

PBT (Polybutylene terephthalate)

DURANEX[®]

Grade Compositions
(ASTM)

WinTech Polymer Ltd.

A PBT Resin with Outstanding Heat Resistance and Electrical Property

PBT(Polybutylene terephthalate)

DURANEX®

NOTES TO USERS

- All property values shown in this brochure are the typical values obtained under varying conditions prescribed by applicable standards and test method.
- This brochure has been prepared based on our own experiences and laboratory test data, and therefore all data shown here are not always applicable to parts used under different conditions. We do not guarantee that these data are directly applicable to the application conditions of users and we ask each user to make his own decision on the application.
- It is the users' responsibility to investigate patent rights, service life and potentiality of applications introduced in this brochure. Materials we supply are not intended for the implant applications in the medical and dental fields, and therefore are not recommended for such uses.
- For all works done properly, it is advised to refer to the appropriate **“Technical Catalog”** for specific material processing.
- For safe handling of materials we supply, it is advised to refer to the Material Safety Data Sheet **“MSDS”** of the proper material.
- This brochure is edited based on reference literatures, information and data currently available to us. So the contents of this brochure are subject to change without notice due to new data.
- Please contact our office for any questions about products we supply, descriptive literatures or any description in this brochure.

* “DURANEX®” is a registered trademark of Polyplastics Co., Ltd in Japan and other countries, under license to WinTech Polymer Ltd.

* WinTech Polymer Ltd. is a member of the Polyplastics Group, while the “DURANEX®” PBT resin manufactured and sold by that firm is marketed by Polyplastics affiliated companies.

DURANEX® is supplied in a variety of grades, for example , a reinforced grade which is reinforced by glass fibers to exhibit excellent characteristics, a self-extinguishing grade which is filled with a flame retardant and the one that has combined all these excellent characteristics.

DURANEX® not only has such excellent characteristics as low moisture absorption, high hert

distortion temperature, chemicals resistance, electrical properties and dimensional stability, but also has excellent processability which is an inherent characteristic of all thermoplastic polymers.

Taking advantages of these excellent characteristics, **DURANEX®** is finding increasing applications in electric and electronic appliances, automotive parts and many other industrial parts.

Property	UL94	Segment	DURANEX®	Characteristic
Standard, HB	HB	Unreinforced, High Flow Standard	2000	PBT
			2002	PBT
			3105	PBT-GF15
			3200	PBT-GF20
			3300	PBT-GF30
			3400	PBT-GF40
			3405	PBT-GF45
		Toughness	3100H	PBT-GF10
			3105H	PBT-GF15
			3300H	PBT-GF30
Standard, FR, 50% regrind	V-0	Standard	2016	PBT FR(17)
			3116	PBT-GF10 FR(17)
			3216	PBT-GF15 FR(17)
			3226	PBT-GF20 FR(17)
			3316	PBT-GF30 FR(17)
Low warpage	HB	Standard	733LD	PBT+ABS-GF30
		Super low warp	7307B	PBT-GB30
			7307	PBT+PC-(GF+GS)30
			7407	PBT+PC-(GF+GS)40
			7507K	PBT+PC-GF50
			7400W	PBT-(GF+GS)40
		Anisotropy improvement	6300B	PBT-GB30
		Low density, Low wear	601SA	PBT+ABS-TD20
			304SA	PBT+ABS-GF15
			701SA	PBT+ABS-(GF+GS)30
			711SA	PBT+ABS-(GF+PS)
	V-0	Standard	750LD	PBT+ABS-GF30 FR(17)
		Super low warp	7195W	PBT-(GF+GS)15 FR(17)
			7390W	PBT-(GF+GS)30 FR(17)
		Anisotropy improvement	6370B	PBT-GB30 FR(17)
		Low density, Low wear	361SA	PBT+ABS-GF15 FR(17)
			652SA	PBT+ABS-(PS+TD)20 FR(17)
			751SA	PBT+ABS-(GF+GS)30 FR(17)
Hydrolysis resistant, heat shock resistant	HB	HR	330HR	PBT-GF30
		HR, HSR	531HS	PBT+A/MMA-GF30
Resin adhesion improved for multiple injection molding	HB	Standard	313RA	SP-GF15
			303RA	SP-GF30
	V-0	Standard/HR	353RA	SP-GF30 FR(17)
Epoxy Adhesion Improved	HB	Standard	3105A	PBT+E/EA-GF15
Higher gloss, Better surface appearance	HB	Standard	3306	PBT+PET-GF30
		High stiff, Low warp, Low sink	702MS	SP-(GF+PS)55
	V-0	Unreinforced	407EP	PBT FR(17)
Low friction, Low wear	HB	Standard	2002K	PBT-TD5
			6302T	PBT+MH30
			6300T	PBT+MH30
			7400F	PBT+PTFE-GF30
	V-0	Standard	209AW	PBT+PE FR(17)
			2002U	PBT
Weather resistant	HB	Standard	7300E	PBT-(GF+CD)35
Electric conductive	HB	Standard	200FP	PBT
Unfilled PBT for film, extrusion	HB	Standard	300FP	PBT
			500FP	PBT
			700FP	PBT
			800FP	PBT
			600JP	SP
		Lower melting point		

