SolutionPartner

EP Division



LG Chem

Applications

LG Engineering Plastics

Product Portfolio

Polycarbonate	PC PC Compound, PC Alloy	**LUPOY**
Polyester	PBT, PBT Compound, PBT Alloy PBT/Styrenics Alloy	**LUPOX** **LUMAX**
Polyamide	PA Compound, PA Alloy	**LUMID** **LUXY**
Olefin	PP Compound	**LUPOL**
mPPO	PPO/HIPS, PPO/PA Alloy	**LUMILOY**
Styrenics	Reinforced ABS & SAN	**LUPOS**
Acetal	POM, POM Compound	**LUCEL**
TPE	TPEE (Ester Type Elastomer) TPO (Olefin Type Elastomer)	**KEYFLEX BT** **KEYFLEX TO**
Heat Resistant Resin	PPS & SPS Compound	**LUSEP**
Conductive Resin	ABS, PS, PC, mPPO, PPS Compound	**LUCON**
High Barrier Resin	Nanocomposite (PA, EVOH, etc.)	**HYPERIER**
Ecofriendly Resin	Biomass Based Compound	**LUCLEN**

1. Notebook PC





LCD Cover
LUPOY GN5151RFA
LUPOY GN5101RF
LUPOY ER5151RFA
LUPOY GN2253F (Slim Notebook)
LUPOY GN2403F (Slim Notebook)

LCD Bezel
LUPOY GN5001RFA
LUPOY SG5009F

Bottom Cover
LUPOY GN5151RFA
LUPOY ER5151RFA
LUPOY GN2253F (Slim Notebook)
LUPOY GN2403F (Slim Notebook)

Keyboard Deck
LUPOY GN5001RFA
LUPOY GN5101RF

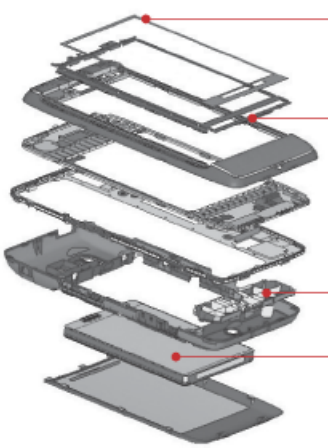


Battery Pack H'sg
LUPOY GN1008RF
LUPOY ER1008RF

2. Mobile phone



- **Front**
  LUPOY SC1004, GP2102
  LUPOY SC2152, SC2202
- **Rear**
  LUPOY GP2102,SC2152
  LUPOY SC2202, SC2302
  LUXY K3G55
- **Battery Cover**
  LUPOY SC1004
  LUPOY GP2102



Mold Frame
LUPOY SR3108F
LUPOY RF3208F

LCD Bracket
LUPOY SC2302
LUXY K3G55

Internal Antenna
LUPOY LS2302

Inner Battery Pack H'sg
LUPOY GN1002F
LUPOY GN1008RF

3. Display_TV

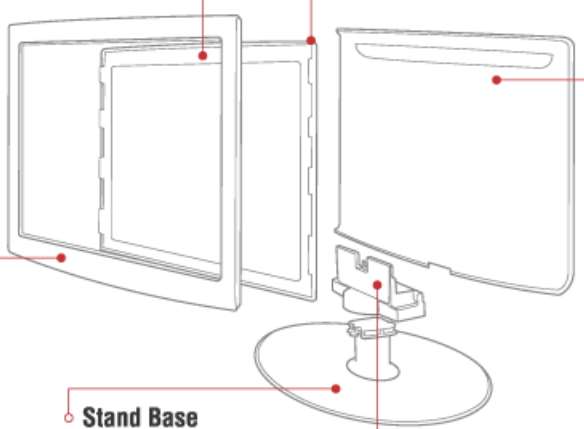


BLU Reflecter
LUPOY SR3108FC



BLU Frame
LUPOY GP1000LC
LUPOY GN2101F GN2151F
LUPOY GN2106F, GN5159F





Rear Cover
LUPOY GN5001RFT
LUPOY GN5001RFG
LUPOY GN5001RFP
LUPOY EF5001RFT
LUMILOY GN1306FJ



Front Cover
LUPOY GN5001RFT
LUPOY GN5001RFG
LUPOY GN5001RFP
LUPOY EF5001RFT



Stand Base
LUPOY GN5001RFT
LUPOY GN5001RFG
LUPOY GN5001RFP
LUPOY EF5001RFT
LUMILOY GP2250G



Stand Neck
LUPOY GN5001RFT
LUPOY GN5001RFG
LUPOY GN5001RFP
LUPOY EF5001RFT
LUMILOY GN1306FJ





4. OA

< Copier >



Upper Cover
LUPOY GN1006F
LUPOY GN5001RF

Inner Part [Paper Guide]
LUCON CP6051F

Copier Housing
LUPOY GN5001RF(J)

Inner Part
LUPOY GN5201F, GN2301F
LUPOS GP2200, GP2206F

< Projector >



Upper Cover
LUPOY EF1006FP

Lower Cover
LUPOY GN5007FP

< Laser Beam Printer >



Front Cover
LUPOY GN5001RFT

Housing
LUPOY GN5001RF(J,R,K)

Base/ Side Frame
LUPOY GN5201F, GN2351F
LUMILOY GN2206F(H), GN4356F

Inner Part
LUPOY GN5201F, GN2301F
LUPOS GP2206F, GP2050, GP2200

< Toner Cartridge >



Housing
LUPOY GN5001RF(J,R)
LUMILOY GN2206F



5. Home Appliance

< Washing Machine >

PCB Supporter
LUMILOY RF3206F



Out-Tub
LUPOL
(PP+MF+GF)





Steam Generator
LUCON SP9306FL



Door Window
LUPOY GP1000LP

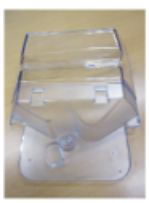


Insulator
LUPOX GP2306FI

Motor Bushing
LUPOX GP2300G

< Refrigerator >

Ice-maker Cover
LUPOY GP1000L







Cluster Cover
LUPOX GP2306F
LUMAX GP5106FI

< Air Conditioner >



Vein
LUPOS GP2300



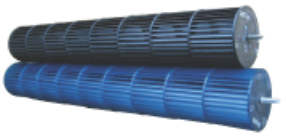


Out Door Fan
LUPOS GP2200
LUPOL LW4302



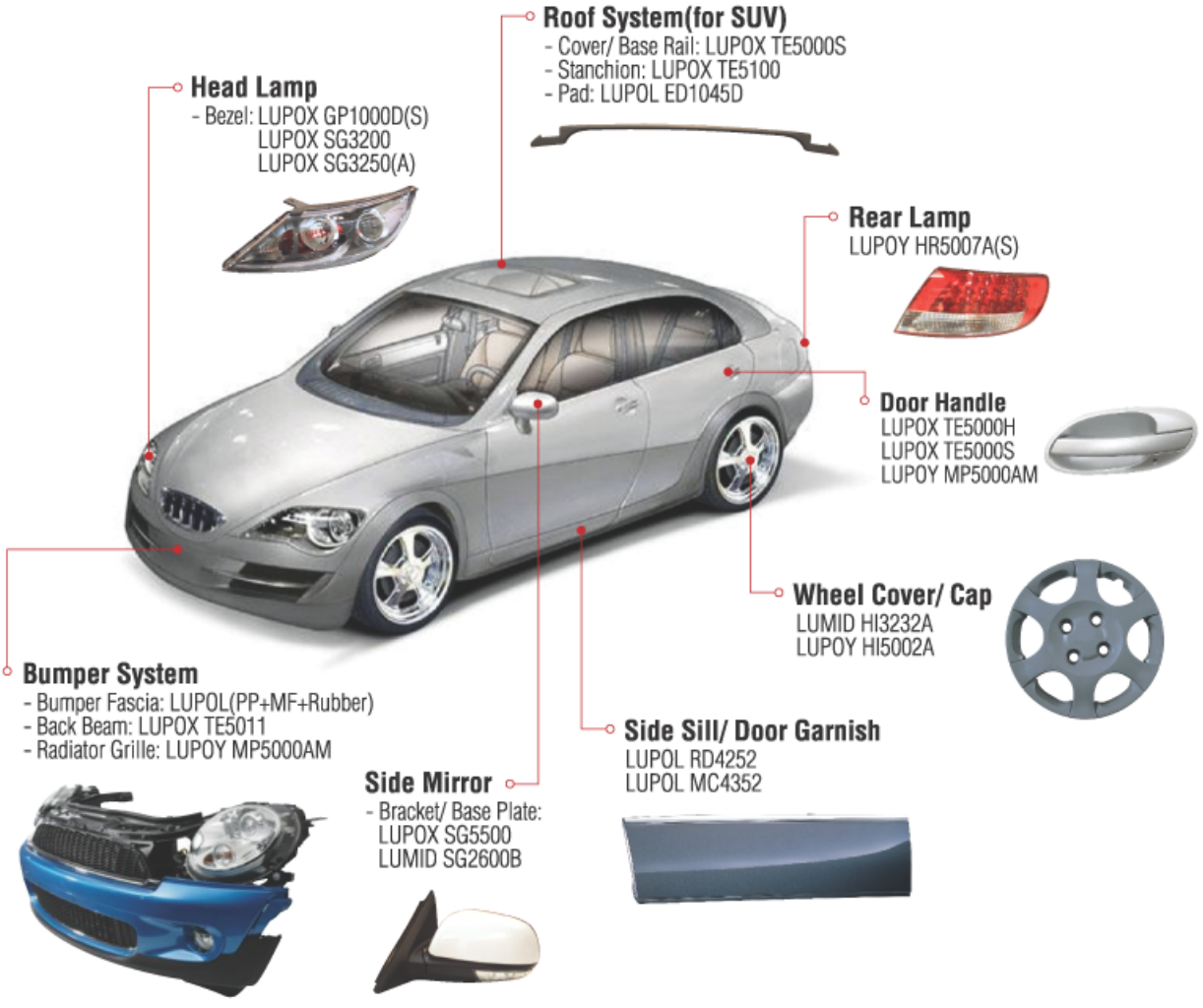


Blowing Fan
LUPOS GP2305A



6. Automotive

< Exterior >



< Interior >



Door
- Trim: LUPOL (PP+MF+Rubber)
- Handle: LUPOY MP5000AM



Console
- Box: LUPOL (PP+MF+Rubber)
- Cover: LUPOY NS5000(C)



