

					Non-Reinforced					
Items	Test method (ISO)	Units	Grade		1300S 1302S 1402S	1402SH	1300F 1402F	1500 1502(S)	1700S 1702	9400S
Physical property	Density	1183			1.14	1.14	1.14	1.14	1.14	1.14
	Equilibrium moisture content		%		2.5	2.5	2.2	2.5	2.5	2.8
Mechanical	Tensile stress at Yield	527	MPa	DRY	82	82	88	84	84	80
				WET	52	48	59	51	50	40
	Tensile strain at Yield	527	%	DRY	4	4.5	5	4.5	4.5	4
				WET	24	25	20	26	27	22
	Tensile stress at Break	527	MPa	DRY	—	—	—	—	—	—
				WET	—	—	—	—	—	—
	Tensile strain at Break	527	%	DRY	—	—	—	—	—	—
				WET	>100	>100	>100	>100	>100	>100
	Tensile modulus	527	GPa	DRY	3	3	3.5	2.9	3	2.7
				WET	1.2	1.1	1.6	1.0	1.1	0.7
	Flexural strength	178	MPa	DRY	113	111	116	110	115	97
				WET	42	38	48	39	39	30
	Flexural modulus	178	GPa	DRY	2.7	2.6	2.9	2.7	2.8	2.3
				WET	1.1	0.9	1.2	0.9	0.9	0.7
Thermal	Charpy impact strength	179	Notched Un-notched	DRY	6/NB	6/NB	6/NB	5/NB	7/NB	7/NB
				WET	15/NB	16/NB	12/NB	30/NB	28/NB	41/NB
	Rockwell hardness	2039	scaleR/scaleM	DRY	120/80	120/80	120/85	120/80	120/80	/75
				WET	108/55	108/55	110/60	105/55	105/55	—
	Coefficient of linear thermal expansion (para to flow)	ASTM D 696	$\times 10^{-5}/\text{k}$		8	8	8	8	8	—
	Temperature of distortion under load	75	°C	1.8MPa	70	60	70	65	70	60
				0.45MPa	190	160	220	195	215	165
	Comparative tracking index	IEC 60112		DRY	600/1300S	—	600/1300F	600/1500	—	—
					575/1302S	—	—	—	—	—
					525/1402S	525/1402SH	525/1402F	525/1502	—	—
Electrical property	Dielectric strength	ASTM D 149	KV/mm	DRY	20	20	20	20	20	20
	Surface resistivity	ASTM D 257	$\Omega \cdot$	DRY	10^{13}	10^{13}	10^{13}	10^{14}	10^{14}	10^{14}
	Volume resistivity	ASTM D 257	$\Omega \cdot \text{cm}$	DRY	10^{14}	10^{14}	10^{14}	10^{15}	10^{15}	10^{15}
	UL	UL 94		DRY	V2	V2	—	—	—	—
	Glow wire ignition (3mm)	IEC 60695 -2-1	°C	DRY	960	960	—	—	—	—
Flammability	Mold shrinkage, 3mm t, para/perp to flow	(Asahi Kasei)	%		1.3 - 2.0	1.3 - 2.0	0.9 - 1.6	1.3 - 2.0	1.3 - 2.0	—
Features					General purpose	Fast cycle hinge prop.	Ultrafast cycle	High mol, wt, extrusion	Superhigh mol, wt, extrusion	High mol, wt, thick-wall
Typical uses					Connectors, Cable ties, Canisters, Washers	Connectors, Clips	Electrical parts, Car parts	Fasteners, Sheets	Films, Rods, Sheets	Railway parts, Office furnishing

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ItemsTest method (ISO)UnitsGrade					GF-Reinforced					
					13G15 14G15	1300G 1402G	13G43	13G25 14G25	14G33	14G5 (Black)
Physical property	Density	1183			1.25	1.39	1.5	1.32	1.39	1.58
	Equilibrium moisture content		%		2.1	1.7	1.4	1.9	1.7	1.3
Mechanical	Tensile stress at Yield	527	MPa	DRY	—	—	—	—	—	—
				WET	77	—	—	116	—	—
	Tensile strain at Yield	527	%	DRY	—	—	—	—	—	—
				WET	6	—	—	5.5	—	—
	Tensile stress at Break	527	MPa	DRY	107	190	207	190	208	237