Item		Unit	Testing Method	Standard						
				HB						
				2000	2002	3105	3200	3300	3400	3405
				Unfilled High flow	Unfilled	G • F 15% filled	G • F 20% filled	G • F 30% filled	G • F 40% filled High rigidity	G • F 45% filled High rigidity
Specific gravity		g/cm ³	D 792	1.31	1.31	1.41	1.45	1.53	1.64	1.70
Tensile strength		MPa	D 638	52	51	96	107	132	147	156
Tensile elongation		%	D 638	20.0	>200	3.0	2.6	2.5	2.0	1.6
Flexural strength		MPa	D 790	85	93	156	176	210	245	254
Flexural modulus		MPa	D 790	2540	2,540	5,390	6,570	9,120	12,060	14,210
Izod impact strength (with notch)	Notch side	J/m	D 256	26	34	58	64	93	117	156
	Reversed notch	J/m	D 256	290	1,810	290	340	530	630	630
Deflection temperature under load (1.82MPa)		°C	D 648	80	78	209	209	213	214	214
Coefficient of linear thermal expansion (Short-time test: 2mmt)		×10 ⁻⁵ /°C	—	10	10	3 ~ 8	3 ~ 8	2 ~ 7	2 ~ 7	2 ~ 7
Dielectric breakdown strength (Short-time test: 2mmt)		MV/m	D 149	17	14	20	22	23	24	24
Volume resistivity (3mmt)		Ω • cm	D257	5×10 ¹⁶	5×10 ¹⁶	5×10 ¹⁶	5×10 ¹⁶	5×10 ¹⁶	6×10 ¹⁵	1×10 ¹⁷
Surface resistivity		Ω	D257	4×10 ¹³	2×10 ¹⁷	9×10 ¹⁵	3×10 ¹⁷	6×10 ¹⁶	3×10 ¹⁶	4×10 ¹⁶
Arc resistance		s	D495	173	173	125	125	125	(125)	(125)
Tracking resistance		V	(IEC)	600+	600+	500	500	500	(550)	(500)
Flammability (UL94)		—	(UL94)	HB	HB	HB	HB	HB	HB	HB

- All figures in the table are the typical values of the material and not the minimum values of the material specifications.
- For qualified values of UL (Underwriters Laboratories Inc.) refer to the yellow card (File No.E213445) issued by UL

