Product Comparison

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Technical Data

Product Description	
LUPOX® GP1000DS	General Purpose Application Automotive Parts, Head Lamp Bezel Material Type PBT
Generic PBT	This data represents typical values that have been calculated from all products classified as: Generic PBT This information is provided for comparative purposes only.

General	LUPOX® GP1000DS	Generic PBT
Manufacturer / Supplier	• LG Chem Ltd.	• Generic
Generic Symbol	• PBT	• PBT
Material Status	• Commercial: Active	• Commercial: Active
Literature [1]	• Technical Datasheet	--
UL Yellow Card [2]	• E515076-0 • E248280-10222591 • E353371-10222063 • E67171-10240991	--
Search for UL Yellow Card	• LG Chem Ltd. • LUPOX®	--
Availability	• Asia Pacific • Europe • Latin America • North America	• Africa & Middle East • Asia Pacific • Europe • Latin America • North America
Features	• Low to No Outgassing • Outstanding Surface Finish	--
Uses	• Automotive Applications • Automotive Lighting	--
Processing Method	• Injection Molding	--
Multi-Point Data	• Isothermal Stress vs. Strain (ISO 11403) • Tensile Stress vs. Strain (ASTM D638)	--

Physical	LUPOX® GP1000DS	Generic PBT	Unit	Test Method
Density / Specific Gravity				
--	1.31	1.26 to 1.55	g/cm³	ASTM D792
--	--	1.29 to 1.32	g/cm³	ISO 1183
23°C	1.31	--	g/cm³	ISO 1183
--	--	1.31	g/cm³	ASTM D1505
Apparent (Bulk) Density	--	0.80 to 0.81	g/cm³	ISO 60
Melt Mass-Flow Rate (MFR)				
250°C/2.16 kg	33	8.0 to 56	g/10 min	ASTM D1238
250°C/2.16 kg	33	3.0 to 72	g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR) (250°C/2.16 kg)	--	3.7 to 52	cm³/10min	ISO 1133

Physical	LUPOX® GP1000DS	Generic PBT	Unit	Test Method
Molding Shrinkage				
Flow	--	0.54 to 2.1	%	ASTM D955
Flow : 23°C, 2.00 mm	1.4 to 1.7	--	%	ASTM D955 ISO 294-4
Across Flow	--	0.99 to 2.0	%	ASTM D955
Across Flow : 23°C, 2.00 mm	1.6 to 2.2	--	%	ASTM D955 ISO 294-4
--	--	0.19 to 2.3	%	ISO 294-4
Water Absorption				
24 hr	--	0.050 to 0.11	%	ASTM D570
24 hr, 23°C, 50% RH	0.050	--	%	ASTM D570
24 hr, 23°C	0.050	0.040 to 0.20	%	ISO 62
Saturation	--	0.20 to 0.50	%	ASTM D570
Saturation, 23°C	--	0.077 to 0.52	%	ISO 62
Equilibrium	--	0.070 to 0.090	%	ASTM D570
Equilibrium, 23°C, 50% RH	--	0.054 to 0.27	%	ISO 62
Viscosity Number (Reduced Viscosity)	--	0.6 to 160.0	ml/g	ISO 1628
Viscosity Number	--	1.23 to 160	cm^3/g	ISO 307
Intrinsic Viscosity	--	0.74 to 1.3	dl/g	

Mechanical	LUPOX® GP1000DS	Generic PBT	Unit	Test Method
Tensile Modulus				
--	--	2110 to 2860	MPa	ASTM D638
23°C, 3.20 mm [4]	3040	--	MPa	ASTM D638
--	--	2100 to 2880	MPa	ISO 527-1
23°C, 4.00 mm	3040	--	MPa	ISO 527-1/1
Tensile Strength				
Yield	--	45.5 to 120	MPa	ASTM D638
Yield, 23°C, 3.20 mm [4]	57.0	--	MPa	ASTM D638
Yield	--	38.4 to 61.7	MPa	ISO 527-2
Yield, 23°C, 4.00 mm	58.0	--	MPa	ISO 527-2/50
Break	--	22.0 to 142	MPa	ASTM D638
Break, 23°C, 3.20 mm [4]	18.0	--	MPa	ASTM D638
Break	--	33.6 to 60.6	MPa	ISO 527-2
Break, 23°C, 4.00 mm	18.0	--	MPa	ISO 527-2/50
--	--	44.4 to 60.4	MPa	ASTM D638
--	--	31.5 to 60.3	MPa	ISO 527-2
Tensile Elongation				
Yield	--	1.0 to 16	%	ASTM D638
Yield, 23°C, 3.20 mm [4]	3.0	--	%	ASTM D638
Yield	--	1.8 to 11	%	ISO 527-2
Yield, 23°C, 4.00 mm	4.0	--	%	ISO 527-2/50
Break	--	0.50 to 110	%	ASTM D638
Break, 23°C, 3.20 mm [4]	100	--	%	ASTM D638
Break	--	1.6 to 23	%	ISO 527-2
Break, 23°C, 4.00 mm	150	--	%	ISO 527-2/150

