	45	45
flexural modulus	ASTM D790	MPa	3000	2500
IZOD Impact strength, notched 23 °C	ASTM D256/A	J/m	30	28
Rockwell hardness	ASTM D785	R	-	70
Thermal properties				
VICAT method B (50°C/h at 50 N)	ASTM D1525	°C	100	92
H.D.T. method A (1,82 MPa)	ASTM D648	°C	65	60
thermal expansion coefficent (linear)	ASTM D696	10^{-5}/K	-	8 - 10
Flammability properties				
flame rating 3.2 mm	UL 94	-	HB	HB
Electrical properties				
surface resistivity	ASTM D257	Ohm	$>10^{13}$	$>10^{13}$
dielectric constant	ASTM D150	-	2,5	2,4
CTI comparative tracking index	IEC 112	Volt	> 600	> 600



Nylfor A®

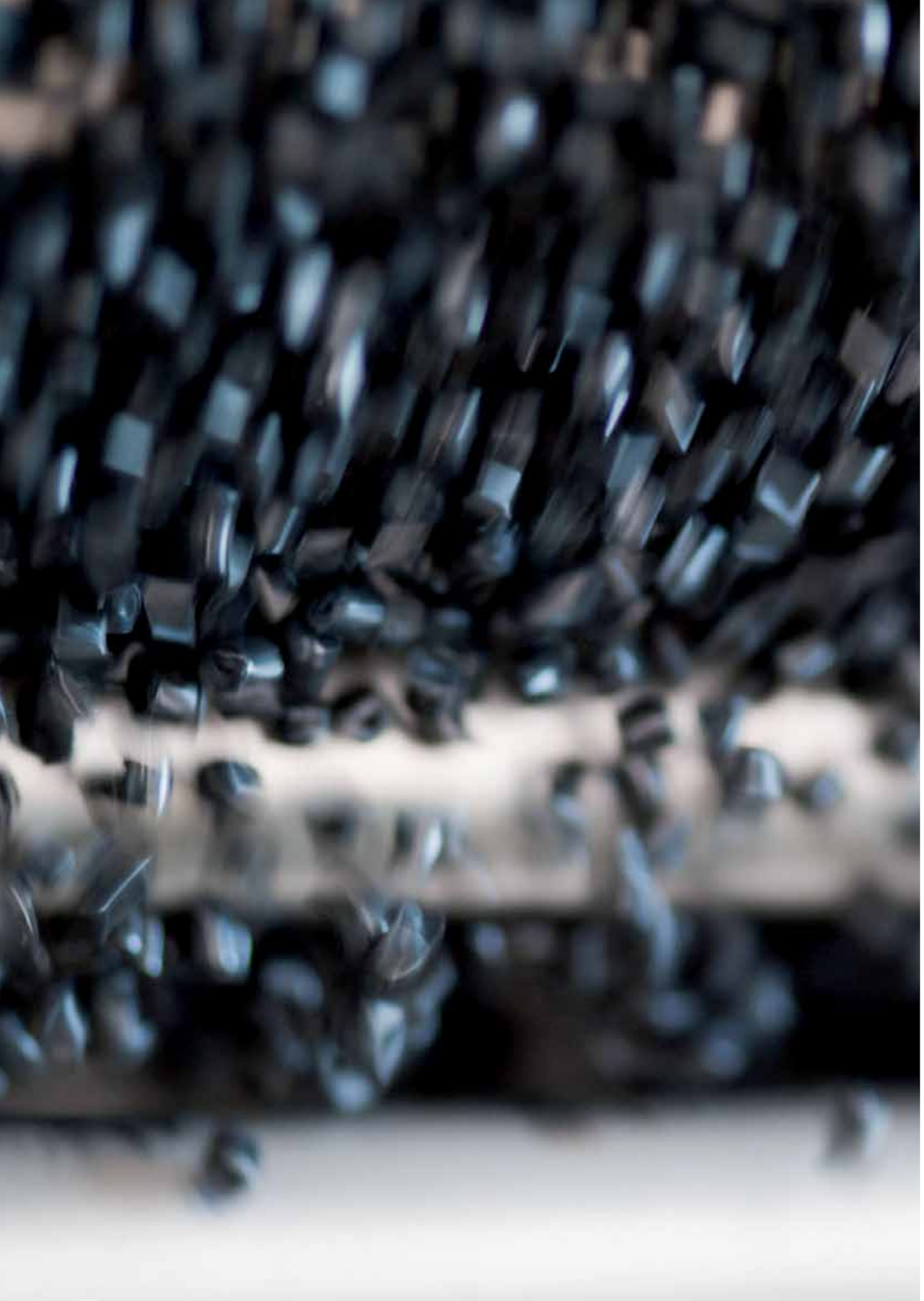
NYLFOR A® PA66 compounds

Type	Grade	Composition	Features
FILLED	A2 MF/30 E3/2A	Elastomer modified polyamide 66, 30% mineral filler	Good impact resistance
	A2 MF/40	Polyamide 66, 40% mineral filler	
ELASTOMER MODIFIED	A2 E2/2E	Elastomer modified polyamide 66	Good impact resistance even at low temperature
	A2 E2/3E		
	A2 E6/2A	Elastomer modified polyamide 66	General purpose
	A2 E6/3E		
REINFORCED	A2 GF/15	Polyamide 66, 15% glass fiber	Good impact resistance
	A2 GF/30	Polyamide 66, 30% glass fiber	
	A2 GF/50	Polyamide 66, 50% glass fiber	
	A2 GF/30 E2/2A	Polyamide 66, 30% glass fiber	
	A2 GB/30	Polyamide 66, 30% glass beads	Excellent aesthetic properties
FLAME RETARDANT	A2 FR1/2A	Flame retardant polyamide 66, halogen and phosphorous free	
	A2 FR2/3A	Flame retardant polyamide 66, PBDE free	
	74S5251N	Flame retardant polyamide 66, 25% glass fiber, PBDE free UL94 Listed all colour	UL94 V0
	A2 GF/30 FR2/3A	Flame retardant polyamide 66, 30% glass fiber, PBDE free	
	74S5251P	Flame retardant polyammide 66, 25% glass fiber, with red phosphorus UL94 Listed only natural and black	UL94 V0
	74S5501P	Flame retardant polyammide 66, 50% glass fiber, with red phosphorus UL94 Listed only natural and black	UL94 V0
	A2 GB/30 FR2/3A UV	Flame retardant polyamide 66, 30% glass beads, PBDE free, UV stabilized	UL94 V0
CONDUCTIVE	A2 GFCF/30	Polyamide 66, 20% glass fiber and 10% carbon fiber	
	A2 CF/30	Polyamide 66, 30% carbon fiber	
LUBRICATED	NYLOI A2 MS	Polyamide 66, molybdenum bisulfide lubricated	
	NYLOI A2 GF/15 TF	Polyamide 66, 15% glass fiber, PTFE lubricated	
	NYLOI A2 GF/30 TF	Polyamide 66, 30% glass fiber reinforced, PTFE lubricated	
	NYLOI A2 GF/30 SI	Polyamide 66, 30% glass fiber reinforced, silicon lubricated	