Item		Unit	Testing Method	Standard			Standard, FR, 50% Regrind		
				HB			V-0		
				3100H	3105H	3300H	2016	3116	3216
				G • F 7.5% filled Toughness	G • F 15% filled Toughness	G • F 30% filled Toughness	Unfilled	G • F 7.5% filled	G • F 15% filled
Specific gravity		g/cm ³	D 792	1.36	1.41	1.53	1.43	1.49	1.54
Tensile strength		MPa	D 638	76	95	132	54	85	112
Tensile elongation		%	D 638	4.5	5.0	2.6	25.0	4.5	3.5
Flexural strength		MPa	D 790	117	166	201	98	132	166
Flexural modulus		MPa	D 790	3,430	5,090	8,820	2,840	4,410	6,080
Izod impact strength (with notch)	Notch side	J/m	D 256	24	63	107	39	49	58
	Reversed notch	J/m	D 256	240	390	580	440	440	440
Deflection temperature under load (1.82MPa)		°C	D 648	204	208	210	99	202	208
Coefficient of linear thermal expansion (Short-time test: 2mmt)		×10 ⁻⁵ /°C	—	—	3 ~ 8	—	9	2 ~ 7	2 ~ 7
Dielectric breakdown strength (Short-time test: 2mmt)		MV/m	D 149	—	20	—	24	22	20
Volume resistivity (3mmt)		Ω • cm	D257	—	5×10 ¹⁶	—	4×10 ¹⁶	3×10 ¹⁶	2×10 ¹⁶
Surface resistivity		Ω	D257	—	9×10 ¹⁶	—	4×10 ¹⁶	3×10 ¹⁶	3×10 ¹⁶
Arc resistance		s	D495	125	125	—	(62)	(65)	(70)
Tracking resistance		V	(IEC)	500	500	—	(250)	(250)	(250)
Flammability (UL94)		—	(UL94)	HB	HB	HB	V-0	V-0	V-0

- All figures in the table are the typical values of the material and not the minimum values of the material specifications.
- For qualified values of UL (Underwriters Laboratories Inc.) refer to the yellow card (File No.E213445) issued by UL

Item		Unit	Testing Method	Standard, FR, 50% Regrind		Low warp				
				V-0		HB				
				3226	3316	733LD	7307B	7307	7407	7400W
				G • F 20% filled	G • F 30% filled	Standard G • F 30% filled	Super low warp G • B filled	Super low warp G • F filled	Super low warp G • F filled	Super low warp G • F filled
Specific gravity		g/cm ³	D 792	1.57	1.66	1.46	1.52	1.47	1.57	1.63
Tensile strength		MPa	D 638	127	147	139	58	102	117	92
Tensile elongation		%	D 638	3.4	2.7	2.0	2.2	3.2	2.6	2.1
Flexural strength		MPa	D 790	186	225	180	107	166	186	156
Flexural modulus		MPa	D 790	7,250	9,610	9,000	5,190	5,880	9,120	9,120
Izod impact strength (with notch)	Notch side	J/m	D 256	78	98	86	31	88	96	47
	Reversed notch	J/m	D 256	530	680	400	—	490	580	290
Deflection temperature under load (1.82MPa)		°C	D 648	211	212	200	180	200	206	205
Coefficient of linear thermal expansion (Short-time test: 2mmt)		×10 ⁻⁵ /°C	—	2 ~ 7	2 ~ 7	—	—	—	3 ~ 6	3 ~ 6
Dielectric breakdown strength (Short-time test: 2mmt)		MV/m	D 149	20	20	—	—	—	26	28
Volume resistivity (3mmt)		Ω • cm	D257	1×10 ¹⁶	1×10 ¹⁶	—	—	—	3×10 ¹⁵	2×10 ¹⁵
Surface resistivity		Ω	D257	1×10 ¹⁶	1×10 ¹⁶	—	—	—	4×10 ¹⁷	2×10 ¹⁵
Arc resistance		s	D495	(77)	92	—	—	—	128	(110)
Tracking resistance		V	(IEC)	(265)	250	—	—	—	350	(325)
Flammability (UL94)		—	(UL94)	V-0	V-0	HB	HB	HB	HB	HB

- All figures in the table are the typical values of the material and not the minimum values of the material specifications.
- For qualified values of UL (Underwriters Laboratories Inc.) refer to the yellow card (File No.E213445) issued by UL