Mechanical	LUPOX® GP1000DS	Generic PBT	Unit	Test Method
Nominal Tensile Strain at Break	--	2.5 to 52	%	ISO 527-2
Tensile Creep Modulus				ISO 899-1
1 hr	--	2400	MPa	
1000 hr	--	1580	MPa	
Flexural Modulus				
--	--	1700 to 2980	MPa	ASTM D790
23°C, 6.40 mm [5]	2500	--	MPa	ASTM D790
--	--	2090 to 2920	MPa	ISO 178
23°C, 4.00 mm [6]	2730	--	MPa	ISO 178
Flexural Strength				
--	--	58.3 to 98.9	MPa	ASTM D790
23°C, 6.40 mm [5]	87.0	--	MPa	ASTM D790
--	--	8.00 to 113	MPa	ISO 178
23°C, 4.00 mm [6]	88.0	--	MPa	ISO 178
Yield	--	74.6 to 85.8	MPa	ASTM D790
Break	--	2.00 to 205	MPa	ASTM D790
Compressive Strength	--	19.3 to 124	MPa	ASTM D695
Poisson's Ratio	--	0.38		ASTM E132
Coefficient of Friction	--	0.12 to 0.41		ASTM D1894
Taber Abrasion Resistance	--	9.00 to 55.2	mg	ASTM D1044

Impact	LUPOX® GP1000DS	Generic PBT	Unit	Test Method
Charpy Notched Impact Strength				ISO 179
--	--	1.5 to 10	kJ/m²	
-30°C, 4.00 mm	3.1	--	kJ/m²	
23°C, 4.00 mm	3.3	--	kJ/m²	
Charpy Unnotched Impact Strength	--	12 to 200	kJ/m²	ISO 179
Notched Izod Impact				
--	--	29 to 100	J/m	ASTM D256
-30°C, 6.40 mm	29	--	J/m	ASTM D256
23°C, 6.40 mm	33	--	J/m	ASTM D256
--	--	2.0 to 11	kJ/m²	ISO 180
-30°C, 4.00 mm	3.0	--	kJ/m²	ISO 180
23°C, 4.00 mm	4.8	--	kJ/m²	ISO 180
Notched Izod Impact (Area)	--	3.30 to 40.0	kJ/m²	ASTM D256
Unnotched Izod Impact				
--	--	23 to 3200	J/m	ASTM D4812
--	--	24 to 150	kJ/m²	ISO 180
Instrumented Dart Impact				
--	--	2.00 to 61.4	J	ASTM D3763
--	--	3.20 to 120	J	ISO 6603-2
Multi-Axial Instrumented Impact Peak Force	--	2240 to 5190	N	ISO 6603-2
Gardner Impact	--	36.0 to 43.0	J	ASTM D3029

Hardness	LUPOX® GP1000DS	Generic PBT	Unit	Test Method
Rockwell Hardness				
--	--	117 to 122		ASTM D785
R-Scale, 23°C	120	--		ASTM D785 ISO 2039-2
--	--	71 to 125		ISO 2039-2
Shore Hardness	--	75 to 81		ISO 868
Ball Indentation Hardness	--	118 to 163	MPa	ISO 2039-1