NYLFOR A® PA66 compounds

			FILLED		ELASTOMER MODIFIED				REINFORCED					FLAME RETARDANT							CONDUCTIVE		LUBRICATED			
			Nylfor A2 MF/30 E3/2A	Nylfor A2 MF/40	Nylfor A2 E2/2E	Nylfor A2 E2/3E	Nylfor A2 E6/2A	Nylfor A2 E6/3E	Nylfor A2 GF/15	Nylfor A2 GF/30	Nylfor A2 GF/50	Nylfor A2 GF/30 E2/2A	Nylfor A2 GB/30	Nylfor A2 FR1/2A	Nylfor A2 FR2/3A	Nylfor 74S5251N	Nylfor A2 GF/30 FR2/3A	Nylfor 74S5251P	Nylfor 74S5501P	Nylfor A2 GB/30 FR2/3A UV	Nylfor A2 GFCF/30	Nylfor A2 CF/30	Nyloi A2 MS	Nyloi A2 GF/15 TF	Nyloi A2 GF/30 TF	Nyloi A2 GF/30 SI
Physical properties	*Method*	*Unit*																								
density	ASTM D1505	g/cm³	1,32	1,48	1,09	1,07	1,10	1,07	1,23	1,37	1,57	1,31	1,36	1,18	1,38	1,58	**1,62**	1,35	1,59	1,59	1,33	1,28	1,15	1,28	1,41	1,37
mould shrinkage	ASTM D955	%	0,6÷1,0	0,5÷0,8	1,3÷1,7	1,4÷1,8	1,3÷1,7	1,4÷1,8	0,5÷0,9	0,3÷0,6	0,2÷0,4	0,3÷0,6	0,7÷1,0	0,9÷1,3	0,7÷1,0	0,2÷0,6	0,2÷0,6	0,3÷0,7	0,2÷0,5	0,5÷0,9	0,3÷0,6	0,2÷0,5	1,1÷1,5	0,5÷0,9	0,3÷0,6	0,3÷0,6
water absorption at saturation	ISO 62	%	5,50	5,50	7,00	6,70	7,50	6,70	7,00	6,00	4,50	6,00	6,30	7,50	7,50	6,50	5,50	5,50	4,50	6,50	6,00	6,50	8,00	6,80	6,00	6,00
moisture absorption at equilibrium	ISO 62	%	1,8	1,0	2,2	2,2	2,4	2,2	2,2	1,6	1,3	1,6	1,9	2,2	2,2	1,6	1,4	1,5	1,9	1,6	2,0	2,0	2,3	2,0	1,5	1,6
coefficient of friction (dynamic)	ASTM 1894	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,30	0,37	0,61	0,26
coefficient of friction (static)	ASTM 1894	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,28	0,31	0,41	0,19
Mechanical properties																										
tensile strength at yield	ASTM D638	MPa	70	-	50	40	55	44	-	-	-	-	-	80	67	-	-	-	-	-	-	-	80	-	-	-
tensile strength at break	ASTM D638	MPa	-	85	-	-	-	-	115	170	210	150	75	-	-	140	150	150	185	85	190	210	-	115	170	160
tensile elongation at break	ASTM D638	%	> 20	6,0	40,0	70,0	60,0	>100	3,0	3,0	2,5	4,0	6,0	5,0	8,0	2,5	2,5	3,0	2,0	3,0	3,0	2,0	40,0	3,0	3,0	3,0
tensile modulus	ASTM D638	MPa	3500	7500	2350	1800	2300	1800	6000	10000	16500	9000	4800	3700	3650	9200	11500	8500	15000	5300	15000	20000	3300	6000	10000	9500
flexural modulus	ASTM D790	MPa	3000	6000	2100	1500	2000	1300	5000	8500	13000	7500	4200	3300	3200	8000	9500	7800	14000	4500	11500	16500	2800	5000	8500	8000
IZOD impact strength, notched 23 °C	ASTM D256	J/m	100	30	200	900	200	950	80	120	160	150	40	40	40	75	75	80	120	26	90	90	55	80	120	110
charpy impact strength, notched 23 °C	ISO 179 1eA	KJ/m²	11,0	4,5	22,0	88,0	21,0	92,0	8,2	12,6	16,5	15,6	4,5	4,5	4,5	8,0	-	9,0	13,0	3,0	9,5	9,5	5,1	8,0	12,0	11,0
Thermal properties																										
H.D.T. method A (1.82 MPa)	ASTM D648	°C	180	170	70	65	75	65	240	250	256	245	100	75	80	255	255	250	255	100	250	250	75	240	250	250
Flammability properties																										
flame rating 1.6 mm	UL 94	Class	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	V0	V0	V0	V0	V0	V0	V0	HB	HB	HB	HB	HB	HB
flame rating 3.2 mm	UL 94	Class	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	V0	V0	V0	V0	V0	V0	V0	HB	HB	HB	HB	HB	HB
CTI comparative tracking index	IEC 112	Volt	600	500	600	600	600	600	450	450	450	600	425	-	-	405	-	-	-	-	-	-	600	-	-	-
Recommended processing conditions																										
cylinder temperature	-	°C	260÷280	270÷300	260÷280	260÷280	260÷280	260÷280	270÷300	270÷300	270÷300	270÷300	270÷300	260÷280	260÷280	260÷280	260÷280	270÷280	270÷280	260÷280	270÷300	270÷300	270÷300	270÷300	270÷300	270÷300
mould temperature	-	°C	60÷80	60÷80	60÷80	60÷80	60÷80	60÷80	80÷90	80÷90	80÷90	60÷80	80÷90	60÷80	60÷80	60÷80	60÷80	60÷90	60÷90	60÷80	80÷90	80÷90	80÷90	80÷90	80÷90	80÷90
drying	-	h /°C	4h 90°C	4h 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C

UL94 listed



Nylfor B®

NYLFOR B® PA6 compounds

Type	Grade	Composition	Features
FILLED	B2 MF/30	Polyamide 6, 30% mineral filler	Good impact resistance
	B2 MF/40	Polyamide 6, 40% mineral filler	
ELASTOMER MODIFIED	B2 E2/2E	Elastomer modified polyamide 6	Good impact resistance even at low temperature
	B2 E2/3E		
	B2 E4/2A	Elastomer modified polyamide 6	General purpose.
	B2 E4/2E		
	B2 E4/3E		
REINFORCED	B2 GF/15	Polyamide 6, 15% glass fiber	Good impact resistance
	B2 GF/30	Polyamide 6, 30% glass fiber	
	B2 GF/50	Polyamide 6, 50% glass fiber	
	B2 GF/30 E6/2A	Elastomer modified polyamide 6, 30% glass fiber	
	B2 GB/30	Polyamide 6, 30% glass beads.	Excellent aesthetic properties
FLAME RETARDANT	B2 FR1/2A	Flame retardant polyamide 6, halogen and phosphorous free	
	B2 FR2/3A	Flame retardant polyamide 6, PBDE free	
	B2 GF/30 FR2/3A	Flame retardant polyamide 6, 30% glass fiber, PBDE free UL94 Listed all colour	
	64S1303HO	Flame retardant polyamide 6, 30% glass fiber, PBDE free, UL94 Listed only natural colour	UL94 V0
CONDUCTIVE	B2 GFCF/30	Polyamide 6, 20% glass fiber and 10% carbon fiber	
	B2 CF/30	Polyamide 6, 30% carbon fiber	
LUBRICATED	NYLOI B2 MS	Polyamide 6, molybdenum bisulfide lubricated	
	NYLOI B2 GF/15 TF	Polyamide 6, 15% glass fiber, PTFE lubricated	
	NYLOI B2 GF/30 TF	Polyamide 6, 30% glass fiber reinforced, PTFE lubricated	
	NYLOI B2 GF/30 SI	Polyamide 6, 30% glass fiber reinforced, silicon lubricated	

