Product Comparison

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Technical Data

Product Description

TRIREX® 3020HF	• TRIREX is the registered trademark of polycarbonate resin manufactured by Samyang Corporation. TRIREX polycarbonate resins offer superior mechanical properties, good dimensional stability and high electrical performance, which allows it to be widely used for electrical, electronic, appliance, automotive and optical industries. • TRIREX 3020HF is a polycarbonate resin grade which has high low temperature impact strength in combination with superior mechanical and physical property. CHARACTERISTICS • Superior low temperature impact resistance • Good flow-ability • Workable under a wide range of temperatures (-100°C ~ 135°C) • High electrical performance • Good dimensional stability • Low moisture absorbency • Good weather resistance APPLICATIONS • TRIREX 3020HF resin grade is designed for injection molding products. • High flow viscosity. Transparent colors only.
Generic PC	This data represents typical values that have been calculated from all products classified as: Generic PC This information is provided for comparative purposes only.

General	TRIREX® 3020HF	Generic PC
Manufacturer / Supplier	• Samyang Corporation	• Generic
Generic Symbol	• PC	• PC
Material Status	• Commercial: Active	• Commercial: Active
UL Yellow Card [1]	• E121254-220598 • E257054-521406 • E366374-101723899	--
Search for UL Yellow Card	• Samyang Corporation • TRIREX®	--
Availability	• Asia Pacific • Europe • North America	• Africa & Middle East • Asia Pacific • Europe • Latin America • North America
Features	• Good Dimensional Stability • Good Electrical Properties • Good Flow • Good Weather Resistance • High Viscosity • Low Moisture Absorption • Low Temperature Impact Resistance	--
Uses	• Appliance Components • Automotive Applications • Electrical/Electronic Applications • Optical Applications	--
Appearance	• Clear/Transparent	--
Forms	• Pellets	--
Processing Method	• Injection Molding	--

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General	TRIREX® 3020HF	Generic PC
Also Available In	--	• Africa & Middle East • Asia Pacific • Europe • Latin America • North America

Physical	TRIREX® 3020HF	Generic PC	Unit	Test Method
Density / Specific Gravity				
--	1.20	1.14 to 1.26	g/cm³	ASTM D792
--	--	1.18 to 1.21	g/cm³	ISO 1183
--	--	1.20	g/cm³	ASTM D1505
Apparent (Bulk) Density	--	0.63 to 0.66	g/cm³	ISO 60
Melt Mass-Flow Rate (MFR)				
300°C/1.2 kg	23	0.80 to 27	g/10 min	ASTM D1238
300°C/1.2 kg	--	1.8 to 24	g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR)				
--	--	6.5 to 19	cm³/10min	ASTM D1238
300°C/1.2 kg	--	2.0 to 23	cm³/10min	ISO 1133
Spiral Flow	--	2.20 to 30.8	cm	
Molding Shrinkage				
Flow	--	0.50 to 0.79	%	ASTM D955
Flow : 3.00 mm	0.50 to 0.70	--	%	ASTM D955
Across Flow	--	0.56 to 0.61	%	ASTM D955
--	--	0.51 to 0.82	%	ISO 294-4
Water Absorption				
24 hr	--	0.15 to 0.17	%	ASTM D570
24 hr, 23°C	0.15	--	%	ASTM D570
24 hr, 23°C	--	0.15 to 0.25	%	ISO 62
Saturation	--	0.30 to 0.38	%	ASTM D570
Saturation, 23°C	--	0.050 to 0.40	%	ISO 62
Equilibrium	--	0.32 to 0.58	%	ASTM D570
Equilibrium, 23°C, 50% RH	--	0.066 to 0.18	%	ISO 62
Viscosity Number	--	50.0 to 63.0	cm³/g	ISO 307

Mechanical	TRIREX® 3020HF	Generic PC	Unit	Test Method
Tensile Modulus				
--	--	1600 to 2670	MPa	ASTM D638
--	--	1880 to 2710	MPa	ISO 527-1
Tensile Strength				
Yield	67.0	55.8 to 64.2	MPa	ASTM D638
Yield	--	53.8 to 66.8	MPa	ISO 527-2
Break	--	54.6 to 71.1	MPa	ASTM D638
Break	--	48.3 to 73.8	MPa	ISO 527-2
--	--	46.5 to 71.1	MPa	ASTM D638
--	--	57.8 to 68.7	MPa	ISO 527-2