Thermal	LUPOX® GP1000DS	Generic PBT	Unit	Test Method
Deflection Temperature Under Load				
0.45 MPa, Unannealed	--	139 to 226	°C	ASTM D648
0.45 MPa, Unannealed, 6.40 mm	170	--	°C	ASTM D648
0.45 MPa, Unannealed	--	111 to 221	°C	ISO 75-2/B
0.45 MPa, Unannealed, 4.00 mm	145	--	°C	ISO 75-2/Bf
0.45 MPa, Annealed	--	155 to 181	°C	ISO 75-2/B
1.8 MPa, Unannealed	--	46.0 to 214	°C	ASTM D648
1.8 MPa, Unannealed, 6.40 mm	60.0	--	°C	ASTM D648
1.8 MPa, Unannealed	--	49.3 to 207	°C	ISO 75-2/A
1.8 MPa, Unannealed, 4.00 mm	50.0	--	°C	ISO 75-2/Af
1.8 MPa, Annealed	--	57.0 to 78.0	°C	ISO 75-2/A
8.0 MPa, Unannealed	--	45.0 to 45.1	°C	ISO 75-2/C
Continuous Use Temperature	--	120 to 122	°C	ASTM D794
Glass Transition Temperature	--	54.7 to 61.5	°C	ISO 11357-2
Vicat Softening Temperature				
--	--	166 to 220	°C	ASTM D1525
--	170	--	°C	ASTM D1525 [7] ISO 306/B50 [7]
--	--	168 to 223	°C	ISO 306
Melting Temperature				
--	--	222 to 226	°C	
--	--	222 to 225	°C	DSC
--	223	225 to 226	°C	ISO 11357-3
--	223	222 to 225	°C	ASTM D3418
--	--	210 to 226	°C	ISO 3146
CLTE				
Flow	--	2.9E-5 to 9.3E-5	cm/cm/°C	ASTM D696
Flow : -30 to 80°C	1.2E-4	--	cm/cm/°C	ASTM D696 ISO 11359-2
Flow	--	1.9E-5 to 1.4E-4	cm/cm/°C	ASTM E831
Flow	--	1.4E-5 to 4.4E-4	cm/cm/°C	ISO 11359-2
Transverse : -30 to 80°C	1.2E-4	--	cm/cm/°C	ASTM D696 ISO 11359-2
Transverse	--	7.5E-5 to 1.2E-4	cm/cm/°C	ASTM E831
Transverse	--	1.4E-5 to 4.3E-4	cm/cm/°C	ISO 11359-2
Thermal Conductivity	--	0.25 to 0.28	W/m/K	ISO 8302

Thermal	LUPOX® GP1000DS	Generic PBT	Unit	Test Method
RTI Elec				UL 746B
--	--	72.5 to 140	°C	
0.7 to 3.3 mm	140	--	°C	
RTI Imp				UL 746B
--	--	74.8 to 140	°C	
0.7 to 3.3 mm	130	--	°C	
RTI Str				UL 746B
--	--	138 to 140	°C	
0.7 to 3.3 mm	140	--	°C	

Electrical	LUPOX® GP1000DS	Generic PBT	Unit	Test Method
Surface Resistivity				
23°C	> 1.0E+13	--	ohms	ASTM D257
--	--	1.0E+3 to 2.5E+15	ohms	ASTM D257
--	--	1.0E+2 to 2.5E+15	ohms	IEC 60093
--	--	9.8E+14 to 1.0E+15	ohms	IEC 62631-3-2
Volume Resistivity				
--	--	2.5 to 2.5E+17	ohms·cm	ASTM D257
23°C	> 1.0E+13	--	ohms·cm	ASTM D257
--	--	13 to 2.5E+17	ohms·cm	IEC 60093
--	--	1.0E+11 to 2.5E+13	ohms·m	IEC 62631-3-1
Dielectric Strength				
--	--	2.0 to 26	kV/mm	ASTM D149
23°C, 2.00 mm	21	--	kV/mm	ASTM D149
--	--	15 to 31	kV/mm	IEC 60243-1
Dielectric Constant				
--	--	2.91 to 3.44		ASTM D150
23°C	3.00	--		ASTM D150
--	--	3.18 to 4.02		IEC 60250
--	--	3.16		IEC 60250
--	--	3.35		IEC 62631-2-1
Dissipation Factor				
--	--	1.0E-3 to 0.078		ASTM D150
--	--	7.8E-4 to 0.020		IEC 60250
--	--	4.0E-4 to 0.024		IEC 62631-2-1
Arc Resistance	--	69.5 to 180	sec	ASTM D495
Comparative Tracking Index (CTI)	PLC 0	--		UL 746A
Comparative Tracking Index	--	587 to 600	V	IEC 60112