NYLFOR B® PA6 compounds

			FILLED		ELASTOMER MODIFIED					REINFORCED					FLAME RETARDANT				CONDUCTIVE		LUBRICATED			
			Nylfor B2 MF/30	Nylfor B2 MF/40	Nylfor B2 E2/2E	Nylfor B2 E2/3E	Nylfor B2 E4/2A	Nylfor B2 E4/2E	Nylfor B2 E4/3E	Nylfor B2 GF/15	Nylfor B2 GF/30	Nylfor B2 GF/50	Nylfor B2 GF/30 E6/2A	Nylfor B2 GB/30	Nylfor B2 FR1/2A	Nylfor B2 FR2/3A	Nylfor B2 GF/30 FR2/3A	Nylfor 64S1303HO	Nylfor B2 GFCF/30	Nylfor B2 CF/30	Nyloi B2 MS	Nyloi B2 GF/15 TF	Nyloi B2 GF/30 TF	Nyloi B2 GF/30 SI
Physical properties	*Method*	*Unit*																						
density	ASTM D1505	g/cm³	1,36	1,49	1,09	1,07	1,10	1,09	1,07	1,23	1,37	1,57	1,31	1,36	1,18	1,38	1,62	1,62	1,33	1,28	1,15	1,28	1,41	1,37
mould shrinkage	ASTM D955	%	0,6÷0,9	0,5÷0,9	1,3÷1,7	1,4÷1,8	1,3÷1,7	1,3÷1,7	1,4÷1,8	0,5÷0,9	0,3÷0,6	0,2÷0,4	0,3÷0,6	0,7÷1,0	0,9÷1,2	0,6÷1,0	0,2÷0,6	0,2÷0,6	0,3÷0,6	0,2÷0,5	1,0÷1,4	0,5÷0,9	0,3÷0,6	0,3÷0,6
water absorption at saturation	ISO 62	%	6,00	5,70	8,0	7,0	8,00	8,00	7,00	8,00	6,30	4,50	5,50	6,30	6,00	6,00	5,50	5,50	6,80	6,80	9,00	7,50	5,70	6,30
moisture absorption at equilibrium	ISO 62	%	1,2	1,1	2,5	2,2	2,5	2,5	2,2	2,6	1,9	1,4	1,5	1,9	1,8	1,8	1,5	1,5	2,3	2,3	2,8	2,2	1,7	1,9
coefficient of friction (dynamic)	ASTM 1894	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,30	0,37	0,61	0,26
coefficient of friction (static)	ASTM 1894	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,28	0,31	0,41	0,19
Mechanical properties																								
tensile strength at yield	ASTM D638	MPa	-	-	50	40	55	50	40	-	-	-	-	-	-	-	-	-	-	-	75	-	-	-
tensile strength at break	ASTM D638	MPa	70	85	-	-	-	-	-	115	170	200	140	65	80	65	140	140	180	200	-	115	170	160
tensile elongation at break	ASTM D638	%	6,0	6,0	40,0	70,0	60,0	75,0	90,0	3,0	3,0	3,0	7,0	6,0	5,0	7,0	2,5	2,5	3,0	2,0	40,0	3,0	3,0	3,0
tensile modulus	ASTM D638	MPa	6300	6400	2300	1800	2400	2100	1800	5500	9500	16000	9300	4600	3500	3500	9800	9800	12500	17500	3300	5500	9500	9000
flexural modulus	ASTM D790	MPa	5500	5700	2050	1400	2100	1900	1400	4500	8000	12500	7800	4000	3100	3100	8800	8800	11000	14000	2800	4500	8000	7500
IZOD impact strength, notched 23 °C	ASTM D256	J/m	35	45	200	900	200	480	800	80	140	170	180	40	45	40	85	85	90	90	50	80	120	110
charpy impact strength, notched 23 °C	ISO 179 1eA	KJ/m²	4,0	5,2	22,0	88,0	21,0	55,0	88,0	8,5	15,0	19,0	19,5	4,0	5,0	4,4	9,0	9,0	9,1	9,3	5,2	8,3	12,8	12,0
Thermal properties																								
H.D.T. method A (1.82 MPa)	ASTM D648	°C	110	112	60	50	65	60	50	210	210	215	205	90	70	70	210	210	210	210	65	210	205	210
Flammability properties																								
flame rating 1.6 mm	UL 94	Class	HB	-	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	V0	V0	V0	V0	HB	HB	HB	HB	HB	HB
flame rating 3.2 mm	UL 94	Class	HB	-	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	V0	V0	V0	V0	HB	HB	HB	HB	HB	HB
GWFI glow wire flammability index 3 mm	IEC 695-2-12	°C / mm	-	-	-	-	-	-	-	-	-	-	-	-	960/3	960/3	960/3	960/2	-	-	-	-	-	-
CTI comparative tracking index	IEC 112	Volt	500	-	600	600	600	600	600	450	450	450	600	425	-	-	-	410	-	-	600	-	-	-
Recommended processing conditions																								
cylinder temperature	-	°C	240÷270	240÷270	240÷270	240÷270	240÷270	240÷270	240÷270	250÷280	250÷280	250÷280	250÷280	240÷270	220÷240	220÷240	230÷260	230÷260	250÷280	250÷280	240÷270	250÷280	250÷280	250÷280
mould temperature	-	°C	60÷80	60÷80	60÷80	60÷80	60÷80	60÷80	60÷80	80÷90	80÷90	80÷90	60÷80	60÷80	60÷80	60÷80	80÷90	80÷90	80÷90	80÷90	60÷80	80÷90	80÷90	80÷90
drying	-	h /°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C

UL94 listed

NYLFOR R® PA6 compounds

Type	Grade	Composition	Features
UNFILLED	R 6 OP	General pourpose polyamide 6	
ELASTOMER MODIFIED	R 6 E10	Elastomer modified polyamide 6	Impact resistance
REINFORCED	R 6 GF/15 OP	Polyamide 6, 15% glass fiber	Good impact resistance
	R 6 GF/30 OP	Polyamide 6, 30% glass fiber	
	R 6 GB/30 OP	Polyamide 6, 30% glass beads	

NYLFOR R® PA66 compounds

Type	Grade	Composition	Features
UNFILLED	R 66 OP	General pourpose polyamide 66	
ELASTOMER MODIFIED	R 66 E10 OP	Elastomer modified polyamide 66	Impact resistance
	R 66 CM 17E	Elastomer modified polyamide 66, 17% mineral filler	
REINFORCED	R 66 GF/15 OP	Polyamide 66, 15% glass fiber	Good impact resistance
	R 66 GF/30 OP	Polyamide 66, 30% glass fiber	
	R 66 GB/30 OP	Polyamide 66, 30% glass beads	

NYLFOR R6® textile recyling of PA6

			UNFILLED	ELASTOMER MODIFIED	REINFORCED		
			Nylfor R 6 OP	Nylfor R 6 E10	Nylfor R 6 GF/15 OP	Nylfor R 6 GF/30 OP	Nylfor R 6 GB/30 OP
Physical properties	*Method*	*Unit*					
density	ASTM D1505	g/cm³	1,13	1,10	1,23	1,35	1,34
mould shrinkage	ASTM D955	%	1,0÷1,5	1,4÷2,0	0,4÷0,9	0,3÷0,6	0,8÷1,2
water absorption at saturation	ISO 62	%	7,00	6,00	6,00	5,00	6,00
moisture absorption at equilibrium	ISO 62	%	1,2	1,2	1,0	0,9	1,0
Mechanical properties							
tensile strength at yield	ASTM D638	MPa	65	45	-	-	-
tensile strength at break	ASTM D638	MPa	50	40	85	130	70
tensile elongation at break	ASTM D638	%	10,0	25,0	5,0	5,0	8,0
tensile modulus	ASTM D638	MPa	2850	2000	5500	8500	5000
flexural modulus	ASTM D790	MPa	2300	1600	4400	7500	4000
IZOD impact strength, notched 23 °C	ASTM D256	J/m	40	100	50	70	50
charpy impact strength, notched 23 °C	ISO 179 1eA	KJ/m²	4,5	NB	5,2	7,6	5
Thermal properties							
H.D.T. method A (1.82 MPa)	ASTM D648	°C	70	65	196	205	65
Flammability properties							
flame rating 1.6 mm	UL 94	Class	HB	HB	HB	HB	HB
flame rating 3.2 mm	UL 94	Class	HB	HB	HB	HB	HB
Recommended processing conditions							
cylinder temperature	-	°C	220÷250	220÷250	240÷260	240÷260	235÷255
mould temperature	-	°C	60÷80	60÷80	80÷90	80÷90	80÷90
drying	-	h /°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C