Cluster
- Housing: LUPOY NS5000(C)
- Cover: LUPOY GP1000ML



Instrument Panel
- Core: LUPOL (PP+MF+Rubber)
- Skin: KEYFLEX TO1192A
- Airbag Cover: LUPOL ST5020



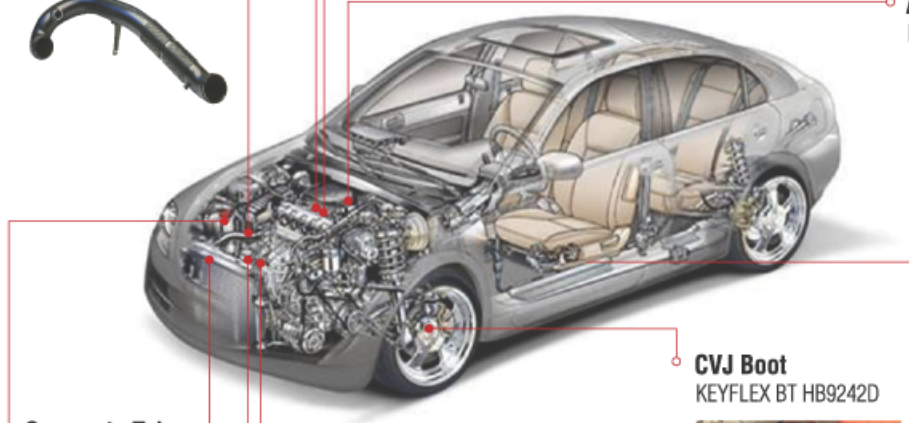
Center Fascia, Air Vent Duct
LUPOY NS5000C(U)



Airbag (DAB)
- Cover: KEYFLEX BT S5035
  LUPOL ST5010, ST5015
- Air Bag Plastic Housing: LUMID HI2402AW



< Underhood >



Cylinder Head Cover
LUMID LW4403B
LUMID GP2350B



Engine Cover
LUMID LW4203A
LUMID LW4383B



Air Intake Hose
KEYFLEX BT HB9255D

AIM(Air Intake Manifold)
LUMID GP2330A



Fuel Filler Neck
LUMID HI5001AH



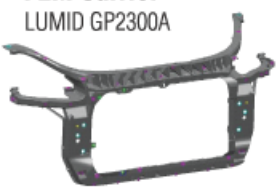
CVJ Boot
KEYFLEX BT HB9242D



Corrugate Tube
LUPOL GP1007FE



FEM Carrier
LUMID GP2300A



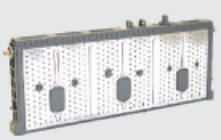
Fan & Shroud
LUMID SG4389B

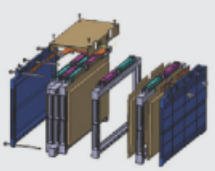


Radiator Tank
LUMID EG2309B



EV Battery Module Housing
LUMID GP3300BW
LUMILOY GP2100
LUMILOY GN2101F





7. Others



UPS
LUPOY GN5001RF



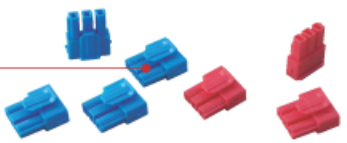
Smart Meter
LUPOY GN5001RFH



Helmet
LUPOY GP5006BH



Water Proof Connector
LUPOX HV1005S
LUPOX GP1000SB



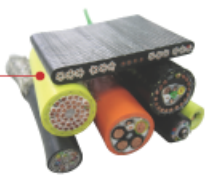
Connector Housing
LUPOX TE5006FH
LUPOX GP1000K(M)
LUPOX GP1000H
LUPOX GP2306F



Inline Skate
LUMID HI2302A



Rice Cooker
LUPOL HG3200SK2



Cable
KEYFLEX BT1140D
KEYFLEX BT1155D
KEYFLEX BT1172D



Modem
LUPOY GN5001RF



3D Glasses Frame
LUPOY GP1000LP



Camera Housing
LUPOY GN5001RF Series
LUPOY GP2000 Series
LUPOY GP1000 Series

Body Tube
LUPOY SG2000 Series



Properties_ ASTM Standard

LUPOY

PC, PC Compound, PC Alloy

LUPOY resins are the trade name of LG Chemical's high performance engineering resins based on polycarbonate.
A number of specific grades are available, including general grades, reinforced grades, and flame retardant grades.
Among the highly desirable characteristics of LUPOY resins are excellent mechanical properties, high heat resistance, high impact strength, and dimensional stability.

Properties		Unit	Test Method (ASTM)	PC										
				Unreinforced (General)										
				GP 1000M	GP 1000ML	GP 1000L	GP 1000SW	GP 1000LG	GP 1000LP	HI 1002ML	SC 1004A	SC 1004AU	SC 1004ML	SR 3108L
Physical														
Specific gravity		-	D792	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.25
Mold shrinkage		%	D955	0.5 ~ 0.8	0.5 ~ 0.8	0.5 ~ 0.7	0.5 ~ 0.8	0.4 ~ 0.6	0.5 ~ 0.7	0.5 ~ 0.7	0.5 ~ 0.7	0.5 ~ 0.7	0.5 ~ 0.8	0.5 ~ 0.8
Mechanical														
Tensile strength		kg/cm²	D638	630	630	630	620	740	630	580	560	550	570	550
Tensile elongation		%		130	130	100	130	50	70	120	130	130	130	100
Flexural strength		kg/cm²	D790	1,000	1,000	1,050	1,050	1,200	980	900	900	910	900	900
Flexural modulus		kg/cm²		23,000	23,000	24,000	23,000	27,000	21,500	23,000	21,000	21,500	22,000	23,000
Impact (Notched)	23°C	kg.cm/cm	D256	75	75	65	76	4.3	60	70	68	55	67	60
	(-30°C)			–	–	–	–	–	–	20	50	25	30	–
Rockwell hardness		M(R)	D785	118	115	118	118	–	–	117	117	118	117	117
Thermal														
Melt flow	250°C, 2.16Kgf	g/10min	D1238	–	–	–	–	–	–	–	–	–	–	–
	260°C, 5.0Kgf			–	–	–	–	–	–	–	–	–	–	–
	300°C, 1.2Kgf			11	17	22	13	32	30	13	12	19	12	25
HDT	18.6Kg/cm²	°C	D648	130	132	130	132	–	130	130	130	125	130	124
	4.6Kg/cm²			–	–	–	–	105	–	–	–	–	–	–
Flammability														
UL94		class (mm)	UL94	HB (1.5mm, 3.2mm)	HB (1.5mm, 3.2mm)	HB (1.5mm, 3.2mm)	HB (1.5mm, 3.2mm)	HB (1.5mm, 3.2mm)	HB (1.5mm, 3.2mm)	HB(1.5mm) V2(3.0mm)	HB (0.7mm)	HB (0.7mm)	HB (0.7mm)	–
Characteristic														
				General Medium viscosity Transparent	General Medium viscosity Transparent	High flow Transparent	High flow	Low Tg High flow	Transparent	Chemical resistance High impact	Chemical/ Impact (at low temp.) resistance	Impact resistance Weather-ability	Chemical/ Impact resistance Coloring	Light reflection