Flammability	LUPOX® GP1000DS	Generic PBT	Unit	Test Method
Burning Rate	--	0.0 to 100	mm/min	ISO 3795
Flame Rating				UL 94
0.71 mm	HB	--		
1.5 mm	HB	--		
3.3 mm	HB	--		
Glow Wire Flammability Index	--	743 to 960	°C	IEC 60695-2-12
Glow Wire Ignition Temperature	--	650 to 852	°C	IEC 60695-2-13
Oxygen Index				
--	--	19 to 32	%	ASTM D2863
--	--	22 to 30	%	ISO 4589-2

Fill Analysis	LUPOX® GP1000DS	Generic PBT	Unit	Test Method
Melt Density	--	1.04 to 1.11	g/cm³	
Melt Viscosity	--	90.9 to 219	Pa·s	ASTM D3835
Melt Specific Heat	--	2260	J/kg/°C	ASTM C351
Melt Thermal Conductivity	--	0.11	W/m/K	ASTM C177
Ejection Temperature	--	171	°C	

Injection	LUPOX® GP1000DS	Generic PBT	Unit
Drying Temperature	100 to 120	109 to 121	°C
Drying Time	4.0 to 6.0	2.8 to 6.2	hr
Drying Time, Maximum	--	10	hr
Suggested Max Moisture	0.020	0.020 to 0.043	%
Suggested Shot Size	--	60	%
Hopper Temperature	--	35 to 51	°C
Rear Temperature	230 to 250	235 to 250	°C
Middle Temperature	230 to 250	234 to 261	°C
Front Temperature	230 to 250	238 to 266	°C
Nozzle Temperature	240 to 260	239 to 261	°C
Processing (Melt) Temp	230 to 260	244 to 266	°C
Mold Temperature	60 to 100	60 to 92	°C
Injection Pressure	--	77.0 to 87.5	MPa
Holding Pressure	--	58.6 to 80.0	MPa
Back Pressure	--	0.147 to 1.64	MPa
Screw Speed	--	45 to 300	rpm
Vent Depth	--	0.019 to 0.032	mm

Injection Notes

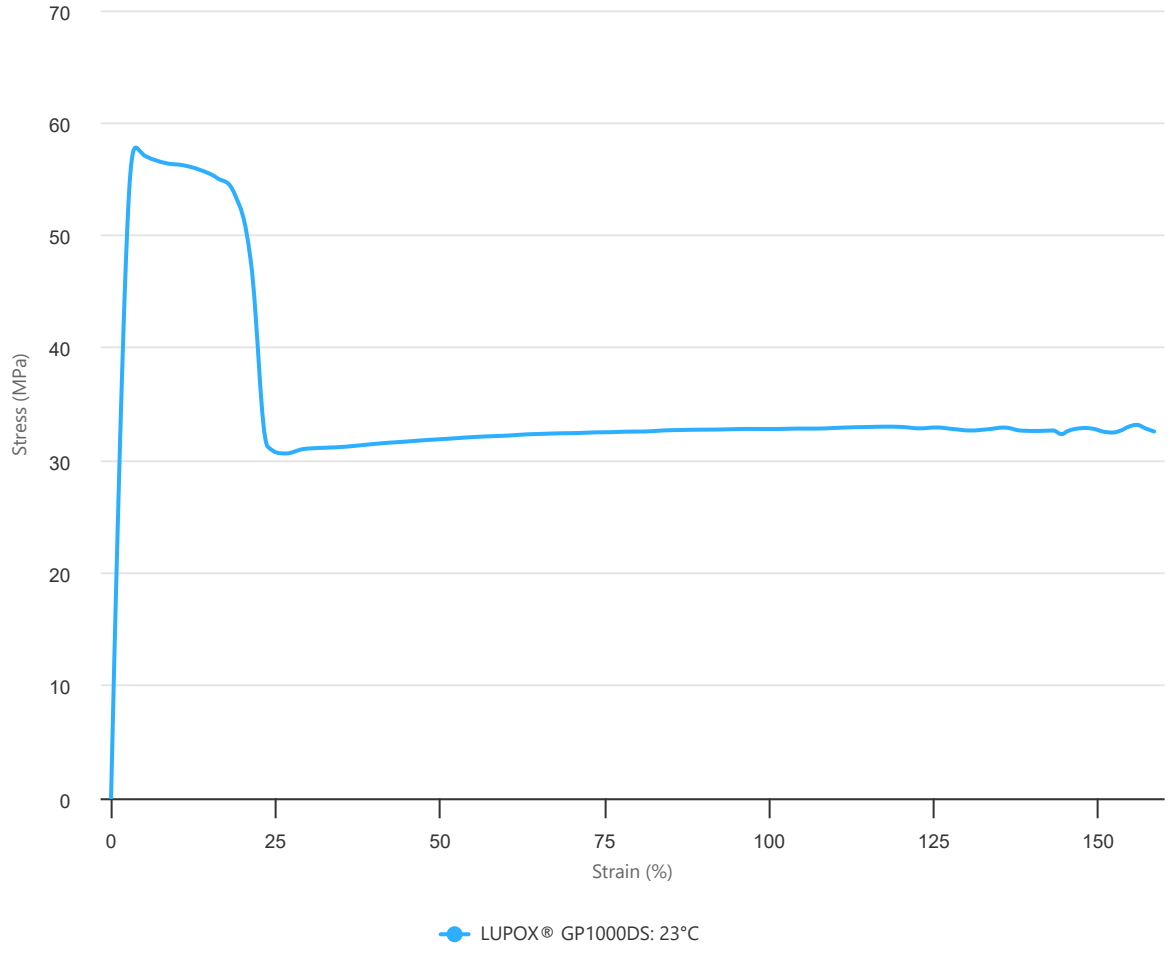
Generic PBT	This data represents typical values that have been calculated from all products classified as: Generic PBT This information is provided for comparative purposes only.