NYLFOR R66® textile recyling of PA66

			UNFILLED	ELASTOMER MODIFIED		REINFORCED		
			Nylfor R 66 OP	Nylfor R 66 E10 OP	Nylfor R 66 CM 17 E	Nylfor R 66 GF/15 OP	Nylfor R 66 GF/30 OP	Nylfor R 66 GB/30 OP
Physical properties	*Method*	*Unit*						
density	ASTM D1505	g/cm³	1,13	1,10	1,24	1,23	1,37	1,34
mould shrinkage	ASTM D955	%	1,0÷1,5	1,5÷2,0	0,8÷1,0	0,4÷0,9	0,3÷0,6	0,8÷1,2
water absorption at saturation	ISO 62	%	7,00	6,00	5,00	6,00	5,00	5,50
moisture absorption at equilibrium	ISO 62	%	1,2	1,2	1,1	1,0	0,9	1,0
Mechanical properties								
tensile strength at yield	ASTM D638	MPa	50	65	-	-	-	-
tensile strength at break	ASTM D638	MPa	48	50	50	115	135	65
tensile elongation at break	ASTM D638	%	15,0	25,0	20,0	3,5	3,0	5,0
tensile modulus	ASTM D638	MPa	3200	2750	3300	5800	7300	4200
flexural modulus	ASTM D790	MPa	2600	2200	2900	4800	5800	3100
IZOD impact strength, notched 23 °C	ASTM D256	J/m	40	80	50	65	70	38
charpy impact strength, notched 23 °C	ISO 179 1eA	KJ/m²	4,5	NB	-	7	7,6	4,5
Thermal properties								
H.D.T. method A (1.82 MPa)	ASTM D648	°C	80	70	70	248	241	95
Flammability properties								
flame rating 1.6 mm	UL 94	Class	HB	HB	HB	HB	HB	HB
flame rating 3.2 mm	UL 94	Class	HB	HB	HB	HB	HB	HB
Recommended processing conditions								
cylinder temperature	-	°C	260÷280	260÷280	275÷290	285÷295	270÷300	275÷290
mould temperature	-	°C	60÷80	60÷80	60÷90	80÷90	80÷90	60÷90
drying	-	h /°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C	4h - 90°C

Nivionplast®

NIVIONPLAST® A PA66 compounds

Type	Product Code	Characteristics
UNREINFORCED	A273B	
	A273SL	
GF REINFORCED	AR206G	20% GF, Heat stabilised
	AR306G	30% GF, Heat stabilised
	AR306GY	30% GF, Heat and hydrolysis stabilised
	AR356G	30% GF, Heat stabilised

NIVIONPLAST® B PA6 compounds

Type	Product Code	Characteristics
UNREINFORCED	B273B	
	B273MR	
	B273MRT	High Impact
GF REINFORCED	BR206G	20% GF, Heat stabilised
	BR306G	30% GF, Heat stabilised
	BR306GY	30% GF, Heat and hydrolysis stabilised
	BR356G	35% GF, Heat stabilised
	BR50G	50% GF
	BR60G	60% GF
	BC306MB	30% Glass Beads, Heat stabilised

NIVIONPLAST® A PA66 compounds

			UNREINFORCED		GF REINFORCED			
			Nivionplast A273B	Nivionplast A273SL	Nivionplast AR206G	Nivionplast AR306G	Nivionplast AR306GY	Nivionplast AR356G
Physical properties	*Method*	*Unit*						
density	ASTM D792	g/cm³	1,14	1,14	1,27	1,36	1,36	1,41
filler content	INTERNAL	%	-	-	20	30	30	35
water absorption at saturation	ISO 62	%	8,5	8,5	6,5	5,5	5,5	5
moisture absorption, equilibrium at 23 °C, 50% rh	ISO 62	%	2,6	2,6	2,2	1,9	1,9	1,6
melting point	ASTM D2117	°C	260	260	260	260	260	260
mould shrinkage	ASTM D955	%	1,3-2,2	1,3-2,2	0,5-0,7	0,4	0,4	0,4
Mechanical properties								
tensile strength at yield	ASTM D638	MPa	85	85	-	-	-	-
tensile strength at break	ASTM D638	MPa	-	-	150	180	180	200
elongation at break	ASTM D638	%	30	30	3	3	3	3
tensile modulus	ASTM D638	MPa	3100	3100	7000	10000	10000	11500
flexural strength	ASTM D790	MPa	130	130	220	270	270	290
flexural modulus	ASTM D790	MPa	2800	2800	6500	8500	8500	10000
IZOD impact strength notched, 23 °C	ASTM D256	J/m	45	45	75	95	95	110
Thermal properties								
H.D.T. method A (1,82 MPa)	ASTM D648	°C	80	80	240	245	245	248
H.D.T. method B (0,45 MPa)	ASTM D648	°C	200	200	250	250	250	250
thermal expansion coefficient (linear)	ASTM D696	10^{-5}/K	-	-	3-3,5	2-3	2-3	1,5-2
Flammability properties								
flame rating 3.2 mm	UL 94	-	V2	V2	HB	HB	HB	HB

NIVIONPLAST® B PA6 compounds

UNREINFORCED			GF REINFORCED						GLASS BEADS REINFORCED
Nivionplast B273B	Nivionplast B273MR	Nivionplast B273MRT	Nivionplast BR206G	Nivionplast BR306G	Nivionplast BR306GY	Nivionplast BR356G	Nivionplast BR50G	Nivionplast BR60G	Nivionplast BC306MB
1,13	1,13	1,07	1,27	1,35	1,35	1,40	1,56	1,70	1,34
-	-	-	20	30	30	35	50	62	30
9	9	-	7,3	7	7	6,5	-	-	7
2,8	2,8	-	2,4	2,2	2,2	1,9	-	-	2
220	220	220	220	220	220	220	220	220	220
-	-	-	0,4-0,9	0,25-0,35	0,25-0,35	0,25-0,35	0,1-0,2	0,1-0,2	0,9-1,2
80	80	50	-	-	-	-	-	-	-
-	-	40	150	170	170	190	190	200	87
60	60	80	3,5	3,5	3,5	3,2	3	2,2	4,3
3000	3000	2000	7000	9000	9000	11000	15000	19000	4900
120	120	80	210	250	250	270	320	340	140
3000	3000	1950	6300	8500	8500	10500	15000	18500	4700
45	45	700	75	120	120	130	160	155	50
65	65	60	185	205	205	210	208	210	75
180	180	135	195	210	210	215	218	220	200
7	7	-	2-3	2-3	2-3	2-3	2-3	2-3	4-5
V2	V2	HB	HB	HB	HB	HB	HB	HB	HB

PIBIFOR® PBT Compounds

Type	Grade	Description	Characteristics
ELASTOMER MODIFIED	K2 E9/2A	Elastomer modified PBT	Good impact resistance even at low temperature
REINFORCED	K2 GF/20	PBT, 20% glass fiber	Good mechanical properties
	K2 GF/30	PBT, 30% glass fiber	Good mechanical properties
	K2 GF/50	PBT, 50% glass fiber	Good mechanical properties
	K2 GB/30	PBT, 30% glass beads	Excellent aesthetic properties
FLAME RETARDANT	K2 FR7/2H	Flame retardant PBT, unfilled, PDBE free	
	34S5201NO	Flame retardant PBT, 20% glass fiber, PDBE free UL94 listed only natural colour	UL94 listed
	34S5301NC	Flame retardant PBT, 30% glass fiber, PDBE free. UL94 listed only black colour	UL94 listed