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Mechanical	TRIREX® 3020HF	Generic PC	Unit	Test Method
Tensile Elongation				
Yield	--	0.22 to 18	%	ASTM D638
Yield	--	2.5 to 6.2	%	ISO 527-2
Break	130	0.0 to 140	%	ASTM D638
Break	--	1.0 to 130	%	ISO 527-2
Nominal Tensile Strain at Break	--	50 to 53	%	ISO 527-2
Tensile Creep Modulus				ISO 899-1
1 hr	--	2200	MPa	
1000 hr	--	1900	MPa	
Flexural Modulus				
--	2250	1960 to 2540	MPa	ASTM D790
--	--	1880 to 2600	MPa	ISO 178
Flexural Strength				
--	--	65.3 to 110	MPa	ASTM D790
--	--	71.4 to 102	MPa	ISO 178
Yield	93.0	82.6 to 105	MPa	ASTM D790
Break	--	74.8 to 108	MPa	ASTM D790
Compressive Strength				
--	--	60.4 to 113	MPa	ASTM D695
--	--	21.0 to 80.0	MPa	ISO 604
Coefficient of Friction	--	0.090 to 0.32		ASTM D1894
Taber Abrasion Resistance	--	9.50 to 10.1	mg	ASTM D1044
Wear Factor	--	-2.0 to 120	10^-8 mm³/N·m	ASTM D3702

Films	TRIREX® 3020HF	Generic PC	Unit
Film Thickness - Tested	--	180 to 660	µm

Impact	TRIREX® 3020HF	Generic PC	Unit	Test Method
Charpy Notched Impact Strength	--	6.8 to 81	kJ/m²	ISO 179
Charpy Unnotched Impact Strength	--	38 to 300	kJ/m²	ISO 179
Notched Izod Impact				
--	--	36 to 910	J/m	ASTM D256
23°C, 3.18 mm	790	--	J/m	ASTM D256
--	--	7.1 to 71	kJ/m²	ISO 180
Notched Izod Impact (Area)	--	10.0 to 86.0	kJ/m²	ASTM D256
Unnotched Izod Impact				
--	--	2100 to 3200	J/m	ASTM D4812
--	--	34 to 180	kJ/m²	ISO 180
Instrumented Dart Impact				
--	--	52.7 to 87.5	J	ASTM D3763
--	--	48.9 to 71.8	J	ISO 6603-2
Multi-Axial Instrumented Impact Peak Force	--	4870 to 6550	N	ISO 6603-2
Gardner Impact	--	33.9 to 170	J	ASTM D3029
Gardner Impact	--	36.2 to 49.9	J	ASTM D5420
Tensile Impact Strength	--	366 to 640	kJ/m²	ASTM D1822

Hardness	TRIREX® 3020HF	Generic PC	Unit	Test Method
Rockwell Hardness				
--	--	69 to 124		ASTM D785
--	--	48 to 121		ISO 2039-2
Shore Hardness	--	79 to 82		ISO 868
Ball Indentation Hardness	--	94.7 to 117	MPa	ISO 2039-1
Thermal	**TRIREX® 3020HF**	**Generic PC**	**Unit**	**Test Method**
Deflection Temperature Under Load				
0.45 MPa, Unannealed	--	131 to 141	°C	ASTM D648
0.45 MPa, Unannealed	--	129 to 143	°C	ISO 75-2/B
0.45 MPa, Annealed	--	142 to 146	°C	ASTM D648
0.45 MPa, Annealed	--	136 to 146	°C	ISO 75-2/B
1.8 MPa, Unannealed	133	115 to 135	°C	ASTM D648
1.8 MPa, Unannealed	--	115 to 130	°C	ISO 75-2/A
1.8 MPa, Annealed	--	135 to 143	°C	ASTM D648
1.8 MPa, Annealed	--	138 to 143	°C	ISO 75-2/A
Continuous Use Temperature	--	120 to 135	°C	ASTM D794
Glass Transition Temperature				
--	--	143 to 146	°C	ISO 11357-2
--	--	145 to 148	°C	DSC
Vicat Softening Temperature				
--	--	132 to 157	°C	ASTM D1525
--	--	136 to 151	°C	ISO 306
Ball Indentation Temperature	--	125	°C	IEC 60598-1
Melting Temperature	--	140 to 232	°C	
CLTE				
Flow	5.0E-5 to 7.0E-5	5.7E-5 to 7.0E-5	cm/cm/°C	ASTM D696
Flow	--	1.6E-5 to 0.17	cm/cm/°C	ASTM E831
Flow	--	6.5E-5 to 7.2E-5	cm/cm/°C	ISO 11359-2
Transverse	--	8.0E-6 to 1.8E-4	cm/cm/°C	ASTM D696
Transverse	--	5.9E-5 to 8.1E-5	cm/cm/°C	ASTM E831
Transverse	--	6.0E-5 to 8.1E-5	cm/cm/°C	ISO 11359-2
Specific Heat	--	1240 to 1270	J/kg/°C	ASTM C351
Thermal Conductivity				
--	--	0.13 to 0.48	W/m/K	ASTM C177
--	--	0.17 to 0.72	W/m/K	ISO 8302
RTI Elec	--	78.0 to 132	°C	UL 746B
RTI Imp	--	79.3 to 130	°C	UL 746B
RTI Str	--	78.0 to 132	°C	UL 746B
Electrical	**TRIREX® 3020HF**	**Generic PC**	**Unit**	**Test Method**
Surface Resistivity				
--	--	2.5 to 2.6E+17	ohms	ASTM D257
--	--	1.0 to 1.0E+16	ohms	IEC 60093