Extrusion	LUPOX® GP1000DS	Generic PBT	Unit
Drying Temperature	--	110 to 120	°C
Drying Time	--	3.0 to 4.0	hr
Suggested Max Moisture	--	0.040	%
Melt Temperature	--	249 to 263	°C

Extrusion Notes

Generic PBT	This data represents typical values that have been calculated from all products classified as: Generic PBT This information is provided for comparative purposes only.

Isothermal Stress vs. Strain (ISO 11403)



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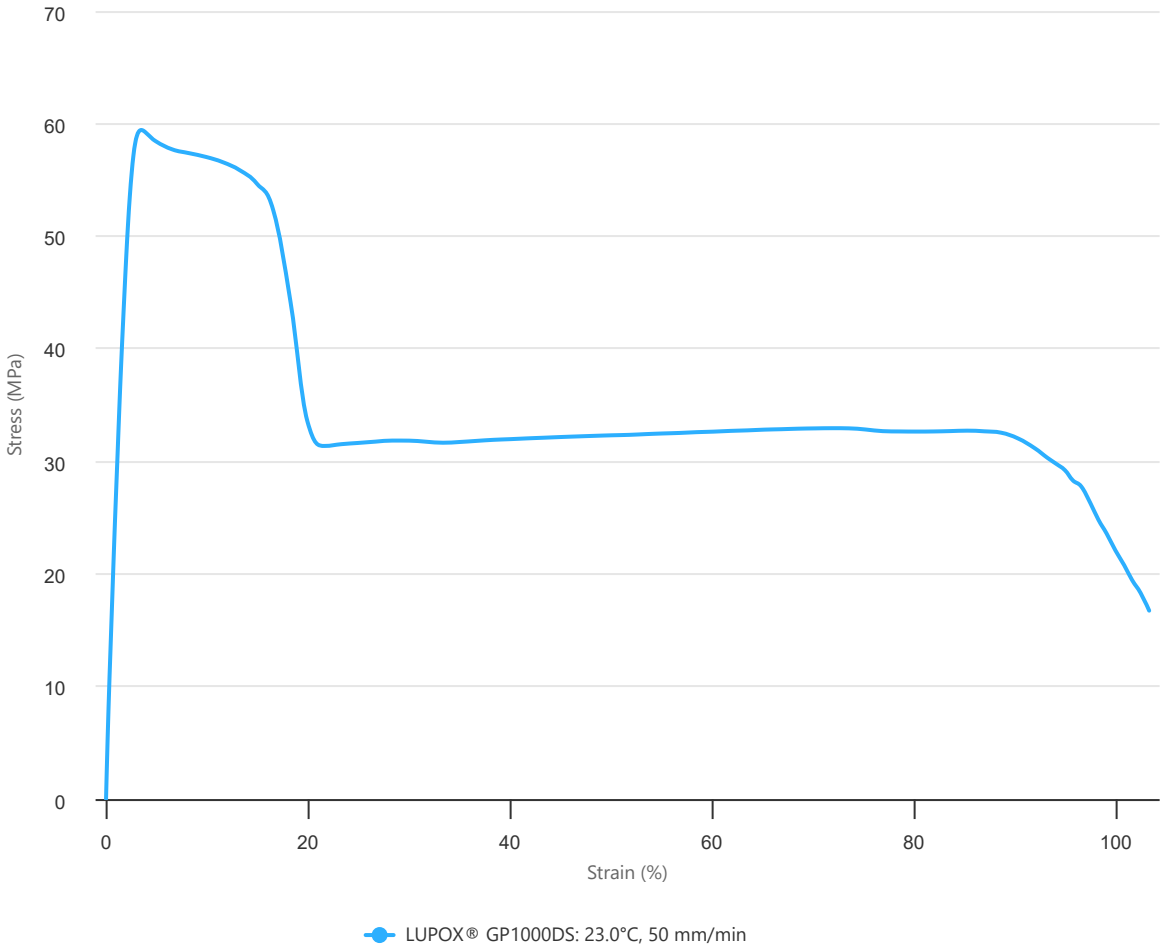
Tensile Stress vs. Strain (ASTM D638)