PIBIFOR® PBT Compounds

			ELASTOMER MODIFIED	REINFORCED				FLAME RETARDANT		
			Pibifor K2 E9/2A	Pibifor K2 GF/20	Pibifor K2 GF/30	Pibifor K2 GF/50	Pibifor K2 GB/30	Pibifor K2 FR7/2H	Pibifor 34S5201NO	Pibifor 34S5301NC
Physical properties	*Method*	*Unit*								
density	ASTM D1505	g/cm³	1,23	1,45	1,53	1,71	1,53	1,43	1,58	1,66
mould shrinkage	ASTM D955	%	1,6÷2,0	0,4÷1,0	0,3÷0,9	0,1÷0,8	1,5÷1,9	1,7÷2,1	0,4÷1,0	0,2÷0,7
water absorption at saturation	ASTM D570	%	0,40	0,40	0,40	0,30	0,40	0,40	0,40	0,30
moisture absorption at equilibrium	-	%	0,2	0,2	0,2	0,1	0,2	0,2	0,2	0,1
Mechanical properties										
tensile strength at yield	ASTM D638	MPa	52	-	-	-	-	60	-	-
tensile strength at break	ASTM D638	MPa	-	115	135	140	50	-	110	130
tensile elongation at break	ASTM D638	%	50,0	2,5	2,5	2,0	4,0	8,0	2,5	2,5
tensile modulus	ASTM D638	MPa	2400	7000	9700	15500	3900	2900	8400	10100
flexural modulus	ASTM D790	MPa	1800	6000	8000	13000	3500	2500	6500	9000
IZOD impact strength, notched 23 °C	ASTM D256	J/m	200	77	95	105	35	40	70	90
charpy impact strength, notched 23 °C	ISO 179 1eA	KJ/m²	25,0	8,0	10,0	11,0	3,8	4,5	7,8	9,3
Thermal properties										
H.D.T. method A (1,82 MPa)	ASTM D648	°C	52	205	210	215	95	60	200	205
Flammability properties										
flame rating 1.6 mm	UL 94	Class	HB	HB	HB	HB	HB	V0	V0	V0
flame rating 3.2 mm	UL 94	Class	HB	HB	HB	HB	HB	V0	V0	V0
Recommended processing conditions										
cylinder temperature	-	°C	235÷260	235÷260	235÷260	250÷270	235÷260	235÷250	235÷250	235÷250
mould temperature	-	°C	50÷90	70÷100	70÷100	80÷100	60÷80	60÷80	60÷90	60÷80
drying	-	h /°C	3h 110°C	3h 110°C	3h 110°C	3h 110°C	3h 110°C	3h 110°C	3h 110°C	3h 110°C

UL94 listed

PIBITER® PBT Compounds

Type	Product Code	Characteristics
UNREINFORCED	N100	
	N200	
	N400	
GF REINFORCED	NRV10	10% GF
	NRV20	20% GF
	NRV30	30% GF
FLAME RETARDANT	NRV210AE	10% GF
	NRV220AE	20% GF
	NRV230AE	30% GF
	N200AE	unreinforced
PBT + PC ALLOY	HI A1301	
	HI C3311	

PIBITER® PBT Compounds

			UNREINFORCED			GF REINFORCED			FLAME RETARDANT				PIBITER HI	
			Pibiter N 100	Pibiter N 200	Pibiter N 400	Pibiter NRV 10	Pibiter NRV 20	Pibiter NRV 30	Pibiter NRV 210AE	Pibiter NRV 220AE	Pibiter NRV 230AE	Pibiter N 200AE	Pibiter HI A1301	Pibiter HI C3311
Physical properties	*Method*	*Unit*												
specific gravity	ASTM D792	g/cm³	1,31	1,31	1,31	1,37	1,44	1,52	1,52	1,57	1,7	1,44	1,21	1,21
filler content	INTERNAL	%	-	-	-	10	20	30	10	20	30	-	-	-
water absorption equilibrium (23 °C - 50% UR)	ASTM D570	%	0,35	0,35	0,35	0,35	0,35	0,25	0,35	0,3	0,25	0,35	-	-
water absorption 24 h/23 °C	ASTM D570	%	0,05	0,05	0,05	0,05	0,04	0,04	0,05	0,045	0,03	0,05	0,1	0,2
mould shrinkage	INTERNAL	%	1,7	1,7	1,7	0,9	0,5	0,35	0,6	0,5	0,35	1,3	1,5 - 2	0,8
MFI melt flow index 250 °C/2.16 kg	ASTM D1238	g/10 '	25	20	11	27	18	14	30	18	12	50	3,5	6
Mechanical properties														
tensile strength at yield	ASTM D638	MPa	52	52	51	-	-	-	-	-	-	-	32	50
tensile strength at break	ASTM D638	MPa	34	34	33	80	110	130	70	102	120	50	35	46
elongation at break	ASTM D638	%	>100	>100	>100	4,5	3	2,5	3,5	2,5	2,5	-	> 200	170
tensile modulus	ASTM D638	MPa	2550	2550	2450	4400	6800	9800	5200	8000	11000	3200	1550	2200
flexural strength	ASTM D790	MPa	87	87	82	140	180	210	125	165	200	-	50	80
flexural modulus	ASTM D790	MPa	2500	2500	2400	4100	6400	9000	5000	7500	10400	3000	1550	2100
IZOD impact strength, notched 23 °C	ASTM D256/A	J/m	40	45	45	43	70	85	45	70	80	30	900	800
IZOD impact strength, notched -30 °C	ASTM D256/A	J/m	-	-	-	-	-	-	-	-	-	-	850	600
Rockwell hardness	ASTM D785	M	80	80	80	90	95	98	-	-	98	-	-	-
Thermal properties														
VICAT method B (50°C/h at 50 N)	ASTM D1525	°C	175	175	175	205	210	215	-	205	207	190	117	110
H.D.T. method A (1,82 MPa)	ASTM D648	°C	55	55	50	200	206	210	-	209	213	70	-	-
H.D.T. method B (0,45 MPa)	ASTM D648	°C	-	-	-	215	220	220	-	222	224	180	70	-
thermal expansion coefficient (linear)	ASTM D696	10^{-5}/K	-	-	-	5	3 - 4	2 - 3	-	-	2 - 3	5	-	-
Flammability properties														
flame rating 0.75 mm	UL 94	-	HB	HB	HB	HB	HB	HB	V0	V0	V0	V0	HB	HB
Electrical properties														
surface resistivity	ASTM D257	Ohm	$>10^{14}$	$>10^{14}$	$>10^{14}$	$>10^{14}$	$>10^{14}$	$>10^{14}$	-	-	-	$>10^{14}$	-	-
volume resistivity	ASTM D257	Ohm.cm	$>10^{15}$	$>10^{15}$	$>10^{15}$	$>10^{15}$	$>10^{15}$	$>10^{15}$	-	-	-	$>10^{15}$	-	-
dielectric strength at 1.6 mm	ASTM D149	kV/mm	17	17	17	20	22	22	-	-	-	16	-	-
dielectric constant	ASTM D150	-	3,2	3,2	3,2	3,5	3,7	3,8	-	-	-	3,2	-	-
comparative tracking index	DIN 53480	Volt	> 600	> 600	> 600	> 350	> 350	> 350	-	-	-	> 400	-	-
dissipation factor tan ∂ - 1 khz	ASTM D150	-	0,002	0,002	0,002	0,002	0,003	0,003	-	-	-	0,002	-	-

Abistir® Blendfor®

ABISTIR® ABS compounds

Type	Product Code	Characteristics	
GENERAL PURPOSE	Abistir UG	General purpose grade, excellent gloss, easy processing	
	Abistir MR	Medium fluidity and impact resistance	
	Abistir AR	High impact resistance	
	Abistir TR	High heat resistance	
REINFORCED	Abistir UG GB/20	20% glass beads, good stiffness and good aesthetical properties	
	Abistir MR GF/17	17% glass fibre, excellent stiffness and toughness	
	Abistir MR GF/17 V0	17% glass fibre, good stiffness and dimensional stability	
FLAME RETARDANT	Abistir 7145/V0-UV	Improved UV resistance	UL94 listed
	Abistir 7120/V0-UV	Good fluidity, UV stabilized	