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Properties		Unit	Test Method (ASTM)	PC										
				Unreinforced (Flame Retardant)										
				GN 1001F	GN 1002FC	GN 1002FH	GN 1002FL	GN 1006FM	GN 1006FL	GN 1006FT	GN 1008RF	GP 1006FM	GP 1006FL	EF 1006F
Physical														
Specific gravity		-	D792	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
Mold shrinkage		%	D955	0.4 ~ 0.6	0.5 ~ 0.8	0.5 ~ 0.8	0.5 ~ 0.8	0.5 ~ 0.7	0.5 ~ 0.7	0.5 ~ 0.8	0.5 ~ 0.7	0.5 ~ 0.7	0.5 ~ 0.7	0.5 ~ 0.7
Mechanical														
Tensile strength		kg/cm²	D638	730	600	630	620	630	630	630	610	630	630	630
Tensile elongation		%		50	80	100	100	100	100	100	100	150	150	100
Flexural strength		kg/cm²	D790	1,190	950	980	940	930	930	930	930	930	930	970
Flexural modulus		kg/cm²		27,000	22,000	22,000	23,400	23,000	23,000	23,000	24,000	23,000	23,000	23,000
Impact (Notched)	23°C	kg.cm/cm	D256	4	67	72	60	73	65	60	80	73	65	70
	(-30°C)			–	–	–	–	–	–	–	–	–	–	–
Rockwell hardness		M(R)	D785	–	–	–	117	118	118	118	–	118	118	118
Thermal														
Melt flow	250°C, 2.16Kgf	g/10min	D1238	–	–	–	–	–	–	–	–	–	–	–
	260°C, 5.0Kgf			–	–	–	–	–	–	–	–	–	–	–
	300°C, 1.2Kgf			32	16	13	25	10	22	30	18	11	22	12
HDT	18.6Kg/cm²	°C	D648	97	115	118	115	130	130	130	101	130	130	130
	4.6Kg/cm²			–	–	–	–	–	–	–	–	–	–	–
Flammability														
UL94		class (mm)	UL94	V-0 (1.0mm, 3.0mm)	V-0 (1.5mm, 2.0mm) 5VB (2.0mm)	V-0 (1.5mm, 2.0mm) 5VB (2.0mm)	V-0 (1.5mm, 2.0mm) 5VB (2.0mm)	V-2 (1.5mm) V-1 (2.0mm) V-0 (2.5mm, 3.0mm)	V-2 (1.5mm) V-1 (2.0mm) V-0 (2.5mm, 3.0mm)	V-2 (1.5mm) V-1 (2.0mm) V-0 (2.5mm, 3.0mm)	V-2 (0.4mm) V-0 (0.6mm, 0.8mm, 3.0mm)	V-0 (1.0mm, 1.5mm, 2.5mm, 3.0mm) 5VA (2.5mm, 3.0mm)	V-0 (1.0mm, 1.5mm, 2.5mm, 3.0mm) 5VA (2.5mm, 3.0mm)	V-0 (1.0mm, 1.5mm, 1.7mm, 3.0mm) 5VB (1.7mm) 5VA (2.5mm)
Characteristic														
				Translucent	Halogen free	Heat/ Impact resistance Halogen free	High flow Halogen free	Transparent Non-P,Br,Cl	Transparent Non-P,Br,Cl	High flow Transparent Non-P,Br,Cl	High flame retardant Heat resistance	Translucent	Translucent Low viscosity	Translucent Non-P,Br,Cl

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Application

• **Automotive**	Automotive Front Ends, Cluster Pad Main Panel(Instrument Panel), Lower Cluster Pad Main, Console Box, Glove Box Cover, Door, Wheel Cover & Cap, Defroster Grille, Back Mirror HSG
• **Electrical/ Electronic**	Monitor HSG, Fax HSG, Notebook PC HSG, Cellular Phone Case, Fax & Copy Machine Frame, CD ROM Drive Tray and Main Frame, Relay Case, Connector, Switch
• **Industrial/ Mechanical**	Helmet, Terminal Box, Electrical Tool HSG, Industrial Bobbin, Distributing Board Box, Power Tool Component, Gears and Cams, Water Meter HSG

PC														
Reinforced (General/ Flame Retardant)														
SR 3108FC	**SR 3108FM**	**RF 3208F**	**GP 2100**	**GP 2200**	**GP 2300**	**GP 2102**	**SC 2152**	**SC 2202**	**SC 2302**	**LS 2302**	**SC 3154**	**GN 2101F**	**GN 2201FM**	**GN 2301F**
1.25	1.25	1.37	1.25	1.35	1.43	1.25	1.29	1.35	1.43	1.46	1.30	1.25	1.35	1.43
0.5 ~ 0.8	0.5 ~ 0.8	0.5 ~ 0.8	0.2 ~ 0.4	0.2 ~ 0.4	0.1 ~ 0.3	0.2 ~ 0.4	0.1 ~ 0.3	0.1 ~ 0.3	0.1 ~ 0.3	0.1 ~ 0.3	0.4 ~ 0.5	0.2 ~ 0.4	0.1 ~ 0.3	0.1 ~ 0.3
550	590	550	800	1,000	1,200	550	550	925	1,100	900	480	780	1,100	1,200
90	120	70	–	–	–	20	10	–	–	–	20	–		–
900	950	950	1,200	1,600	1,800	1,100	970	1,500	1,700	1,400	880	1,250	1,700	1,800
23,000	25,000	26,000	36,000	55,000	75,000	33,000	42,000	46,000	70,000	62,000	31,000	36,000	55,000	75,000
50	65	35	7	10	11	28	22	19	18	9	18	8	11	11
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
117	117	–	124	122	120	124	122	122	120	–	123	124	122	120
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
18	15	38	13	9	12	9	5	5	12 (2.16kg)	16	11	8	7	5
120	127	120	140	140	140	137	137	144	140	125	137	138	142	145
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
V-1 (0.85mm) V-0 (1.5mm, 3.0mm)	V-1 (0.85mm) V-0 (1.5mm, 3.0mm)	V-0 (1.6mm)	–	V-2 (1.5mm, NC, BK)	–	HB (0.75mm)	HB (0.75mm, 3.0mm)	HB (0.75mm, 3.0mm)	HB (0.75mm, 3.0mm)	–	HB (1.7mm)	V-0 (1.5mm, 3.0mm) 5VA (3.0mm)	V-0 (1.5mm, 3.0mm) 5VA (3.0mm)	V-0 (1.5mm, 3.0mm) 5VA (3.0mm)
Light reflection Halogen free	Light reflection Halogen free	High reflection Halogen free	General	General	General	Chemical/ Impact resistance Toughness	Chemical/ Impact resistance Toughness	Chemical/ Impact resistance	Chemical/ Impact resistance	Laser active	Low warpage Chemical/ Impact resistance	Halogen free	Halogen free	Halogen free

Properties		Unit	Test Method (ASTM)	PC			PC/ ABS Alloy							
				Reinforced (General/ Flame Retardant)			Unreinforced (General)							
				GN 2351F	GN 2253F	GN 2403F	EC 5000A	GP 5006B	GP 5006BH	GP 5008A	HG 5000B	HI 5002A	HP 5004	HP 5004A
Physical														
Specific gravity		-	D792	1.47	1.39	1.53	1.18	1.14	1.14	1.10	1.14	1.11	1.14	1.14
Mold shrinkage		%	D955	0.2 ~ 0.4	0.1 ~ 0.3	0.1 ~ 0.2	0.4 ~ 0.6	0.5 ~ 0.8	0.5 ~ 0.8	0.5 ~ 0.8	0.5 ~ 0.8	0.5 ~ 0.8	0.4 ~ 0.6	0.5 ~ 0.7
Mechanical														
Tensile strength		kg/cm²	D638	1,300	1,100	1,400	500	570	580	400	610	560	560	600
Tensile elongation		%		–	–	–	40	100	100	–	100	70	100	130
Flexural strength		kg/cm²	D790	1,800	1,600	2,200	840	920	930	610	930	860	900	900
Flexural modulus		kg/cm²		87,000	75,000	120,000	22,000	23,000	23,000	17,000	23,000	21,000	23,000	21,000
Impact (Notched)	23°C	kg.cm/cm	D256	8	10	10	45	58	72	46	56	57	60	65
	(-30°C)			–	–	–	–	30	55	–	–	–	45	50
Rockwell hardness		M(R)	D785	–	–	–	–	114	116	–	116	–	111	113
Thermal														
Melt flow	250°C, 2.16Kgf	g/10min	D1238	–	–	–	9	6	3.3	2	7.5	8	5	4
	260°C, 5.0Kgf			–	–	–	–	–	–	–	–	–	–	–
	300°C, 1.2Kgf			–	–	–	–	–	–	–	–	–	–	–
HDT	18.6Kg/cm²	°C	D648	140	94	100	–	114	116	91	114	104	112	118
	4.6Kg/cm²			–	–	–	97	–	–	–	–	–	–	–
Flammability														
UL94		class (mm)	UL94	V-0 (1.5mm, 3.0mm) 5VA (3.0mm)	V-0 (0.8mm, 1.0mm, 3.0mm)	V-0 (0.8mm, 1.0mm, 3.0mm)	HB (1.5mm)	–	–	–	HB (1.5mm)	HB (1.5mm)	HB (0.7mm)	HB (0.7mm)
Characteristic														
				High stiffness Halogen free	High stiffness Low warpage Good surface	High stiffness Low warpage Good surface	Anti-static	General	High impact Good toughness	General	High gloss High flow	General	High flow Impact resistance	Good weld property Impact resistance

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PC/ ABS Alloy													
Unreinforced (General)										Unreinforced (Non-Halogen Flame Retardant)			
HR 5006A	HR 5007A	HR 5007AE	HR 5007AS	MP 5000AM	NS 5000	NS 5000C	NS 5000CU	EU 5000G	EU 5000GA	GN 5001RF	GN 5001RFD	GN 5001RFG	GN 5001RFH
1.13	1.14	1.13	1.14	1.10	1.14	1.14	1.15	1.14	1.16	1.18	1.18	1.18	1.19
0.5 ~ 0.8	0.5 ~ 0.8	0.5 ~ 0.8	0.5 ~ 0.8	0.5 ~ 0.8	0.5 ~ 0.8	0.5 ~ 0.8	0.5 ~ 0.8	0.5 ~ 0.7	0.5 ~ 0.7	0.4 ~ 0.6	0.4 ~ 0.6	0.4 ~ 0.5	0.4 ~ 0.6
550	580	550	610	470	580	540	540	550	550	600	600	670	640
100	100	100	100	100	100	100	90	100	100	50	50	30	80
850	840	880	940	730	880	870	870	805	800	900	950	970	950
22,500	22,000	23,000	23,000	19,500	23,000	22,000	22,000	21,000	21,500	25,000	26,000	26,000	27,000
65	65	63	60	50	73	70	60	55	60	40	60	45	62
50	50	45	–	–	55	55	20	15	17	–	–	–	–
111	114	115	116	–	–	–	–	–	–	113	–	–	113
4.3	5.3	5.5	6.7	5.5	5.5	4.8	5.1	5	4.4	16	18	20	15
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
108	113	108	116	98	114	114	115	110	118	–	–	–	–
–	–	–	–	–	–	–	–	–	–	92	94	95	103
HB (1.6mm)	HB (1.6mm)	HB (1.6mm)	–	HB (1.5mm)	–	–	–	–	–	V-0 (1.2mm)	V-0 (1.0mm) V-2 (0.85mm)	V-0 (1.2mm)	V-0 (1.2mm)
High impact High heat resistance	High impact High heat resistance	High impact High heat resistance	High gloss High flow	Metal plating	High flow Heat/ Impact resistance	High flow Heat/ Impact resistance	Lightfast	Lightfast Low gloss	Lightfast Low gloss	General	Impact resistance Good flame retardant	High gloss	High heat resistance Impact resistance