				WET	73	135	150	112	143	183
	Tensile strain at Break	527	%	DRY	2.5	3	3	4	4	2
				WET	11	5	4.5	9	6	4
	Tensile modulus	527	GPa	DRY	5.8	10	12.7	8.2	9.8	16.9
				WET	3.6	8	10.2	5.9	7.8	13
	Flexural strength	178	MPa	DRY	162	275	303	275	302	371
				WET	116	202	225	170	213	269
	Flexural modulus	178	GPa	DRY	4.8	9	11.7	7.8	9.6	13.6
				WET	3.3	6.8	8.7	5	6.7	11
Charpy impact strength	179	Notched Un-notched	KJ/m²	DRY	6/26	11/72	12/84	10/68	13/90	14/NB
				WET	5/38	16/83	18/85	14/92	16/97	21/95
Rockwell hardness	2039	scaleR/scaleM	DRY	120/94	120/96	118/96	120/96	120/96	118/95	
			WET	/71	112/96	/80	/74	/75	/80	
Thermal	Coefficient of linear thermal expansion (para to flow)	ASTM D 696	×10 ⁻⁵ /k		4	3	3	3	2	2
	Temperature of distortion under load	75	1.8MPa 0.45MPa		235	250	255	245	250	255
					260	265	260	260	260	260
Electrical property	Comparative tracking index	IEC 60112		DRY	600/13G15	600/1300G	600	600/13G25	425	525
					425/14G15	425/1402G	—	425/14G25	—	—
	Dielectric strength	ASTM D 149	KV/mm	DRY	26	28	30	29	33	21
	Surface resistivity	ASTM D 257	Ω	DRY	10 ¹⁵	10 ¹⁵	10 ¹⁵	10 ¹⁵	10 ¹⁵	10 ¹⁵
	Volume resistivity	ASTM D 257	Ω•cm	DRY	10 ¹⁵	10 ¹⁵	10 ¹⁵	10 ¹⁵	10 ¹⁵	10 ¹⁵
Flammability	UL	UL 94		DRY	HB	HB	HB	HB	HB	HB
	Glow wire ignition (3mm)	IEC 60695 -2-1	°C	DRY	960	960	960	960	960	960
Mold shrinkage, 3mm t, para/perp to flow		(Asahi Kasei)	%		0.7/1.2	0.4/0.9	0.3/0.7	0.5/0.9	0.4/0.8	0.4/0.7
Features					15%GF	33%GF	43%GF	25%GF	33%GF	50%GF
Typical uses					Mechanical and Electrical parts, Car pats(Micromotors,Radiator tanks,Shift lever parts) Under-the-hood car parts(Heater tanks,Fuel injectors,ABS sensors)					

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Items Test method (ISO) Units Grade					GF-Reinforced						
					54G33	54G43	93G33	90G33	90G50	90G55 (Black)	90G60 (Black)
Physical property	Density	1183			1.39	1.5	1.39	1.39	1.58	1.64	1.71
	Equilibrium moisture content		%		1.9	1.6	1.9	1.4	1.2	1.1	—
Mechanical	Tensile stress at Yield	527	MPa	DRY	—	—	—	—	—	—	—
				WET	—	—	—	—	—	—	—
	Tensile strain at Yield	527	%	DRY	—	—	—	—	—	—	—
				WET	—	—	—	—	—	—	—
	Tensile stress at Break	527	MPa	DRY	183	200	174	180	244	232	189
				WET	113	131	107	150	192	163	138
	Tensile strain at Break	527	%	DRY	4	4	5.5	2.5	2	2	2
				WET	9	7.5	9.5	3	3	3	3
	Tensile modulus	527	GPa	DRY	9.7	12.2	9.4	10.2	17.2	18.6	18.2
				WET	6.1	7.7	5.3	9.3	14.5	14.8	13.7
	Flexural strength	178	MPa	DRY	270	290	233	238	355	394	324
				WET	165	191	150	216	239	269	210
	Flexural modulus	178	GPa	DRY	9	10.6	7.3	10.0	14.2	15.4	15.8
				WET	5.3	7	4.8	8.1	12	12.3	12.2
	Charpy impact strength	179	Notched Un-notched KJ/m²	DRY	12/98	14/99	12/98	6/55	14/88	13/82	11/56
				WET	19/98	21/109	23/98	12/54	14/84	13/71	15/54