BLENDFOR® PC/ABS alloy

Type	Product Code	Characteristics
GENERAL PURPOSE	Blendfor A 4000	Excellent impact resistance and good fluidity
	Blendfor A 6000	Excellent toughness
	Blendfor A 8000	Excellent thermal resistance
REINFORCED	Blendfor A 4000 GF/10	Good stiffness
FLAME RETARDANT	Blendfor A 4000 V0	Good fluidity and impact resistance
	Blendfor A 6000 V0	Good fluidity and stiffness
	Blendfor A 8000 V0	Good stiffness and impact resistance

ABISTIR® ABS compounds

			GENERAL PURPOSE				REINFORCED			FLAME RETARDANT	
			Abistir UG	Abistir MR	Abistir AR	Abistir TR	Abistir UG GB/20	Abistir MR GF/17	Abistir MR GF/17 V0	Abistir 7145/V0-UV	Abistir 7120/V0-UV
Physical properties	*Method*	*Unit*									
density	ASTM D1505	g/cm	1,05	1,05	1,05	1,06	1,19	1,18	1,34	1,22	1,25
mould shrinkage	ASTM D955	%	0,4-0,6	0,4-0,6	0,4-0,6	0,4-0,6	0,3-0,4	0,2-0,3	0,1-0,3	0,3-0,5	0,3-0,5
water absorption 24 h/23°C	ASTM D570	%	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,15	0,15
MFI melt flow index	ASTM D1238	g/10'	30	20	6	7	20	10	9	25	50
Mechanical properties											
tensile strenght at yield	ASTM D638	MPa	45	40	38	50	35	50	60	38	37
elongation at break	ASTM D638	%	20	50	>50	3	10	2	2	40	7
flexural modulus	ASTM D790	MPa	2400	2200	2000	2400	3000	4300	5000	2000	2100
IZOD impact strength, notched 23 °C	ASTM D256	J/m	150	200	450	150	50	70	50	130	110
IZOD impact strength, notched 0 °C	ASTM D256	J/m	130	150	200	-	25	50	-	-	-
IZOD impact strength, notched -30 °C	ASTM D256	J/m	60	100	130	-	-	30	-	-	-
Thermal properties											
VICAT method B (50 °C/h - 50 N)	ASTM D1525	°C	95	95	93	108	97	102	100	88	80
H.D.T. method A (1,82 MPa)	ASTM D648	°C	92	90	77	-	93	98	95	75	72
ball pressure test	IEC 335	°C	75	75	75	-	75	90	75	75	-
Flammability properties											
limited oxigen index	ASTM D2863	%	-	-	-	-	-	-	37	27	-
flame rating 1.6 mm	UL 94	Class	HB	HB	HB	HB	HB	HB	V0	V0	V0
flame rating 3.2 mm	UL 94	Class	HB	HB	HB	HB	HB	HB	V0	V0	V0
needle flame test	IEC 695-2-2	-	-	-	-	-	-	-	OK	OK	OK
GWIT glow wire flammability index 3 mm	IEC 60695-2-12	°C	650	650	650	-	650	650	960	960	960
CTI comparative tracking index	IEC 112	Volt	600	600	600	550	550	550	>300	>600	-
Recommended processing conditions											
cylinder temperature	-	°C	190-230	190-230	190-230	190-230	210-250	210-250	190-220	180-210	180-210
mould temperature	-	°C	50-60	50-60	50-60	40-60	50-80	50-80	50-70	50-70	50-70
drying	-	h /°C	2h 80°C	2h 80°C	2h 80°C	2h 80°C	2h 80°C	2h 80°C	2h 80°C	2h 80°C	2h 80°C

UL94 listed

BLENDFOR® PC/ABS alloy

			GENERAL PURPOSE			REINFORCED	FLAME RETARDANT		
			Blendfor A 4000	Blendfor A 6000	Blendfor A 8000	Blendfor A 4000 GF/10	Blendfor A 4000 V0	Blendfor A 6000 V0	Blendfor A 8000 V0
Physical properties	*Method*	*Unit*							
density	ASTM D1505	g/cm	1,12	1,13	1,15	1,20	1,18	1,20	1,22
mould shrinkage	ASTM D955	%	0,4-0,7	0,4-0,7	0,4-0,7	0,4-0,6	0,4-0,7	0,4-0,7	0,4-0,7
water absorption 24 h/23 °C	ASTM D570	%	0,10	0,10	0,10	0,10	0,10	0,10	0,10
MFI melt flow index	ASTM D1238	g/10'	15	14	12	12	30	25	20
Mechanical properties									
tensile strenght at yield	ASTM D638	MPa	50	50	55	60	45	48	50
elongation at break	ASTM D638	%	>50	>50	>50	2	45	45	45
flexural modulus	ASTM D790	MPa	2250	2300	2350	3200	2100	2200	2400
IZOD impact strength, notched 23 °C	ASTM D256	J/m	400	500	550	90	200	250	400
IZOD impact strength, notched 0 °C	ASTM D256	J/m	300	350	400	-	-	-	-
IZOD impact strength, notched -30 °C	ASTM D256	J/m	200	200	350	-	-	-	-
Thermal properties									
VICAT method B (50 °C/h - 50 N)	ASTM D1525	°C	110	120	130	110	106	115	130
H.D.T. method A (1,82 MPa)	ASTM D648	°C	90	100	110	-	-	-	-
ball pressure test	IEC 335	°C	75	75	125	-	-	-	-
Flammability properties									
limited oxigen index	ASTM D2863	%	21	22	23	-	-	-	-
flame rating 1.6 mm	UL 94	Class	HB	HB	HB	HB	V0	V0	V0
flame rating 3.2 mm	UL 94	Class	HB	HB	HB	HB	V0	V0	V0
needle flame test	IEC 695-2-2	-	-	-	-	-	OK	OK	OK
GWIT glow wire flammability index 3 mm	IEC 695-2-1	°C	650	650	750	-	960	960	960
CTI comparative tracking index	IEC 112	Volt	400	300	250	-	-	-	-
Recommended processing conditions									
cylinder temperature	-	°C	220-250	230-260	240-260	180-220	180-220	180-220	180-220
mould temperature	-	°C	50-70	50-70	50-70	40-60	40-60	40-60	40-60
drying	-	h /°C	3h 90°C	3h 90°C	3h 90°C	2h 80°C	2h 80°C	2h 80°C	2h 80°C

Retelan® - Reblend®

RETELAN® ABS compounds

Type	Product Code
STANDARD	N
HIGH IMPACT	S
VERY HIGH IMPACT	SS
HIGH IMPACT + HIGH FLOW	SF
HIGH THERMAL PROPERTIES	TM
FLAME RETARDANT	NFV0
17 %GLASS FIBRE	G4