Electrical	TRIREX® 3020HF	Generic PC	Unit	Test Method
Volume Resistivity				
--	4.0E+16	10 to 2.5E+17	ohms·cm	ASTM D257
--	--	1.0E+2 to 2.5E+17	ohms·cm	IEC 60093
--	--	1.0E+11 to 5.5E+14	ohms·m	IEC 62631-3-1
Dielectric Strength				
--	30	14 to 31	kV/mm	ASTM D149
--	--	17 to 34	kV/mm	IEC 60243-1
Dielectric Constant				
--	--	2.80 to 3.20		ASTM D150
--	--	3.00 to 3.10		IEC 60250
--	--	2.90		IEC 60250
Dissipation Factor				
--	--	4.0E-4 to 0.078		ASTM D150
--	--	4.0E-4 to 0.012		IEC 60250
--	--	1.0E-3 to 0.010		IEC 62631-2-1
Arc Resistance	120	88.7 to 120	sec	ASTM D495
Comparative Tracking Index	--	113 to 250	V	IEC 60112
High Amp Arc Ignition (HAI)	--	90.0 to 120		UL 746A
Hot-wire Ignition (HWI)	--	23 to 45	sec	UL 746A

Flammability	TRIREX® 3020HF	Generic PC	Unit	Test Method
Burning Rate	--	99 to 100	mm/min	ISO 3795
Flame Rating (1.6 mm)	V-2	--		UL 94
Glow Wire Flammability Index	--	849 to 960	°C	IEC 60695-2-12
Glow Wire Ignition Temperature	--	788 to 883	°C	IEC 60695-2-13
Oxygen Index				
--	--	25 to 37	%	ASTM D2863
--	--	25 to 36	%	ISO 4589-2

Optical	TRIREX® 3020HF	Generic PC	Unit	Test Method
Gloss	--	3 to 100		ISO 2813
Refractive Index				
--	--	1.584 to 1.587		ASTM D542
--	--	1.566 to 41.18		ISO 489
Light Transmittance	--	86.7 to 89.1	%	ASTM D1003
Haze	--	-0.500 to 2.01	%	ASTM D1003

Fill Analysis	TRIREX® 3020HF	Generic PC	Unit	Test Method
Melt Density	--	1.01	g/cm³	
Melt Thermal Conductivity	--	0.24	W/m/K	ASTM C177

Injection	TRIREX® 3020HF	Generic PC	Unit
Drying Temperature	120	119 to 122	°C
Drying Time	3.0 to 5.0	2.4 to 5.2	hr
Drying Time, Maximum	--	28	hr

Injection	TRIREX® 3020HF	Generic PC	Unit
Dew Point	--	-29	°C
Suggested Max Moisture	0.020	0.020 to 0.025	%
Suggested Shot Size	--	50	%
Suggested Max Regrind	--	20	%
Hopper Temperature	--	70	°C
Rear Temperature	235 to 260	254 to 304	°C
Middle Temperature	250 to 275	268 to 311	°C
Front Temperature	265 to 290	277 to 323	°C
Nozzle Temperature	265 to 300	277 to 316	°C
Processing (Melt) Temp	265 to 300	277 to 322	°C
Melt Temperature (Optimum)	--	285	°C
Mold Temperature	65 to 105	75 to 100	°C
Injection Pressure	--	84.5 to 103	MPa
Holding Pressure	--	87.9 to 90.0	MPa
Back Pressure	0.250 to 0.700	0.413 to 0.787	MPa
Screw Speed	40 to 70	52 to 57	rpm
Clamp Tonnage	--	4.8	kN/cm²
Vent Depth	0.020 to 0.080	0.047 to 0.056	mm

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

Extrusion	TRIREX® 3020HF	Generic PC	Unit
Drying Temperature	--	109 to 124	°C
Drying Time	--	3.3 to 13	hr
Cylinder Zone 1 Temp.	--	267 to 270	°C
Cylinder Zone 2 Temp.	--	283 to 287	°C
Cylinder Zone 3 Temp.	--	281 to 285	°C
Cylinder Zone 4 Temp.	--	282 to 285	°C
Adapter Temperature	--	289 to 294	°C
Melt Temperature	--	274 to 312	°C
Die Temperature	--	276 to 298	°C

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

Notes

[1] 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.

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

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