Properties		Unit	Test Method (ASTM)	PC/ ABS Alloy										
				Unreinforced (Non-Halogen Flame Retardant)								Unreinforced (Flame Retardant)		
				GN 5001RFJ	GN 5001RFP	GN 5001RFT	EF 5001RFT	GN 5007FL	GN 5008HF	SG 5009F	SG 5009FA	EC 5000AF	GP 5006AF	GP 5008BF
Physical														
Specific gravity		-	D792	1.18	1.18	1.19	1.19	1.19	1.18	1.18	1.18	1.18	1.17	1.18
Mold shrinkage		%	D955	0.4 ~ 0.6	0.5 ~ 0.7	0.5 ~ 0.7	0.4 ~ 0.8	0.5 ~ 0.8	0.4 ~ 0.6	0.4 ~ 0.6	0.3 ~ 0.5	0.4 ~ 0.6	0.5 ~ 0.8	0.4 ~ 0.6
Mechanical														
Tensile strength		kg/cm²	D638	600	670	580	580	630	600	680	680	530	520	550
Tensile elongation		%		80	80	20	30	100	50	–	–	50	–	50
Flexural strength		kg/cm²	D790	950	1,000	970	950	1,020	860	1,050	1,050	870	800	840
Flexural modulus		kg/cm²		27,000	28,000	26,000	25,000	23,500	25,000	28,500	28,500	25,000	22,000	24,000
Impact (Notched)	23°C	kg.cm/cm	D256	35	12	53	50	75	35	5	8.5	50	45	60
	(-30°C)			–	–	–	–	–	–	–	–	–	–	–
Rockwell hardness		M(R)	D785	113	–	–	–	–	113	–	–	–	108	113
Thermal														
Melt flow	250°C, 2.16Kgf	g/10min	D1238	14	20	28	20	–	18	15	20	11	6	5
	260°C, 5.0Kgf			–	–	–	–	30	–	–	–	–	–	–
	300°C, 1.2Kgf			–	–	–	–	–	–	–	–	–	–	–
HDT	18.6Kg/cm²	°C	D648	–	–	–	–	–	–	–	–	–	104	112
	4.6Kg/cm²			92	110	85	94	119	88	90	94	98	–	–
Flammability														
UL94		class (mm)	UL94	V-0 (1.2mm)	V-0 (1.2mm)	V-0 (1.2mm)	V-0 (1.6mm, 3.2mm)	V-0 (1.5mm)	V-0 (2.5mm)	V-0 (1.6mm)	V-0 (1.2mm)	V-2 (1.6mm)	V-0 (1.7mm) 5VA (3.0mm)	V-0 (1.5mm) 5VA (3.0mm)
Characteristic														
				High heat resistance Impact resistance	High heat resistance High gloss	High flow High impact High gloss	Eco-label	High heat resistance High impact High flow	Ultra high flow	Scratch resistance High gloss	Scratch resistance High gloss	Anti-static Flame retardant	High flow	Impact resistance

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PC/ ABS Alloy										Eco Friendly			
Unreinforced (Flame Retardant)	Reinforced (General/ Flame Retardant)									PC		PC/ ABS	
GP 5008BFH	GP 5100	GP 5200	GP 5300	GN 5101RF	GN 5151RFA	GN 5201F	GP 5056F	GP 5106F	GP 5206F	ER 1004A	ER 1008RF	ER 5001RF	ER 5001RFA
1.18	1.20	1.30	1.38	1.21	1.27	1.36	1.20	1.25	1.35	1.20	1.19	1.18	1.18
0.4 ~ 0.6	0.3 ~ 0.4	0.1 ~ 0.3	0.1 ~ 0.3	0.3 ~ 0.5	0.2 ~ 0.4	0.2 ~ 0.4	0.35 ~ 0.55	0.2 ~ 0.4	0.3	0.5 ~ 0.7	0.5 ~ 0.7	0.4 ~ 0.6	0.4 ~ 0.6
560	900	950	1,050	590	600	1,050	715	670	950	540	610	600	620
80	–	–	–	–	–	–	–	–	–	100	100	–	–
910	1,400	1,400	1,700	980	1,050	1,500	1,150	1,100	1,400	850	950	950	990
24,500	49,000	54,000	75,000	31,000	44,000	60,000	34,000	40,000	58,000	21,000	25,000	26,000	26,000
55	10	10	10	25	6.5	11	5.5	7	7	65	80	50	50
–	–	–	–	–	–	–	–	–	–	45	–	–	–
113	–	116	115	–	–	–	–	–	117	–	–	–	–
–	–	–	–	7	8	11	–	4	7	–	–	18	18
22	–	3	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	12	20	–	–
123	121	116	118	–	89	105	110	113	120	130	101	–	–
–	–	–	–	96	–	–	–	–	–	–	–	92	94
V-0 (2.5mm)	–	–	–	V-0 (0.75mm)	V-0 (1.0mm)	V-0 (1.5mm) 5VB (2.0mm)	V-0 (2.5mm)	V-0 (1.7mm)	V-0 (1.7mm)	HB (1.5mm)	V-0 (0.6mm) V-2 (0.4mm)	V-0 (1.2mm)	V-0 (1.2mm)
Impact resistance High heat resistance	Dimensional stability	Dimensional stability High stiffness	High stiffness	High flame retardant Stiffness	High stiffness Halogen free Flame retardant	Halogen free Flame retardant	Flame retardant	Flame retardant	Flame retardant	PCR 30% High impact	EPEAT High flame retardant Impact resistance	EPEAT	EPEAT

LUPOX

PBT, PBT Compound, PBT Alloy, Polyester

LUPOX resins are thermoplastic polyester resins which are based on polybutylene terephthalate(PBT).
They are semi-crystalline thermoplastics with many excellent properties including high strength, rigidity and good resistance to fatigue and creep at elevated temperatures.
Futhermore, LUPOX resins show minimal moisture absorption, excellent electrical properties, plus good resistance against water, weak acid and many solvents.

Properties		Unit	Test Method (ASTM)	General										
				SV 1080	SV 1120M	GP 1000D	GP 1000DS	GP 1000H	GP 1000M	HV 1010	GP 1000S	HV 1005S	GP 1000K	GP 1000KM
Physical														
Specific gravity		-	D792	1.31	1.31	1.30	1.31	1.28	1.28	1.31	1.31	1.30	1.30	1.29
Mold shrinkage		%	D955	1.2 ~ 2.1	1.2 ~ 2.1	1.6 ~ 1.9	1.9 ~ 2.1	1.2 ~ 2.0	1.2 ~ 2.0	1.2 ~ 2.0	1.2 ~ 2.0	1.2 ~ 2.0	1.2 ~ 2.0	1.2 ~ 2.0
Mechanical														
Tensile strength		kg/cm²	D638	550	550	600	580	480	470	550	600	510	510	440
Tensile elongation		%		>150	>200	40	>100	>100	>100	>100	30	>100	>50	>50
Flexural strength		kg/cm²	D790	850	850	920	860	700	720	850	800	750	750	650
Flexural modulus		kg/cm²		23,000	25,000	26,900	25,500	20,000	20,000	23,000	25,000	21,000	22,000	18,500
Izod impact strength	23°C	kg.cm/cm	D256	3.5	4	3.7	3.4	5.5	5	3.5	3.5	4.5	4.6	6.0
	(-30°C)			–	–	–	–	–	–	–	–	–	–	–
Rockwell hardness		M(R)	D785	(115)	(115)	–	–	(118)	–	–	(115)	–	–	–
Thermal														
Melt flow rate	250°C, 2.16Kgf	g/10min	D1238	15	10	–	–	45	35	–	30	–	57	58
HDT	18.6Kg/cm²	°C	D648	57	57	61	60	54	54	57	58	54	58	56
	4.6Kg/cm²			154	154	170	170	154	154	154	155	154	–	–
Flammability														
Flammability		class (mm)	UL94	HB (0.74mm)	–	HB (0.71mm)	HB (0.71mm)	HB (0.71mm)	HB (0.71mm)	HB (0.81mm)	HB (0.71mm)	–	HB (0.71mm)	HB (0.71mm)
Electrical														
Dielectric strength		kv/mm	D149	–	–	23	23	23	23	23	23	–	23	23
Volume resistivity		Ω.cm	D257	–	–	1.0E+17	1.0E+17	1.0E+17	1.0E+17	1.0E+17	1.0E+17	–	1.0E+17	1.0E+17
Characteristic														
				High viscosity	High viscosity	Surface gloss	Surface gloss	Low viscosity Impact modified	Impact modified	Medium viscosity	Medium viscosity	Impact modified	High flow	High flow Impact modified