REBLEND® PC/ABS alloy

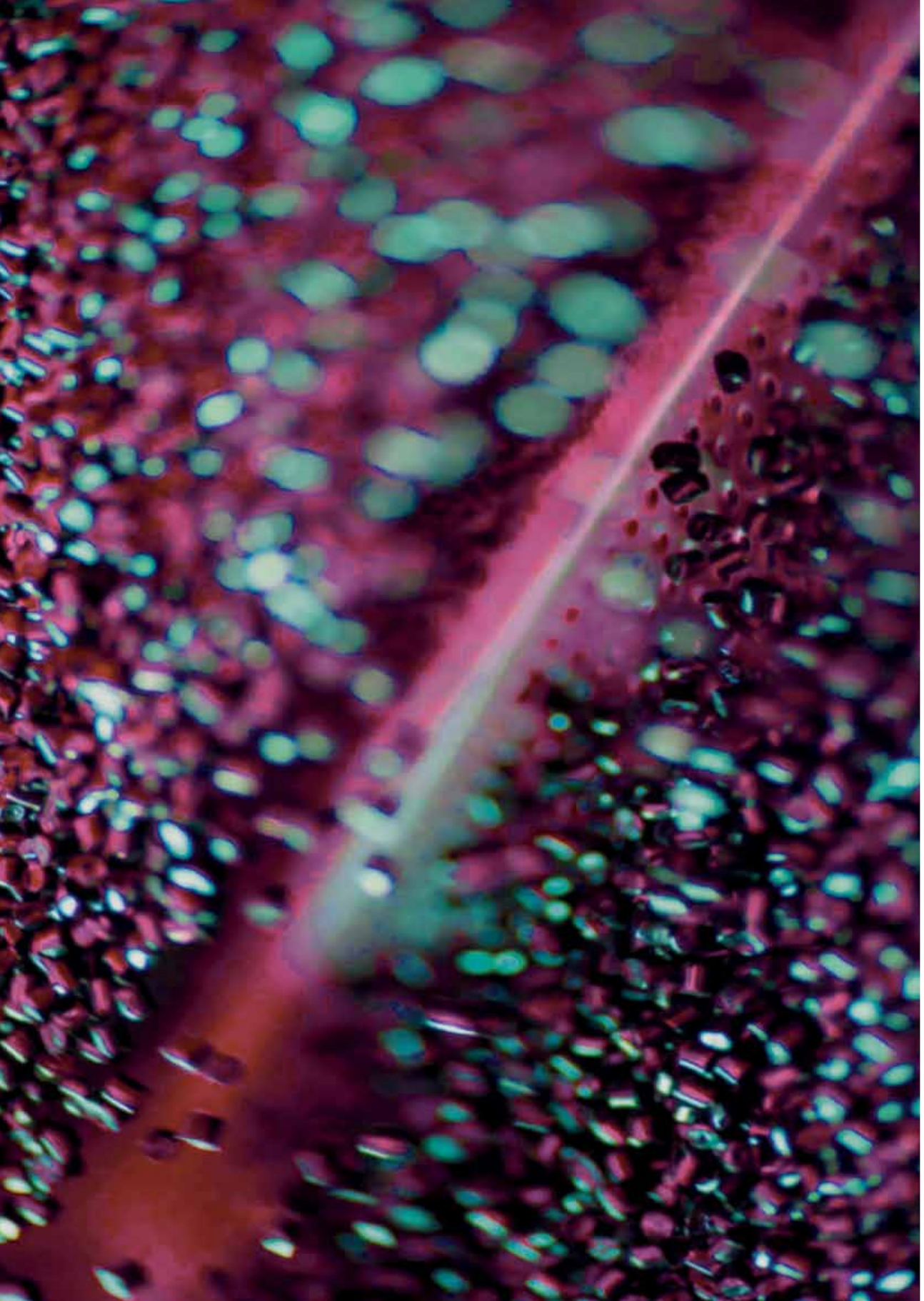
Type	Product Code
UNREINFORCED	4510
	6520OP
	8020OP
20% MINERAL FILLED	5510M4

RETELAN® ABS compounds

			Retelan N	Retelan S	Retelan SS	Retelan SF	Retelan TM	Retelan NFV0	Retelan G4
Physical properties	*Method*	*Unit*							
density	ASTM D792	g/cm^3	1,05	1,05	1,03	1,05	1,05	1,16	1,17
filler content	INTERNAL	%	-	-	-	-	-	-	17
water absorption (24 h/23 °C)	ASTM D570	%	0,3	0,3	0,3	0,3	0,3	0,3	0,3
mould shrinkage	INTERNAL	%	0,5	0,5	0,5	0,5	0,4	0,5	0,25
MFI melt flow index (220 °C/10 kg)	ASTM D1238	g/10 '	20	18	6	35	15	32	4
Mechanical properties									
tensile strength at yield	ASTM D638	MPa	49	44	38	44	45	40	-
tensile strength at break	ASTM D638	MPa	39	36	-	36	35	30	-
elongation at break	ASTM D638	%	26	20	10	20	35	15	2,2
tensile modulus	ASTM D638	MPa	2900	2400	1900	2400	2300	2100	-
flexural strength	ASTM D790	MPa	70	70	56	70	80	60	104
flexural modulus	ASTM D790	MPa	3000	2500	1800	2500	2500	2000	5400
IZOD impact strength, notched 23 °C	ASTM D256/A	J/m	140	200	410	200	400	110	60
Rockwell hardness	ASTM D785	R	105	105	90	105	105	-	108
Thermal properties									
VICAT method A (120 °C/h at 10 N)	ASTM D1525	°C	108	105	103	105	127	95	110
VICAT method B (120 °C/h at 50 N)	ASTM D1525	°C	100	98	90	95	112	85	105
H.D.T. method A (1,82 MPa)	ASTM D648	°C	100	100	96	80	110	72	104
thermal expansion coefficient (linear)	ASTM D696	10^{-5}/K	9	9	9	9	9	9	4
Flammability properties									
flame rating 0.8 mm	UL 94	-	HB	HB	HB	HB	HB	V0	HB
Electrical properties									
surface resistivity	ASTM D257	Ohm	10^{15}	10^{15}	10^{15}	10^{15}	10^{15}	10^{15}	10^{15}
volume resistivity	ASTM D257	Ohm.m	10^{13}	10^{13}	10^{13}	10^{13}	10^{13}	10^{13}	10^{13}
dielectric strength at 1.6 mm	ASTM D149	kV/mm	30	30	30	30	30	32	29
dielectric constant	ASTM D150	-	3,1	3,1	3,1	3,1	3,1	3,1	3,8
comparative tracking index	DIN 53480	-	600	600	600	600	500	-	-
dissipation factor tan ∂ - 1 KHz	ASTM D150	-	0,004	0,004	0,004	0,004	0,004	0,004	0,004

REBLEND® PC/ABS alloy

			UNREINFORCED			FILLED
			Reblend 4510	Reblend 6520OP	Reblend 8020OP	Reblend 5510M4
Physical properties	*Method*	*Unit*				
density	ASTM D792	g/cm^3	1,12	1,12	1,16	1,28
filler content	INTERNAL	%	-	-	-	20
water absorption (24 h/23 °C)	ASTM D570	%	0,7	0,7	0,7	0,2
mould shrinkage	INTERNAL	%	0,55 / 0,75	0,55 / 0,75	0,55 / 0,75	-
MFI melt flow index 260 °C /5 kg	ASTM D1238	g/10 '	10	24	20	20
Mechanical properties						
tensile strength at yield	ASTM D638	MPa	45	50	55	-
tensile strength at break	ASTM D638	MPa	40	45	50	55
elongation at break	ASTM D638	%	> 50	> 50	> 50	4
tensile modulus	ASTM D638	MPa	2400	2400	2400	4100
flexural strength	ASTM D790	MPa	80	90	92	-
flexural modulus	ASTM D790	MPa	2200	2600	2800	4000
IZOD Impact strength, notched 23 °C	ASTM D256/A	J/m	450	550	650	55
Thermal properties						
VICAT method A (50 °C/h at 10 N)	ASTM D1525	°C	120	130	140	-
VICAT method B (50 °C/h at 50 N)	ASTM D1525	°C	110	120	132	130
H.D.T. method A (1,82 MPa)	ASTM D648	°C	95	101	110	115
Flammability properties					-	
flame rating 0.8 mm	UL 94	-	HB	HB	HB	HB
Electrical properties						
surface resistivity	ASTM D257	Ohm	$>10^{15}$	$>10^{15}$	$>10^{15}$	-
volume resistivity	ASTM D257	Ohm.m	10^{15}	10^{15}	10^{15}	-