Item		Unit	Testing Method	Low warp						
				HB						V-0
				7507K	6300B	601SA	304SA	701SA	711SA	750LD
				Super low warp G • F filled High rigidity	Anisotropy improvement G • B 30% Less sinking	Low density, Low wear Mineral filled	Low density, Low wear G • F filled Low specific gravity High flow	Low density, Low wear G • F 30% Low specific gravity	Low density, Low wear G • F 30% Low specific gravity	Standard G • F 30% filled
Specific gravity		g/cm ³	D 792	1.69	1.53	1.34	1.28	1.43	1.45	1.64
Tensile strength		MPa	D 638	172	50	45	95	96	94	115
Tensile elongation		%	D 638	1.6	2.0	8.0	2.6	2.7	2.0	2.0
Flexural strength		MPa	D 790	270	90	84	127	140	120	180
Flexural modulus		MPa	D 790	14,210	4,020	4,400	5,200	7,400	8,000	9,200
Izod impact strength (with notch)	Notch side	J/m	D 256	147	24	33	59	63	49	66
	Reversed notch	J/m	D 256	637	190	—	333	410	220	—
Deflection temperature		°C	D 648	211	175	110	187	200	200	204
Coefficient of linear thermal expansion (Short-time test: 2mmt)		×10 ⁻⁵ /°C	—	—	8	—	—	—	—	—
Dielectric breakdown strength (Short-time test: 2mmt)		MV/m	D 149	—	20	—	—	—	—	—
Volume resistivity (3mmt)		Ω • cm	D257	—	8×10 ¹⁵	—	—	—	—	—
Surface resistivity		Ω	D257	—	5×10 ¹⁶	—	—	—	—	—
Arc resistance		s	D495	—	(125)	—	—	—	—	—
Tracking resistance		v	(IEC)	—	(300)	—	—	—	—	—
Flammability (UL94)		—	(UL94)	HB	HB	HB	HB	HB	HB	V-0

- All figures in the table are the typical values of the material and not the minimum values of the material specifications.
- For qualified values of UL (Underwriters Laboratories Inc.) refer to the yellow card (File No.E213445) issued by UL

Item		Unit	Testing Method	Low Warpage						Hydrolysis resistant, Heat shock resistant
				V-0						HB
				7195W	7390W	6370B	361SA	652SA	751SA	330HR
				Super low warp G • F filled	Super low warp G • F filled	Anisotropy improvement G • F 30%filled Less sinking	Low density, Low wear G • F 15%filled High flow	Low density, Low wear Mineral filled	Low density, Low wear G • F 30%filled Low specific gravity	Hydrolysis resistant G • F 30%filled
Specific gravity		g/cm ³	D 792	1.56	1.65	1.67	1.43	1.45	1.56	1.53
Tensile strength		MPa	D 638	83	107	53	90	51	98	147
Tensile elongation		%	D 638	3.0	2.6	2.0	2.5	5.0	2.2	3.0
Flexural strength		MPa	D 790	127	161	85	115	95	135	225
Flexural modulus		MPa	D 790	5,880	8,920	5,780	5,800	5,500	8,300	9,310
Izod impact strength (with notch)	Notch side	J/m	D 256	39	58	19	57	30	53	98
	Reversed notch	J/m	D 256	240	390	190	—	—	270	588
Deflection temperature under load (1.82MPa)		°C	D 648	210	213	190	145	120	200	213
Coefficient of linear thermal expansion (Short-time test: 2mmt)		×10 ⁻⁵ /°C	—	—	—	—	—		—	—
Dielectric breakdown strength (Short-time test: 2mmt)		MV/m	D 149	—	—	—	—		—	—
Volume resistivity (3mmt)		Ω • cm	D257	—	8×10 ¹⁷	2×10 ¹⁵	—		—	—
Surface resistivity		Ω	D257	—	7×10 ¹⁵	3×10 ¹⁶	—		—	—
Arc resistance		s	D495	—	(69)	—	—		—	—
Tracking resistance		V	(IEC)	—	(275)	—	—		—	—
Flammability (UL94)		—	(UL94)	V-0	V-0	V-0	V-0	V-0	V-0	HB

- All figures in the table are the typical values of the material and not the minimum values of the material specifications.
- For qualified values of UL (Underwriters Laboratories Inc.) refer to the yellow card (File No.E213445) issued by UL