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Application

• **Automotive**	Back Beam, Door Frame Garnish, Distributor Cap, Rotor Arm, Head Lamp Actuator, Bezel, Door Handle, Ignition Components, Connector, Speed Control Device, Window Drive System
• **Electrical/ Electronic**	Relay, Lamp Socket, Solenoid and Transformer Bobbin, Timer Case, Focus Pack, Refrigerator Muffler, Keytop, Condenser, Switch, Connector, Electronic Range Door Latch, Aircon Frame and Blade, PC Inlet Socket
• **Industrial Parts/ Household Appliance**	Pump Case, Oven Handle, Toaster and Cooker Housing, Gear, Insulator Support and Bracket, Telecommunication Cable Splice Closure, Water Meter Housing, Loose Tube

Flame Retardant	Reinforced								Reinforced Flame Retardant		
GP 1006FD	GP 2100	GP 2150	GP 2200	GP 2300	GP 2300G	GP 2300R	HI 2100M	HI 2152	GP 2056F	GP 2156F	GP 2306F
1.42	1.37	1.41	1.44	1.52	1.52	1.53	1.37	1.39	1.47	1.52	1.62
1.2 ~ 2.0	0.6 ~ 1.2	0.4 ~ 1.1	0.4 ~ 1.1	0.3 ~ 0.9	0.4 ~ 1.0	0.4 ~ 1.0	0.7 ~ 1.1	0.7 ~ 1.1	0.5 ~ 1.2	0.4 ~ 1.0	0.3 ~ 1.0
520	800	950	1,100	1,200	1,200	1,250	760	850	600	980	1,300
>50	4	4	4	3	3	3	5	3	4	4	3
730	1,300	1,500	1,600	1,800	1,800	1,850	1,200	1,250	1,000	1,520	1,900
23,000	43,000	50,000	64,000	78,000	78,000	80,000	39,000	42,000	38,000	58,000	85,000
6	3.5	5	6	7.5	7.5	8	4.3	5.5	3	5.4	8
–	–	–	–	–	–	–	–	–	–	–	–
(118)	–	90	–	91	91	–	–	–	–	90	92
–	–	–	–	–	–	–	–	–	–	–	–
62	185	200	200	210	210	210	185	197	130	200	210
165	210	210	210	216	215	215	200	205	190	210	215
V-0 (0.71mm)	HB (0.71mm)	HB (0.71mm)	HB (0.71mm)	HB (0.71mm)	HB (0.71mm)	HB (0.71mm)	–	–	V-0 (0.71mm)	V-0 (0.71mm)	V-0 (0.71mm)
20	23	25	23	23	23	23	–	–	23	26	28
1.0E+13	1.0E+16	1.0E+17	1.0E+16	1.0E+16	1.0E+16	1.0E+16	–	–	1.0E+16	1.0E+17	1.0E+17
Flame retardant Impact modified	General	General	General	General	HCFC resistance	Hydrolysis resistance	Impact modified	Impact modified	Flame retardant	Flame retardant	Flame retardant

Properties		Unit	Test Method (ASTM)	Reinforced Flame Retardant				General PBT Alloy					
				GP 2306FC	GP 2306FI	GP 2306FY	NH 2306F	HI 2303	LW 5300M	SG 3250	SG 3250A	SG 3200	SG 5150
Physical													
Specific gravity		-	D792	1.62	1.62	1.66	1.57	1.44	1.52	1.54	1.52	1.48	1.43
Mold shrinkage		%	D955	0.3 ~ 1.0	0.3 ~ 1.0	0.3 ~ 1.0	0.3 ~ 1.0	0.3 ~ 1.0	0.7 ~ 0.9	1.0 ~ 1.4	1.0 ~ 1.4	1.3 ~ 1.5	0.4 ~ 1.0
Mechanical													
Tensile strength		kg/cm²	D638	1,300	1,200	1,100	1,000	950	590	550	530	500	950
Tensile elongation		%		3	3	4	3	3	3	3	3	4	4
Flexural strength		kg/cm²	D790	1,900	1,900	1,600	1,530	1,600	990	950	900	860	1,500
Flexural modulus		kg/cm²		85,000	85,000	100,000	85,000	65,000	54,000	52,000	50,000	47,000	50,000
Izod impact strength	23°C	kg.cm/cm	D256	7	7	7	6	14	4	3	3	3	4
	(-30°C)			–	–	–	–	–	–	–	–	–	–
Rockwell hardness		M(R)	D785	–	–	–	–	(115)	(90)	(85)	–	–	–
Thermal													
Melt flow rate	250°C, 2.16Kgf	g/10min	D1238	–	–	–	–	–	–	–	–	–	–
HDT	18.6Kg/cm²	°C	D648	205	205	205	210	160	115	105	105	106	190
	4.6Kg/cm²			215	215	215	215	190	165	200	200	196	200
Flammability													
Flammability		class (mm)	UL94	V-0 (0.71mm)	V-0 (0.71mm)	V-0 (0.71mm)	V-0 (0.8mm)	–	–	–	–	–	HB (1.5mm)
Electrical													
Dielectric strength		kv/mm	D149	28	28	28	–	–	–	–	–	–	–
Volume resistivity		Ω.cm	D257	1.0E+17	1.0E+17	1.0E+17	–	–	–	–	–	–	–
Characteristic													
				Flame retardant	Flame retardant Impact modified	Flame retardant GWIT	Halogen free Flame retardant	Impact modified	Low warpage	Surface smoothness	Surface smoothness	Surface smoothness	Surface gloss

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General PBT Alloy										Flame Retardant PBT Alloy			
SG 5200	SG 5300	SG 5500	TE 5000D	TE 5000G	TE 5000GU	TE 5000H	TE 5000S	TE 5011	TE 5100	LW 5303F	TE 5006FH	HI 1002F	HI 1006FA
1.45	1.54	1.72	1.28	1.21	1.21	1.22	1.21	1.22	1.29	1.55	1.31	1.33	1.30
0.4 ~ 1.0	0.4 ~ 1.0	0.3 ~ 0.9	1.2 ~ 1.5	0.7 ~ 0.8	0.7 ~ 0.8	0.7 ~ 0.8	0.7 ~ 0.8	0.7 ~ 1.0	0.7 ~ 1.0	0.3 ~ 0.9	0.6 ~ 1.0	0.9 ~ 1.3	0.9 ~ 1.3
1,000	1,200	1,600	580	570	600	610	600	480	830	1,250	620	500	520
3	3	2	>50	>100	>100	>100	>100	>100	6	3	>100	>50	>50
1,550	1,850	2,400	1,000	900	900	850	880	700	1,300	1,900	920	740	800
58,000	80,000	140,000	23,000	20,000	20,000	22,000	23,000	19,000	39,000	80,000	24,000	20,000	21,500
5.5	7.5	9	4	70	80	60	75	NB	7	7.5	8	70	80
–	–	–	–	–	–	15	15	30	–	–	–	–	–
90	–	–	–	(112)	–	(110)	–	(109)	–	91	(110)	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
200	205	205	–	100	103	100	105	90	110	190	110	90	90
210	215	–	130	115	117	115	115	110	–	200	–	–	–
HB (1.5mm)	HB (1.5mm)	–	–	–	–	–	–	–	–	V-0 (0.71mm)	V-0 (0.75mm)	V-0 (0.75mm)	V-0 (1.5mm)
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
Surface gloss	Surface gloss	Surface gloss High stiffness	Surface gloss	Impact modified UV resistance	Impact modified UV resistance	Impact modified UV resistance	Impact modified UV resistance	Impact modified	High stiffness	Low warpage Flame retardant	Flame retardant GWIT CTI	Flame retardant Impact modified	Flame retardant Impact modified

LUMAX

PBT/ Styrenics Alloy

LUMAX resins are a family of thermoplastic blends of polybutylene terephthalate(PBT) and styrenic resins that combine the most desirable properties of both resins and fillers. They offer high heat resistance, impact resistance and processability requirements of a wide range of applications.

Application

• ***Automotive***	Roof Molding, Instrument Panel, Cowl Vent Grill, Speaker Frame, Lamp Parts, Glove Box Housing
• ***Electrical/ Electronic***	Household Appliances Housing and Internal Parts, Key Top, Switch, Compressor Terminal Board, CD Changer, Deck Items, Electric Tool Housing
• ***Industrial Parts/ Household Appliance***	Lawn Mower Housing, Motor Housing, Pump Impeller

Properties		Unit	Test Method (ASTM)	PBT/ ABS Alloy					
				HR5107	HR5157	GP5200B	GN5006FC	GP5106FI	GP5306F
Physical									
Specific gravity		-	D792	1.25	1.33	1.35	1.05	1.40	1.50
Mold shrinkage		%	D955	0.4 ~ 0.9	0.4 ~ 0.9	0.4 ~ 0.9	0.5 ~ 0.7	0.4 ~ 0.9	0.4 ~ 0.9
Mechanical									
Tensile strength		kg/cm²	D638	670	790	950	480	570	1,100
Tensile elongation		%		4	3	3	13	3	3
Flexural strength		kg/cm²	D790	1,000	1,300	1,450	720	850	1,650
Flexural modulus		kg/cm²		35,000	45,000	58,000	23,000	30,000	80,000
Izod impact strength	23°C	kg.cm/cm	D256	7	8	6.5	15	6	7.5
Rockwell hardness		R	D785	–	108	110	107	108	110
Thermal									
HDT	18.6Kg/cm²	°C	D648	107	175	160	80	130	180
	4.6Kg/cm²			–	–	195	–	–	200
Flammability									
Flammability		class (mm)	UL94	HB	HB	–	V-2 (1.2mm)	V-0 (1.5mm)	V-0 (1.5mm)
Electrical									
Dielectric strength		kv/mm	D149	21	21	–	–	26	26
Volume resistivity		Ω.cm	D257	1.00E+15	1.00E+15	–	–	1.00E+15	1.00E+15
Characteristic									
				Heat resistance	Heat resistance	General	Halogen free Flame retardant	Flame retardant Impact modified	Flame retardant

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LUMID

PA Compound, PA Alloy

LUMID is the trade name of PA6, PA66 and Copolymer Engineering Plastics developed by LG Chem.
It can offer an excellent balance and processing for engineering parts design and development.
It is widely used for Automotive, Electrical/ Electronics and Industrial machinary applications.

