

Table of properties of E&E

Genestar™

Grade	Unit	Test method (ISO)	HB Grade				HB CMOS Grade		UL94 V-0 Grade						Halogen free & V-0 Grade		
			G1300H	G1350H	G1302	GW1458 HF	LA121	LC122	GR2300	GN2330	GN2450	GT2330	GN2332	GW2458 HF	GP2450 NH-2	GP2300F	GP2300T
Type			Standard	Standard	Abrasion resistance	Low warpage high flow	Standard	High strength	Standard	Standard	High strength	Toughness	High flow	Low warpage high flow	Standard	High flow	Toughness
Glass fiber content	%	—	30	35	30	45	35	50	30	33	45	33	33	45	45	30	30

Physical properties

Specific gravity	g/cm3	—	1.37	1.40	1.37	1.50	1.44	1.62	1.57	1.62	1.73	1.58	1.62	1.73	1.53	1.40	1.40
Water absorption (23°C in water, 24hrs)	%	ISO62	0.18	0.16	0.16	0.12	0.10	0.08	0.14	0.13	0.10	0.13	0.10	0.08	0.10	0.12	0.12
Flammability	—	UL94	HB	HB	HB	HB	HB	HB	V-0	V-0	V-0	V-0	V-0	V-0	V-0	V-0	V-0

Mechanical properties

Tensile strength	MPa	ISO527	151	167	154	157	97	83	175	184	200	199	157	159	150	113	130
Tensile elongation	%	ISO527	1.9	1.8	1.9	1.5	1.4	0.6	2.0	1.8	1.6	2.1	1.6	1.2	1.5	1.6	2.1
Flexural strength	MPa	ISO178	214	238	223	242	163	150	239	260	284	267	234	256	220	170	193
Flexural modulus	GPa	ISO178	9.0	10.2	8.8	12.8	8.6	15.0	10.8	11.5	15.4	11.2	11.9	15.6	13.9	9.6	9.3
Charpy impact test (notched)	kJ/m2	179/1eA	11.2	11.8	10.7	16.0	1.8	1.8	10.4	11.2	13.9	10.3	13.9	16.8	9.3	8.9	7.5

Flow properties

Bar-flow length (320°C/0.5mmt/750kgf)	mm	—	53	53	55	62	63	40	65	55	37	45	85	71	55	77	46
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Dimensional properties

Molding shrinkage :in direction of flow	%	ISO294-4	0.3	0.2	0.2	0.2	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3
(2mmt) :at right angles to flow	%	ISO294-4	1.0	0.9	0.9	0.7	1.0	0.8	0.8	0.8	0.6	1.0	0.8	0.5	0.7	1.0	1.0

* Test condition: Dry state

* These values show typical values which are not to be construed as specifications.

*'Halogen free' follows the standards that Br is less than 900ppm, Cl is less than 900ppm, and total of halogen amount (Br and Cl) is less than 1500ppm

Table of properties of LED

Genestar™

Grade	Unit	Test method	LED Grade				
			TA112	TA105	TA115	R480G	R270D
		(ISO)	standard				
Glass fiber content	%	—	15	0	10	0	15

Optical properties

As molded	%(460nm)	0.5mmt	97	99	98	99	98
Heat aging -170°C, 5hrs	%(460nm)	0.5mmt	93	97	96	94	93
UV light aging - UV light, 24hrs	%(460nm)	0.5mmt	83	92	92	98	96

Physical properties

Specific gravity	g/cm3	—	1.48	1.61	1.74	1.54	1.68
Water absorption (23°C in water, 24hrs)	%	ISO62	0.16	0.15	0.12	0.24	0.19
(40°C,95%RH, 96hrs)	%	—	1.6	1.6	1.3	2.0	1.6
Flammability	—	UL94	HB	HB	HB	HB	HB

Mechanical properties

Tensile strength	MPa	ISO527	83	61	61	69	47
Tensile elongation	%	ISO527	1.4	1.6	0.9	2.1	0.8
Flexural strength	MPa	ISO178	143	107	116	104	102
Flexural modulus	GPa	ISO178	6.2	4.3	6.5	3.8	6.2
Charpy impact test (notched)	kJ/m2	179/1eA	1.8	2.0	1.9	1.9	1.9

Flow properties

Bar-flow length (320°C/0.5mmt/750kgf)	mm	—	44	53	48	60 (340°C)	56 (340°C)
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Dimensional properties

Molding shrinkage :in direction of flow	%	ISO294-4	0.5	1.2	0.8	1.4	0.8
(2mmt) :at right angles to flow	%	ISO294-4	1.0	1.2	0.9	1.5	1.1

* Test condition: Dry state

* These values show typical values which are not to be construed as specifications.

*'Halogen free' follows the standards that Br is less than 900ppm, Cl is less than 900ppm, and total of halogen amount (Br and Cl) is less than 1500ppm