Item		Unit	Testing Method	Hydrolysis resistant, Heat shock resistant	Resin adhesion improved for multiple injection molding			Epoxy adhesion improved	Higher gloss, Better surface appearance	
				HB	HB		V-0	HB	HB	
				531HS	313RA	303RA	353RA	3105A	3306	702MS
				Hydrolysis resistant Heat shock resistant	Standard G • F 15% filled	Standard G • F 30% filled	Hydrolysis resistant G • F 30% filled	Standard G • F 15% filled	Standard G • F 30% filled	High stiff Low warp Low Sinking
Specific gravity		g/cm ³	D 792	1.47	1.41	1.53	1.68	1.38	1.54	1.73
Tensile strength		MPa	D 638	117	112	147	142	93	132	155
Tensile elongation		%	D 638	3.0	3.5	3.0	2.5	3.0	2.5	1.5
Flexural strength		MPa	D 790	170	160	220	210	156	210	218
Flexural modulus		MPa	D 790	7,550	5,300	8,600	9,300	5,390	9,120	16,700
Izod impact strength (with notch)	Notch side	J/m	D 256	98	63	98	98	73	88	85
	Reversed notch	J/m	D 256	637	290	680	630	440	530	—
Deflection temperature under load (1.82MPa)		°C	D 648	210	196	197	197	208	210	200
Coefficient of linear thermal expansion (Short-time test: 2mmt)		×10 ⁻⁵ /°C	—	—	—	—	—	—	—	—
Dielectric breakdown strength (Short-time test: 2mmt)		MV/m	D 149	—	—	—	—	—	—	—
Volume resistivity (3mmt)		Ω • cm	D257	—	2.2×10 ¹⁶	2.2×10 ¹⁶	1.2×10 ¹⁶	6×10 ¹⁵	1×10 ¹⁷	—
Surface resistivity		Ω	D257	—	1.8×10 ¹⁶	1.8×10 ¹⁶	5.0×10 ¹⁶	8×10 ¹⁶	2×10 ¹⁶	—
Arc resistance		s	D495	—	128	128	100	(120)	(125)	—
Tracking resistance		V	(IEC)	—	350	350	250	(425)	(570)	—
Flammability (UL94)		—	(UL94)	HB	HB	HB	V-0	HB	HB	HB

- All figures in the table are the typical values of the material and not the minimum values of the material specifications.
- For qualified values of UL (Underwriters Laboratories Inc.) refer to the yellow card (File No.E213445) issued by UL

Item		Unit	Testing Method	Higher gloss, Better surface appearance	Low friction, Low wear					Weather Resistant
				V-0	HB				V-0	HB
				407EP	2002K	6302T	6300T	7400F	209AW	2002U
				Unfilled Toughness	Unreinforced Rigidity up	Mineral filled	Mineral filled	G • F 30% PTFE filled	Unfilled Sliding	Standard Unfilled
Specific gravity		g/cm ³	D 792	1.39	1.36	1.60	1.60	1.61	1.45	1.31
Tensile strength		MPa	D 638	57	54	102	107	127	49	51
Tensile elongation		%	D 638	25	20	3.5	2.9	2.0	10	>200
Flexural strength		MPa	D 790	93	96	176	186	196	84	93
Flexural modulus		MPa	D 790	2,646	3,234	9,310	9,610	8,820	2,842	2,540
Izod impact strength (with notch)	Notch side	J/m	D 256	34	31	41	39	98	34	34
	Reversed notch	J/m	D 256	784	490	580	490	580	637	1,760
Deflection temperature under load (1.82MPa)		°C	D 648	90	90	207	207	210	80	78
Coefficient of linear thermal expansion (Short-time test: 2mmt)		×10 ⁻⁵ /°C	—	—	—	—	—	—	—	—
Dielectric breakdown strength (Short-time test: 2mmt)		MV/m	D 149	—	—	—	—	—	—	—
Volume resistivity (3mmt)		Ω • cm	D257	—	—	5×10 ¹⁴	6×10 ¹⁴	3×10 ¹⁶	—	5×10 ¹⁶
Surface resistivity		Ω	D257	—	—	3×10 ¹³	1×10 ¹⁵	1×10 ¹⁷	—	9×10 ¹⁶
Arc resistance		s	D495	—	—	(103)	(103)	—	—	(173)
Tracking resistance		V	(IEC)	—	—	(280)	(280)	(425)	—	(600+)
Flammability (UL94)		—	(UL94)	V-0	HB	HB	HB	HB	V-0	HB