Properties		Unit	Test Method (ASTM)	PA6											
				Unreinforced		GF Reinforced									
				GP 1100AW	GN 1001AF	GP 2200AW	GP 2300AW	GP 2330A(W)	GP 2500A	GP 2151AF	GP 2251AF	HI 2302A	HI 2402AW	HM 2604AW	SG 2600B
Physical															
Specific gravity		-	D792	1.13	1.14	1.30	1.35	1.37	1.56	1.50	1.60	1.34	1.42	1.69	1.72
Mold shrinkage		%	D955	1.0 ~ 1.4	1.0 ~ 1.4	0.6 ~ 1.0	0.4 ~ 0.9	0.4 ~ 0.9	0.2 ~ 0.5	0.4 ~ 0.9	0.4 ~ 0.9	0.4 ~ 0.9	0.3 ~ 0.8	0.2 ~ 0.5	0.2 ~ 0.5
Mechanical															
Tensile strength		kg/cm²	D638	810	800	1,500	1,800	1,900	2,250	1,000	1,650	1,550	1,700	2,100	2,315
Tensile elongation		%		100	20	4	3	3	2	2.8	3	4	5	2	2
Flexural strength		kg/cm²	D790	1,100	1,100	2,200	2,600	2,750	3,300	1,600	2,350	2,400	2,900	3,000	3,200
Flexural modulus		kg/cm²		27,000	29,000	68,000	85,000	90,000	140,000	61,000	90,000	80,000	97,000	160,000	164,000
Izod impact strength	23℃, 3.2mm	kg.cm/cm	D256	–	5	–	12	–	15	6	–	22	28	16	9
	23℃, 6.4mm			5	–	9	–	13	–	–	11	–	–	–	–
	(-30℃)			–	–	–	–	–	–	–	–	–	–	–	–
Rockwell hardness		R	D785	120	116	121	121	121	121	120	121	117	115	130	120
Thermal															
HDT	18.6Kg/cm²	℃	D648	60	60	205	210	210	210	180	190	205	203	205	212
	4.6Kg/cm²			170	190	–	–	–	–	–	–	–	–	–	–
Flammability															
Flammability		class (mm)	UL94	V-2 (1.5mm)	V-2 (0.8mm)	HB (0.75mm)	HB (0.75mm)	HB (0.75mm)	HB (0.75mm)	V-0 (0.75mm)	V-0 (0.8mm)	–	–	–	–
Electrical															
Dielectric strength		kv/mm	D149	19	21	20	20	20	25	21	21	21	20	21	25
Volume resistivity		Ω.cm	D257	1.00E+15	1.00E+15	1.00E+15	1.00E+14	1.00E+15	1.00E+15	1.00E+15	1.00E+15	1.00E+15	1.00E+14	1.00E+15	1.00E+14
Arc resistance		sec	D495	195	80	150	130	130	–	90	90	180	130	–	–
Characteristic															
				Low viscosity	Halogen free Flame retardant	General purpose	General purpose	General purpose	General purpose	Flame retardant	Flame retardant	High impact	High impact	High stiffness	General purpose Good surface

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Application

- ***Automotive*** Engine Cover, Air Intake Manifold, Cylinder Head Cover, FEM Carrier, Fan& Shroud, Radiator Tank, Reservoir Tank, Fuel Filler Neck, Timing Belt Cover, EV Battery Pack Housing, Wheel Cover, Side Mirror Base Plate, Air Bag Mount Plate, Door Frame Inner Cover
- ***Electrical/ Electronic*** Connector, Bobbin, Relay Switch Cover, Industrial Circuit Breaker, Junction Box, Mobile Phone LCD Bracket & Cover, Power Tool Housing, Shaver Stand Cover, Refrigerator Door Frame
- ***Industrial Parts*** Buckle, Fastener Inline Skate Frame

Properties		Unit	Test Method (ASTM)	PA6							PA66					
				MF Reinforced		GF/MF Reinforced		PA Alloy			Unreinforced			GF Reinforced		
				GP 3300AW	HI 3232A	LW 4203A	LW 4409AK	HI 5001AH	HI 5006A	HI 5063A	GP 1000B	GN 1001BF	HI 1202BW	GP 2130B(W)	GP 2200B(W)	GP 2330B(W)
Physical																
Specific gravity		-	D792	1.36	1.32	1.27	1.49	1.05	1.06	1.09	1.14	1.14	1.07	1.22	1.30	1.38
Mold shrinkage		%	D955	0.6 ~ 1.0	0.9 ~ 1.3	0.7 ~ 1.2	0.5 ~ 1.1	1.8 ~ 2.2	0.8 ~ 1.2	0.5 ~ 1.0	1.3 ~ 2.0	0.9 ~ 1.6	1.4 ~ 1.8	0.7 ~ 1.2	0.6 ~ 1.0	0.4 ~ 0.9
Mechanical																
Tensile strength		kg/cm²	D638	800	700	1,050	1,300	550	450	480	820	800	530	1,250	1,600	1,950
Tensile elongation		%		4	12	9	4	320	100	50	50	30	60	4	4	3
Flexural strength		kg/cm²	D790	1,250	1,000	1,400	2,000	490	600	680	1,150	1,150	700	1,700	2,250	2,850
Flexural modulus		kg/cm²		55,000	40,000	40,000	75,000	13,500	16,000	23,000	28,000	31,000	19,000	50,000	70,000	95,000
Izod impact strength	23°C, 3.2mm	kg.cm/cm	D256	5	8	5	6	–	70	–	5	5	83	–	8	13
	23°C, 6.4mm			–	–	–	–	NB	–	20	–	–	–	5	–	–
	(-30°C)			–	–	–	–	26	–	–	–	–	–	–	–	–
Rockwell hardness		R	D785	121	117	121	121	–	–	–	120	120	110	121	122	122
Thermal																
HDT	18.6Kg/cm²	°C	D648	160	110	180	200	–	80	90	75	85	65	240	245	250
	4.6Kg/cm²			210	190	–	–	–	110	115	230	240	200	255	260	260
Flammability																
Flammability		class (mm)	UL94	HB (0.75mm)	–	–	–	–	–	HB (0.75mm)	V-2 (0.7mm)	V-0 (0.8mm)	–	HB (0.75mm)	HB (0.75mm)	HB (0.75mm)
Electrical																
Dielectric strength		kv/mm	D149	22	22	21	21	–	26	–	23	22	24	25	25	25
Volume resistivity		Ω.cm	D257	1.00E+15	1.00E+15	1.00E+15	1.00E+15	–	1.00E+15	–	1.00E+14	1.00E+14	1.00E+14	1.00E+14	1.00E+14	1.00E+14
Arc resistance		sec	D495	185	185	130	130	–	180	–	–	–	–	–	–	–
Characteristic																
				General purpose	High impact	Low warpage	Low warpage	High melt strength High impact High barrier	High impact Good dimensional stability	Good dimensional stability	General purpose	Halogen free Flame retardant	High impact	General purpose	General purpose	General purpose

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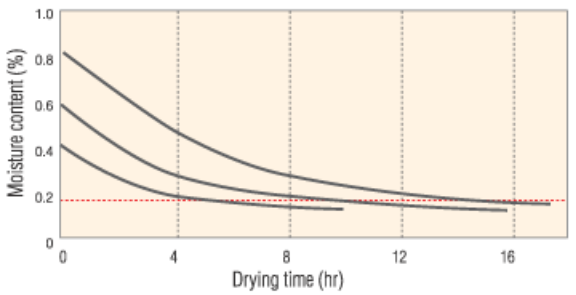
LUMID Material Handling

All LUMID are packaged in moisture-proof bags or containers and can be processed without drying if used promptly.
If resin is exposed to moist air for hours or the moisture content is higher than 0.12%, it should be dried less than 0.12% moisture content using a dehumidifying hopper dryer at 80°C, about 4hr to 6hr.
Especially, LUMID drying time depend on initial moisture content.