Stirofor® - Sanfor® - Cabofor® - Norfor®

STIROFOR® HI-PS compounds

Type	Product Code	Characteristics
UNFILLED	Stirofor HI	Good impact resistance and aesthetical properties
FLAME RETARDANT	Stirofor HI-V2	Good fluidity and impact resistance
	Stirofor HI-V0	Good fluidity and impact resistance
	Stirofor HI-V0 WOD	Good impact resistance, PBDE free

SANFOR® SAN compounds

Type	Product Code	Characteristics
REINFORCED	Sanfor G/25	25% glass fibre, excellent mechanical properties and dimensional stability
	Sanfor G/35	35% glass fibre, excellent stiffness and dimensional stability

CABOFOR® PC compounds

Type	Product Code	Characteristics
UNFILLED	Cabofor 24	Very good fluidity and stiffness
	Cabofor 28	Standard grade, excellent impact resistance
REINFORCED	Cabofor 28 GF/20	20% glass fibre, good mechanical properties
	Cabofor 28 GF/30	30% glass fibre, excellent mechanical properties even at very high temperature
FLAME RETARDANT	Cabofor 28 V0	Medium fluidity and good mechanical properties
	Cabofor 24 GF/10 V0	Good fluidity and stiffness
	Cabofor 28 GF/10 V0	Medium fluidity and good stiffness
	Cabofor 28 GF/20 V0	20% glass fibre, good mechanical properties

NORFOR® PPE compounds

Type	Product Code	Characteristics
UNFILLED	Norfor 90	General purpose grade
	Norfor 130	Good thermal properities, dimensional stability and impact resistance
REINFORCED	Norfor 130 GF/10	10% glass fibre, good dimensional stability and thermal resistance
	Norfor 130 GF/20	20% glass fibre, good dimensional stability and thermal resistance
	Norfor 130 GF/30	30% glass fibre, high stiffness, good dimensional stability and thermal resistance
FLAME RETARDANT	Norfor 130 GF/30 V0	30% glass fibre, high stiffness, good dimensional stability and thermal resistance

STIROFOR® HI-PS compounds							SANFOR® SAN compounds		CABOFOR® PC compounds								NORFOR® PPE compounds					
			UNFILLED	FLAME RETARDANT			REINFORCED		UNFILLED		REINFORCED		FLAME RETARDANT				UNFILLED		REINFORCED			FLAME RETARDANT
			Stirofor HI	Stirofor HI -V2	Stirofor HI-V0	Stirofor HI-V0 WOD	Sanfor G/25	Sanfor G/35	Cabofor 24	Cabofor 28	Cabofor 28 GF/20	Cabofor 28 GF/30	Cabofor 28-V0	Cabofor 24 GF/10 V0	Cabofor 28 GF/10 V0	Cabofor 28 GF/20 V0	Norfor 90	Norfor 130	Norfor 130 GF/10	Norfor 130 GF/20	Norfor 130 GF/30	Norfor 130 GF/30 V0
Physical properties	*Method*	*Unit*																				
density	ASTM D1505	g/cm	1,04	1,09	1,17	1,15	1,22	1,34	1,20	1,20	1,34	1,43	1,22	1,29	1,29	1,34	1,05	1,05	1,12	1,20	1,27	1,35
mould shrinkage	ASTM D955	%	0,4-0,6	0,4-0,6	0,4-0,6	0,4-0,6	0,1-0,2	0,1-0,2	0,5-0,7	0,5-0,7	0,3-0,5	0,2-0,4	0,5-0,7	0,2-0,4	0,2-0,4	0,1-0,3	0,5-0,7	0,5-0,7	0,3-0,5	0,25-0,45	0,2-0,4	0,1-0,3
water absorption (24 h/23 °C)	ASTM D570	%	0,06	0,06	0,06	0,06	0,15	0,10	0,10	0,10	0,08	0,05	-	-	-	0,15	-	-	-	-	-	-
MFI melt flow index	ASTM D1238	g/10'	15	15	15	12	-	-	22	10	8	8	15	18	12	12	18	15	7	5	4	8
Mechanical properties																						
tensile strenght at yield	ASTM D638	MPa	25	40	30	22	80	110	62	62	105	130	65	70	70	105	44	48	70	80	100	85
elongation at break	ASTM D638	%	20	25	20	20	2	1,5	>50	>50	5	3	50	5	5	3	80	60	3,5	2,5	2	2
flexural modulus	ASTM D790	MPa	2200	2400	2300	1800	7800	9500	2400	2400	5600	8000	2400	3000	3000	6000	2100	2200	3400	4700	5600	6000
IZOD impact strength ,notched 23 °C	ASTM D256	J/m	90	80	80	80	35	40	>600	>600	90	110	450	80	100	90	160	200	110	120	130	90
IZOD impact strength, notched 0 °C	ASTM D256	J/m	-	-	-	-	-	-	250	250	75	100	-	-	-	-	-	-	-	-	-	-
IZOD impact strenght notched -30°C	ASTM D256	J/m	-	-	-	-	-	-	150	150	75	80	-	-	-	-	-	-	-	-	-	-
Thermal properties																						
VICAT method B (50 °C/h - 50 N)	ASTM D1525	°C	86	85	85	80	105	108	145	147	147	147	140	144	144	150	110	130	133	134	135	132
H.D.T. method A (1.82 MPa)	ASTM D648	°C	-	77	77	-	102	105	130	131	139	139	-	-	-	147	-	-	-	-	-	-
ball pressure test	IEC 335	°C	-	75	75	-	-	-	125	125	125	125	-	-	-	-	-	-	-	-	-	-
Flammability properties																						
limited oxigen index	ASTM D2863	%	-	21	23	-	-	-	26	26	31	32	-	-	-	29	-	-	-	-	-	-
flame rating 0.8 mm	UL 94	Class	-	-	-	-	HB	HB	V2	V2	HB	HB	-	-	-	-	-	-	-	-	-	-
flame rating 1.6 mm	UL 94	Class	HB	V2	V2	V0	HB	HB	V2	V2	V1	V1	V0	V0	V0	V0	HB	HB	HB	HB	HB	V0
flame rating 3.2 mm	UL 94	Class	HB	V2	V0	V0/5VA	HB	HB	V2	V2	V1	V1	V0	V0	V0	V0	HB	HB	HB	HB	HB	V0
needle flame test	IEC 695-2-2	-	-	OK	OK	OK	-	-	-	-	-	-	OK	OK	OK	OK	-	-	-	-	-	OK
GWFI glow wire flammability index	IEC 695-2-1	°C	-	960	960	960	-	-	750	750	960	960	960	960	960	960	-	-	-	-	-	960
CTI comparative tracking index	IEC 112	Volt	-	500	250	-	-	-	250	250	150	150	-	-	-	150	-	-	-	-	-	-
Recommended processing conditions																						
cylinder temperature	-	°C	160-180	160-190	160-180	160-180	230-260	240-270	250-290	250-290	250-290	260-300	240-280	240-280	240-280	260-300	270-280	270-280	270-280	270-280	270-280	270-280
mould temperature	-	°C	30-50	30-50	30-50	30-50	60-80	60-80	90-110	90-110	100-120	100-120	100-120	100-120	100-120	80-120	100-120	100-120	100-120	100-120	100-120	100-120
drying	-	h/°C	2h 60°C	2h 60°C	2h 60°C	2h 60°C	3h 80°C	3h 80°C	3h 120°C	3h 120°C	3h 120°C	3h 120°C	3h 120°C	3h 120°C	3h 120°C	4h 120°C	2h 80°C	2h 80°C	2h 80°C	2h 80°C	2h 80°C	2h 80°C