	Rockwell hardness	2039	scaleR/scaleM	DRY	120/93	118/93	/90	120/90	120/80	120/95	120/95
				WET	110/68	—	—	—	—	115/88	117/88
Thermal	Coefficient of linear thermal expansion (para to flow)	ASTM D 696	×10 ⁻⁵ /k		3	—	3	3	2	2	2
	Temperature of distortion under load	75	1.8MPa		230	230	210	220	225	225	210
			0.45MPa		250	245	230	235	240	240	230
Electrical property	Comparative tracking index	IEC 60112		DRY	600	600	—	—	—	450	475
					—	—	—	—	—	—	—
	Dielectric strength	ASTM D 149	KV/mm	DRY	31	32	—	—	—	28	28
	Surface resistivity	ASTM D 257	Ω	DRY	10 ¹⁵	10 ¹⁵	—	—	—	10 ¹³	10 ¹³
Flammability	Volume resistivity	ASTM D 257	Ω·cm	DRY	10 ¹⁵	10 ¹⁵	—	—	—	—	—
	UL	UL 94		DRY	HB	HB	HB	—	HB	—	—
	Glow wire ignition (3mm)	IEC 60695 -2-1	°C	DRY	960	960	—	—	—	—	—
Mold shrinkage, 3mm t, para/perp to flow (Asahi Kasei)					%						
						0.4/0.9	0.3/0.7	0.3/0.8	0.4/0.9	0.2/0.5	0.2/0.5
Features					High toughness, Good appearance		Good appearance	Good appearance	High stiffness Good appearance	High stiffness Good appearance Weatherability	High stiffness Smooth surface Good weatherability
Typical uses					Fans, Railway parts		Office furnishings	Car pats	Office furnishings, Mechanical parts	Automotive exterior parts	

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Items					Special Grades						
					91G40	CR101	CR301	CR302	MR001	1330G	TR160
Physical property	Density	1183			1.46	1.45	1.48	1.52	1.52	1.48	1.11
	Equilibrium moisture content		%		1.3	1.5	1.5	1.4	1.5	1.4	1.9
Mechanical	Tensile stress at Yield	527	MPa	DRY	—	—	—	—	—	—	72
				WET	82	77	—	—	59	—	46
	Tensile strain at Yield	527	%	DRY	—	—	—	—	—	—	4.5
				WET	3.5	5.5	—	—	14	—	22
	Tensile stress at Break	527	MPa	DRY	125	100	85	140	93	144	64
				WET	78	76	59	92	58	107	—
	Tensile strain at Break	527	%	DRY	3	3	2	2	5.5	4	13
				WET	6	7	11	2.5	19	6	>100
	Tensile modulus	527	GPa	DRY	7.4	7.2	7	10	5.9	9.8	2.4
				WET	5.2	4.6	4.1	7.6	3.4	6.7	1.1
	Flexural strength	178	MPa	DRY	186	180	140	197	150	235	87
				WET	130	127	92	148	84	165	38
	Flexural modulus	178	GPa	DRY	6.8	6.5	7.4	9.8	5.8	8.7	2.1
				WET	4.9	4.1	4.1	7.1	3.1	6	1
	Charpy impact strength	179	Notched Un-notched	DRY	3/39	/50	3/51	4/38	3/62	10/71	20/NB
				WET	3/56	7/60	3/90	5/46	3/125	13/78	NB/NB
	Rockwell hardness	2039	scaleR/scaleM	DRY	120/89	120/94	/85	/90	120/85	120/89	114/
				WET	—	/74	—	—	108/60	108/60	98/
Thermal	Coefficient of linear thermal expansion (para to flow)	ASTM D 696	×10 ⁻⁵ /k		3	4	4	—	6	3	7
	Temperature of distortion under load	75	1.8MPa		183	232	188	247	118	246	64
			0.45MPa		220	252	249	260	229	261	209
Electrical property	Comparative tracking index	IEC 60112		DRY	—	—	—	—	—	—	—
	Dielectric strength	ASTM D 149	KV/mm	DRY	—	—	—	—	22	—	—
	Surface resistivity	ASTM D 257	Ω	DRY	—	—	—	—	10 ¹³	—	—
	Volume resistivity	ASTM D 257	Ω•cm	DRY	—	—	—	—	10 ¹⁴	—	—