Control of Moisture Content

LUMID	Recommendable Moisture Content
Unreinforced	0.10 ~ 0.12 %
Reinforced, lower than 20%	0.08 ~ 0.12 %
Reinforced, upper than 20%	0.06 ~ 0.10 %

Moisture Content as Drying Time



PA66															Amorphous PA
GF Reinforced											MF Reinforced	GF/MF Reinforced			
GP 2350B	GP 2430BW	GP 2500BW	GP 2101BF	GP 2151BF	GP 2251BF	GP 2301BF	GN 2251BF	SG 2300B	SG 2460B	EG 2309B	GP 3300BW	LW 4383B	LW 4403B	SG 4389B	LUXY K-3 G55
1.43	1.50	1.57	1.45	1.50	1.60	1.63	1.38	1.35	1.52	1.37	1.36	1.45	1.48	1.43	1.50
0.3 ~ 0.8	0.3 ~ 0.7	0.2 ~ 0.5	0.7 ~ 1.2	0.6 ~ 1.1	0.5 ~ 1.0	0.4 ~ 0.9	0.5 ~ 1.0	0.4 ~ 0.9	0.3 ~ 0.7	0.4 ~ 0.9	0.6 ~ 1.0	0.5 ~ 1.0	0.4 ~ 1.1	0.3 ~ 0.9	0.03 ~ 0.15
2,050	2,200	2,350	975	1,250	1,500	1,750	1,250	1,800	2,000	1,800	750	1,200	1,650	1,300	2,030
3	2	2	5	3	2	2	3	3	3	4	5	3	2.7	3.4	6.0
2,780	3,100	3,350	1,450	1,750	2,200	2,500	1,900	2,600	2,800	2,400	1,300	1,950	2,450	1,750	2,870
99,000	130,000	145,000	50,000	67,000	85,000	87,000	78,000	85,000	120,000	78,000	50,000	68,000	85,000	68,000	133,000
13	14	15	4	6	9	10	8.5	–	14	–	6	4.5	6.5	6.4	14
–	–	–	–	–	–	–	–	12	–	10	4	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
123	122	122	120	120	120	120	125	121	120	122	115	122	122	122	–
253	255	255	232	240	248	250	245	250	210	250	185	240	248	238	130
–	260	260	–	255	255	255	–	–	–	260	–	260	260	–	–
HB (0.75mm)	HB (0.75mm)	HB (0.75mm)	V-0 (0.75mm)	V-0 (0.75mm)	V-0 (0.75mm)	V-0 (0.75mm)	V-0 (0.8mm)	–	–	–	HB (0.75mm)	–	–	–	HB (0.75mm)
22	25	25	22	22	22	22	15	25	25	25	20	21	21	21	–
1.00E+14	1.00E+14	1.00E+14	1.00E+14	1.00E+14	1.00E+14	1.00E+14	1.00E+14	1.00E+14	1.00E+14	1.00E+14	1.00E+14	1.00E+14	1.00E+14	1.00E+14	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
High stiffness	General purpose	General purpose	Flame retardant	Flame retardant	Flame retardant	Flame retardant	Halgen free Flame retardant	General purpose Good surface	General purpose Good surface	Chemical resistance	General purpose	Low warpage	Low warpage	Good surface	High stiffness High impact Low warpage

LUPOL

PP Compound

LUPOL resins, polyolefin based compound, are a family of low cost engineering plastics.
LUPOL grades are classified according to the addition of polyolefin resins, mineral filler, impact modifier, glass fiber, etc.
Therefore, LUPOL is widely used for various application such as automotive part, home appliance, etc.

Properties		Unit	Test Method (ASTM)	General		Flame Retardant					GF Reinforced		
				HI 1004	ED 1045D	GP 1000FC	GP 1007F	GP 1007FE	GP 3156F	GN 1000F	GP 2100	GP 2200	GP 2300
Physical													
Specific gravity		-	D792	0.94	0.96	1.00	0.94	0.93	1.32	0.99	0.99	1.00	1.14
Mold shrinkage		%	D955	1.6 ~ 1.8	0.6 ~ 0.9	1.6 ~ 1.8	1.6 ~ 1.8	1.6 ~ 1.8	0.9 ~ 1.3	1.5 ~ 1.7	0.4 ~ 0.6	0.4 ~ 0.6	0.3 ~ 0.5
Melt flow rate	230°C, 2.16kg	g/10min	D1238	5	10	14	11	1.5	6	13	15	8	7
Mechanical													
Tensile strength		kg/cm²	D638	250	130	330	300	260	280	260	550	750	850
Tensile elongation		%		> 200	> 200	70	100	> 200	20	50	5	5	6
Flexural strength		kg/cm²	D790	260	60	1,190	370	300	390	450	700	1,000	1,200
Flexural modulus		kg/cm²		11,000	2,500	18,000	16,000	10,000	18,000	22,000	20,000	35,000	56,000
Izod impact strength	23°C	kg.cm/cm	D256	13	NB	5	9	> 50	5	3.5	5	7	10
	(-10°C)			–	–	–	–	–	–	–	–	–	–
Rockwell hardness		R	D785	–	–	–	–	–	–	–	–	–	–
Thermal													
Heat deflection temperature	4.6Kg/cm²	°C	D648	100	–	120	120	110	135	110	140	150	155
Flammability													
Flammability		class (mm)	UL94	–	–	V-0 (0.75mm)	V-2 (1.5mm)	V-2 (1.5mm)	V-0 (0.75mm)	V-0 (1.5mm)	–	–	–
Characteristic													
				High impact	Low CLTE	Flame retardant	Flame retardant	Flame retardant	Flame retardant	Halogen free	GF 10% Reinforced	GF 20% Reinforced	GF 30% Reinforced

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Application

- **Automotive** — Bumper Cover, Instrument Panel, Glove Box, Air Cleaner, Mud Guard, Door Trim, Garnish, Junction Box, Air bag Cover
- **Electrical/ Electronic** — Air Conditioner Housing, Fan, Socket, Washing Machine Parts
- **Industrial Parts** — Propeller Fan, Pulley, Container, Pump Casing

GF Reinforced		MF Reinforced									
HI 2202B	HI 2302	GP 3100	GP 3102	GP 3200	GP 3202	GP 3300	GP 3302	GP 3400	GP 3402	HM 3207	HM 3207SM
1.00	1.12	0.96	0.96	1.06	1.05	1.13	1.14	1.22	1.22	1.04	1.13
0.2 ~ 0.5	0.2 ~ 0.4	1.1 ~ 1.5	0.9 ~ 1.4	0.9 ~ 1.4	0.9 ~ 1.3	0.7 ~ 1.2	0.7 ~ 1.0	0.6 ~ 1.1	0.6 ~ 1.0	1.2 ~ 1.5	1.0 ~ 1.2
3	6	10	10	10	10	10	10	10	10	10	34
550	830	350	290	370	300	350	300	340	260	300	210
10	3	60	80	25	45	20	30	10	15	45	12
850	1,000	430	360	490	450	560	410	570	440	460	330
30,000	45,000	19,000	16,000	28,000	27,000	35,000	32,000	44,000	37,000	27,000	26,000
15	12	5	9	4	6	3	4.5	2.5	4	8	4.5
–	–	–	–	3	3.5	–	–	–	–	3	–
–	–	–	–	–	–	–	–	–	–	95	–
145	155	130	130	140	137	140	137	140	140	135	136
–	–	–	–	–	–	–	–	–	–	–	–
GF 20% Reinforced High impact	GF 30% Reinforced High impact	MF 10% Filled	MF 10% Filled	MF 20% Filled	MF 20% Filled	MF 30% Filled	MF 30% Filled	MF 40% Filled	MF 40% Filled	MF Filled	High stiffness

Properties		Unit	Test Method (ASTM)	MF Reinforced		GF/MF Reinforced		Non-painting	High Impact		Elastomer		
				HF 3308C	HG 3200SK2	LW 4302	LW 4405	MC 4352	TE 5109	TE 5008B	ST 5010	ST 5015	ST 5020
Physical													
Specific gravity		-	D792	1.13	1.05	1.21	1.22	1.10	0.97	1.00	0.89	0.89	0.90
Mold shrinkage		%	D955	0.7 ~ 0.9	1.4 ~ 1.8	0.3 ~ 0.5	0.2 ~ 0.4	0.5 ~ 0.6	0.7 ~ 1.0	1.7 ~ 2.0	0.6 ~ 1.1	0.9 ~ 1.2	1.0 ~ 1.3
Melt flow rate	230°C, 2.16kg	g/10min	D1238	12	22	10	3	21	14	3	10	10	10
Mechanical													
Tensile strength		kg/cm²	D638	250	350	700	870	170	180	120	100	100	90
Tensile elongation		%		50	25	5	5	100	150	> 500	> 600	> 600	> 400
Flexural strength		kg/cm²	D790	415	450	1,000	1,300	280	265	100	90	90	90
Flexural modulus		kg/cm²		29,000	20,000	56,000	72,000	17,000	14,500	2,500	3,500	3,500	2,700
Izod impact strength	23°C	kg.cm/cm	D256	5.3	4	12	8.5	40	47	NB	NB	NB	NB
	(-10°C)			–	–	–	–	4.5(-30°C)	7.2(-30°C)	–	–	–	–
Rockwell hardness		R	D785	–	–	–	–	–	–	–	–	–	–
Thermal													
Heat deflection temperature	4.6Kg/cm²	°C	D648	135	125	150	155	120	115	–	–	–	–
Flammability													
Flammability		class (mm)	UL94	–	HB	–	–	–	–	–	–	–	–
Characteristic													
				High stiffness	High gloss	High stiffness Low warpage	High stiffness Low warpage	Non-painting Anti scratch	High impact	High impact	TPO	TPO	TPO

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LUMILOY

PPO/HIPS, PPO/PA Alloy

LUMILOY is the compounding product that PPO is modified with other thermoplastics. It has excellent dimensional stability, low mold shrinkage, low water absorption and low creep behavior. These properties induce an outstanding hydrolytic stability at various conditions, and it can be applied to the part which is associated with water and fluid engineering.
Its low creep feature is typically unaffected by environmental impact, which can retain a high percentage of its own properties. Furthermore, LUMILOY exhibits excellent electrical properties, and all flame retardant products are designed with halogen free flame retardant systems. With these characteristics, LUMILOY may be powerful alternative material for electrical and electronic applications.