- All figures in the table are the typical values of the material and not the minimum values of the material specifications.
- For qualified values of UL (Underwriters Laboratories Inc.) refer to the yellow card (File No.E213445) issued by UL

Item		Unit	Testing Method	Electric conductive	Unfilled PBT for film, Extrusion					
				HB	HB					
				7300E	200FP	300FP	500FP	700FP	800FP	600JP
				Standard G • F 20% filled	Super high flow	High flow	Cast sheet Extrusion iamination Duplicate extrusion	Extrusion Extrusion iamination	Inflation	Lower melting point
Specific gravity		g/cm ³	D 792	1.48	1.31	—	1.31	1.31	1.31	1.30
Tensile strength		MPa	D 638	117	55	—	51	50	49	49
Tensile elongation		%	D 638	2.4	15	—	80	>200	>200	>200
Flexural strength		MPa	D 790	176	—	—	—	—	—	78
Flexural modulus		MPa	D 790	6,660	2,550	—	2,550	2,550	2,550	2,450
Izod impact strength (with notch)	Notch side	J/m	D 256	78	16	—	27	39	49	29
	Reversed notch	J/m	D 256	220	274	—	1,539	Not destroyed	Not destroyed	1,176
Deflection temperature under load (1.82MPa)		°C	D 648	209	115	—	86	71	68	55
Coefficient of linear thermal expansion (Short-time test: 2mmt)		×10 ⁻⁵ /°C	—	—	—	—	—	—	—	—
Dielectric breakdown strength (Short-time test: 2mmt)		MV/m	D 149	—	—	—	—	—	—	—
Volume resistivity (3mmt)		Ω • cm	D257	2×10 ¹¹	—	—	—	—	—	—
Surface resistivity		Ω	D257	2×10 ¹⁰	—	—	—	—	—	—
Arc resistance		s	D495	—	—	—	—	—	—	—
Tracking resistance		V	(IEC)	—	—	—	—	—	—	—
Flammability (UL94)		—	(UL94)	HB	HB	HB	HB	HB	HB	HB

- All figures in the table are the typical values of the material and not the minimum values of the material specifications.
- For qualified values of UL (Underwriters Laboratories Inc.) refer to the yellow card (File No.E213445) issued by UL

Polyplastics



ISO 9001:2000
Certified
JQA-1283



ISO14001 Certified
JQA-EM0337 Research & Development Div.
JQA-EM0414 Fuji Plant

* This registered mark does not guarantee
quality of our products or services.

* WinTech Polymer Ltd. is a member of the Polyplastics Group,
while the "DURANEX[®]" PBT resin manufactured and sold by
that firm is marketed by Polyplastics affiliated companies in
the regions listed below.

* "DURANEX[®]" is a registered trademark of Polyplastics Co., Ltd.

WinTech Polymer Ltd.

Kasumigaseki Bldg. (Flr. 6th)
2-5, Kasumigaseki 3-chome, Chiyoda-ku, Tokyo, 100-6006 Japan
Phone: 81-3-3593-2411 Fax: 81-3-3580-0629

POLYPLASTICS CO., LTD.

Kasumigaseki Bldg. (Flr. 6th)
2-5, Kasumigaseki 3-chome, Chiyoda-ku, Tokyo, 100-6006 Japan
Phone: 81-3-3593-2411 Fax: 81-3-3593-2455

• Affiliates

Polyplastics Asia Pacific Sdn. Bhd. (Kuala Lumpur)

Polyplastics Asia Pacific Singapore Pte. Ltd. (Singapore)

Polyplastics China Limited (Hong Kong)

Polyplastics Marketing (T) Ltd. (Bangkok)

Polyplastics (Shanghai) Ltd. (Shanghai)

Polyplastics Trading (Shanghai) Ltd. (Shanghai)

Polyplastics Taiwan Co., Ltd. (Taipei)