Notes

[1] These links provide you with access to supplier literature. We work hard to keep them up to date; however you may find the most current literature from the supplier.

[2] A UL Yellow Card contains UL-verified flammability and electrical characteristics. UL Prospector continually works to link Yellow Cards to individual plastic materials in Prospector, however this list may not include all of the appropriate links. It is important that you verify the association between these Yellow Cards and the plastic material found in Prospector. For a complete listing of Yellow Cards, visit the UL Yellow Card Search.

[3] Typical properties: these are not to be construed as specifications.

[4] 50 mm/min

[5] 5.0 mm/min

[6] 2.0 mm/min

[7] Rate A (50°C/h), Loading 2 (50 N)

Where to Buy

Supplier	
LUPOX® GP1000DS	**LG Chem Ltd.** Englewood Cliffs, Englewood Cliffs USA Telephone: 201-816-2302 Web: https://www.lgchemon.com/
Generic PBT	**Generic**

Distributor	
LUPOX® GP1000DS	**Biesterfeld Plastic GmbH** *Biesterfeld is a Pan European distribution company. Contact Biesterfeld for availability of individual products by country.* Telephone: +49-40-32-00-80 Web: https://www.biesterfeld.com/ Availability: Europe **Chase Plastic Services, Inc.** *Chase Plastics Services is a North American distributor with representatives throughout the region. Please find your rep here: http://www.chaseplastics.com/contact/locations* Telephone: 800-232-4273 Web: http://www.chaseplastics.com/ Availability: North America **Conventus Polymers** Telephone: 973-343-7669 Web: http://www.conventuspolymers.com/ Availability: North America **Corporación Telch** Telephone: +52-55-1474-9749 Web: https://www.telch.com.mx/ Availability: Mexico **Distrupol Ltd** *Distrupol Ltd is a Pan European distribution company. Contact Distrupol Ltd for availability of individual products by country.* Telephone: 08452003040 Web: http://www.distrupol.com/ Availability: Belgium, Denmark, Finland, Luxembourg, Netherlands, Norway, Sweden **Entec Polymers** *Contact Entec Polymers for availability of individual products by country.* Telephone: 833-319-0299 Web: https://www.entecpolymers.com/?utm_source=ul&utm_medium=paid%20association&utm_campaign=entec%20%7C%20entec%201&utm_term=ul%20%7C%20where%20to%20buy Availability: Latin America **Entec Polymers Latin America** *Contact Entec Polymers for availability of individual products by country.* Web: https://www.entecpolymers.com/ Availability: Latin America **INTERPOLIMERI S.P.A.** Telephone: +39-0497-663811 Web: https://interpolimeri.com/ Availability: Austria, Bulgaria, France, Germany, Hungary, Italy, Portugal, Romania, Slovenia, Spain, Switzerland **Resin Resource, Inc.** Telephone: 877-652-3431 Web: http://www.resinresourceinc.com/ Availability: North America **RESINEX Group** *RESINEX is a Pan European distribution company. Contact RESINEX for availability of individual products by country.* Telephone: +32-14-672511 Web: http://www.resinex.com/ Availability: Europe **SNETOR** *SNETOR is a Pan European distribution company. Contact SNETOR for availability of individual products by country.* Telephone: +33-1-4904-8888 Web: http://www.snetor.com/ Availability: France, Italy
Generic PBT	Please contact the supplier to find a distributor for Generic PBT