Flammability	UL	UL 94		DRY	—	—	—	—	HB	HB	—
	Glow wire ignition(3mm)	IEC 60695 -2-1	°C	DRY	960	960	850	960	960	960	—
	Mold shrinkage, 3mm t, para/perp to flow	(Asahi Kasei)	%		0.7/0.8	0.5 - 1.1	0.5 - 1.3	0.5 - 1.0	1.0 - 1.1	0.5/1.0	1.7 - 2.2
Features					Smooth surface, Low warpage	High stiffness, Dimension stability, Low warpage	Low abrasion, Good elec. prop.	Low Abrasion, Good elec. prop.Soldering heat res.	High heat res., Low warpage	Low abrasion, low wear	Medium-impact
Typical uses					Automotive exterior parts	Engine covers	Slide switch, Insulators		Sockets	Bearings	Clips, Fasteners

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Test method (ISO) Items Units Grade					Special Grades	Flame-Retardant				
					TR380	FR200	FR370	FG170	FG172	FG173
Physical property	Density	1183			1.08	1.16	1.16	1.48	1.52	1.65
	Equilibrium moisture content		%		1.7	2.4	2.3	0.9	0.9	0.6
Mechanical	Tensile stress at Yield	527	MPa	DRY	53	75	83	—	—	—
				WET	35	44	55	—	—	—
	Tensile strain at Yield	527	%	DRY	5.5	3.5	4.5	—	—	—
				WET	28	24	22	—	—	—
	Tensile stress at Break	527	MPa	DRY	45	69	80	131	136	174
				WET	—	—	—	100	107	137
	Tensile strain at Break	527	%	DRY	15	10	15	2.5	2.5	2
				WET	>100	>100	>50	3.5	3	2
	Tensile modulus	527	GPa	DRY	1.9	3.5	3.6	7.5	9.1	11.7
				WET	0.7	1.1	1.6	5.7	6.6	10.5
	Flexural strength	178	MPa	DRY	73	117	124	188	208	259
				WET	30	37.2	54.1	146	152	188
	Flexural modulus	178	GPa	DRY	2	2.9	3.6	7.5	8	10.3
				WET	0.7	1	1.5	4.7	5	8.7
	Charpy impact strength	179	Notched Un-notched	DRY	90/NB	4/NB	4/58	6/44	7/64	11/50
				WET	NB/NB	11/NB	6/NB	5/45	11/62	10/52
	Rockwell hardness	2039	scaleR/scaleM	DRY	107/	118/80	120/85	/95	/95	/100
				WET	89/	90/	110/55	/55	/55	/60
Thermal	Coefficient of linear thermal expansion (para to flow)	ASTM D 696	$\times 10^{-5}/k$		11	8	7	3	3	3
	Temperature of distortion under load	75	1.8MPa 0.45MPa		58	62	78	240	240	245
					183	203	239	256	256	262
Electrical property	Comparative tracking index	IEC 60112		DRY	—	600	600	200	250	275
	Dielectric strength	ASTM D 149	KV/mm	DRY	—	19	22	27	28	28
	Surface resistivity	ASTM D 257	Ω	DRY	—	10^{13}	10^{13}	10^{14}	10^{14}	10^{14}
	Volume resistivity	ASTM D 257	$\Omega \cdot \text{cm}$	DRY	—	10^{14}	10^{14}	10^{15}	10^{15}	10^{15}
Flammability	UL	UL 94		DRY	—	V0	V0	V0	V0	V0
	Glow wire ignition(3mm)	IEC 60695 -2-1	°C	DRY	—	960	960	960	960	960
	Mold shrinkage, 3mm t, para/perp to flow (Asahi Kasei)		%		1.7 - 2.5	1.3 - 2.0	0.9 - 1.6	0.6/1.0	0.4/0.9	0.3/0.7
Features					High-impact	Halogen-free	Soldering heat res, Halogen-free	Halogen 15%GF	Halogen 20%GF	Halogen 30%GF
Typical uses					Canisters, Cable ties	Electrical and Electronic parts(Switches,Connectors)				

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