Properties		Unit	Test Method (ASTM)	General	Reinforced				Flame Retardant			
				GP1000D	GP2100	GP2200	GP2300	GP2250G	GN1006F	GN1006FJ	GN1106F	GN1106FJ
Physical												
Specific gravity		-	D792	1.04	1.12	1.18	1.28	1.21	1.07	1.06	1.09	1.09
Mold shrinkage		%	D955	0.5 ~ 0.8	0.4 ~ 0.7	0.2 ~ 0.7	0.1 ~ 0.5	0.1 ~ 0.5	0.6 ~ 0.8	0.6 ~ 0.8	0.6 ~ 0.8	0.6 ~ 0.8
Mechanical												
Tensile strength		kg/cm²	D638	500	830	970	1,230	910	420	400	660	500
Tensile elongation		%		40	8	7	7	7	25	45	15	15
Flexural strength		kg/cm²	D790	850	1,380	1,400	1,750	1,430	640	690	1,100	920
Flexural modulus		kg/cm²		23,000	39,600	50,000	65,000	56,000	23,000	23,000	26,000	26,000
Izod impact strength	23°C	kg.cm/cm	D256	29	10	11	13	14	14	9	11	8
	(-30°C)			–	–	–	–	–	7	–	–	–
Thermal												
Melt flow rate	250°C, 2.16kgf	g/10min	D1238	–	–	–	–	–	15	10	–	10
	280°C, 5.0kgf			25	11	9.5	7.5	11	–	–	54	–
	285°C, 5.0kgf			–	–	–	–	–	–	–	–	–
	300°C, 5.0kgf			–	–	–	–	–	–	–	–	–
Heat deflection temperature	18.6kg/cm²	°C	D648	128	134	136	135	118	77	87	110	87
	4.6kg/cm²			–	–	–	–	–	–	–	–	–
Flammability												
Flammability		class (mm)	UL94	HB	HB	HB	HB	HB	V-2 (1.5mm)	V-2 (1.5mm)	–	V-1 (1.5mm)
Characteristic												
				General FDA	GF 10% reinforced	GF 20% reinforced NSF61 (BK,GR)	GF 30% reinforced NSF61 (BK,GR)	GF 25% reinforced High impact	Halogen free	Halogen free	Halogen free	Halogen free

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Application

- ***Water and Fluid system*** Pump Impeller, Pump Housing, Water Softener Tank, Water Purifier Part
- ***Electrical & Electronic*** TV Front Cover, TV Rear Cover, TV Stand Base, Stand Neck, Speaker Housing, Printer Base/Side Frame, Toner Cartridge Housing, ODD Base PU, PCB Supporter for Appliances, Adapter
- ***Industrial Parts*** PV Module Junction Box, Battery Module Housing, Battery Tray, Motor and Generator Cover
- ***Automotive*** Fuse and Relay Box, Electric Vehicle Battery Module Housing, Wheel Cover, Exterior Body Panel, Mirror Housing

Properties		Unit	Test Method (ASTM)	Flame Retardant		Reinforced Flame Retardant					PPO/PA Alloy	
				GN1301FJ	GN1306F	GN2101F	GN2206F	GN2306F	GN4356F	RF3206F	TX5002	TX5300
Physical												
Specific gravity		-	D792	1.11	1.09	1.14	1.24	1.31	1.37	1.23	1.10	1.34
Mold shrinkage		%	D955	0.6 ~ 0.8	0.6 ~ 0.9	0.4 ~ 0.7	0.3 ~ 0.7	0.2 ~ 0.7	0.2 ~ 0.6	0.6 ~ 1.0	1.0 ~ 1.5	0.2 ~ 0.9
Mechanical												
Tensile strength		kg/cm²	D638	500	730	800	1,200	1,325	1,100	635	640	1,540
Tensile elongation		%		15	20	5	5	7	5	17	40	8
Flexural strength		kg/cm²	D790	1,000	1,200	1,320	1,650	1,850	1,600	1,050	1,100	2,050
Flexural modulus		kg/cm²		26,000	25,000	38,000	62,000	80,000	89,000	27,000	24,000	70,500
Izod impact strength	23°C	kg.cm/cm	D256	6	20	11	9	10	7	20	21	8
	(-30°C)			–	10	–	7.5	–	–	7	16	–
Thermal												
Melt flow rate	250°C, 2.16kgf	g/10min	D1238	8	–	–	–	–	–	–	–	–
	280°C, 5.0kgf			–	8	8	8	10	–	13	55	–
	285°C, 5.0kgf			–	–	–	–	–	–	–	–	30
	300°C, 5.0kgf			–	–	–	–	–	45	–	–	–
Heat deflection temperature	18.6kg/cm²	°C	D648	80	135	127	136	130	125	124	–	214
	4.6kg/cm²			–	–	–	–	–	–	–	186	256
Flammability												
Flammability		class (mm)	UL94	V-0 5VA (1.5mm)(2.5mm)	V-0 (0.8mm)	V-1 (1.5mm)	V-1 V-0 (0.8mm)(3.2mm)	–	V-1 V-0 (1.2mm)(2.5mm)	–	–	–
Characteristic												
				Halogen free	Halogen free	GF 10% reinforced Halogen free	GF 20% reinforced Halogen free	GF 30% reinforced Halogen free	GF+MF 35% reinforced Halogen free	Halogen free High reflectivity	PPO/PA	PPO/PA GF 30% reinforced

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LUPOS

Reinforced ABS & SAN

LUPOS resins are styrene copolymers. LUPOS have improved strength, rigidity and dimensional stability.
They offer excellent heat resistance, minimal mold shrinkage and have a wide range of applications in automotive parts, electrical/ electronic parts and industrial equipments, etc.

Properties		Unit	Test Method (ASTM)	Reinforced ABS				Reinforced SAN	
				GP2100	GP2200	GP2300	GP2106F	GP2205	GP2305A
Physical									
Specific gravity		-	D792	1.10	1.21	1.28	1.25	1.20	1.40
Mold shrinkage		%	D955	0.2 ~ 0.4	0.1 ~ 0.3	0.1 ~ 0.2	0.1 ~ 0.3	0.1 ~ 0.3	0.1 ~ 0.2
Mechanical									
Tensile strength		kg/cm²	D638	660	850	900	600	1,000	1,100
Tensile elongation		%		9	7	6	7	6	5
Flexural strength		kg/cm²	D790	1,100	1,300	1,450	1,000	1,500	1,550
Flexural modulus		kg/cm²		38,000	55,000	75,000	45,000	70,000	90,000
Izod impact strength	(23°C)	kg.cm/cm	D256	10	9	7	7	4	4
Thermal									
HDT	18.6Kg/cm²	°C	D648	97	98	99	96	102	103
Flammability									
Flammability		class (mm)	UL94	HB (1.5mm)	HB (1.5mm)	HB (1.5mm)	V-0 (1.5mm)	HB (1.5mm)	(HB)
Characteristic									
				General purpose	General strength	High strength	General purpose Flame retardant	General purpose	High strength

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LUCEL

POM, POM Compound

LUCEL resins, acetal copolymer, are semi-crystalline engineering plastics with many exellent properties including mechanical, thermal and chemical properties.
Futhermore, LUCEL resins can be widely accepted as the replacement of thermosets, aluminum and zinc die-casts or other metals.

Properties		Unit	Test Method (ASTM)	Unreinforced					Modified	
				N109LD	N109LDS	N109WR	N127LD	N145LD	HI510	HI520
Physical										
Specific gravity		–	D792	1.41	1.41	1.41	1.41	1.41	1.38	1.36
Coefficient of friction	Dynamic	–	D1894	0.16	0.16	0.16	0.16	0.16	–	–
	Static	–	D1894	0.12	0.12	0.12	0.12	0.12	–	–
Taber abrasion (cs 17wheel,1000g)		mg/1000cycles	D1044	14	14	14	14	14	–	–
Rockwell hardness		M(R)	D785	82	82	82	82	82	70	60
Mold shrinkage		%	D955	1.8 ~ 2.1	1.8 ~ 2.1	1.8 ~ 2.1	1.8 ~ 2.1	1.8 ~ 2.1	1.7 ~ 2.0	1.7 ~ 2.0
Mechanical										
Tensile strength		kg/cm²	D638	620	625	620	630	635	550	420
Tensile elongation		%		65	60	65	55	50	90	150
Flexural strength		kg/cm²	D790	910	920	910	930	950	660	550
Flexural modulus		kg/cm²		26,000	26,000	26,000	26,500	27,000	19,000	15,000
Izod impact strength (Notched)		kg.cm/cm	D256	7	6.5	7	6	5.5	12	18
Thermal										
Melt index (190°C, 2.16kgf)		g/10min	D1238	9	13	9	27	45	–	–
Heat deflection temperature	18.6kg/cm²	°C	D648	110	110	110	110	110	95	85
	4.6kg/cm²	°C	D648	160	160	160	160	160	150	135
Characteristic										
				Standard viscosity Internally lubricated Anti mold desposit	Standard viscosity Internally lubricated Anti mold desposit	Standard viscosity Weather resistance	High flow Internally lubricated Anti mold desposit	Ultra high flow Internally lubricated Anti mold desposit	High impact	High impact

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Application

• **Automotive**	Water Valve Parts, Radiator Drain Cock, Carburetor Float, Exhaust Gas Valve, Diaphragm Valve, Door Lock, Winker Switch, Wiper Gear and Pivot Bearing, Speedometer Gear, Window Glass Bottom Channel, Safety Belt, Retractor Parts, Door Handle, Lamber Support Handle, Sun Visor Bracket, Collapsible Room Mirror Stay, Fender Mirror Body, Washer Pump Nozzle
• **Electrical/ Electronic**	Switch, Coil Bobbin, Micrometer Base, Tuner Parts, Control Switch Parts, Dial Mechanism, Cassette tape Reel, Power Transmission Gear, Shaft Bearing, Bracket, Fan Motor Housing, Spring Frame of Headphone, Arc Shooter, Toner Agitating Rotor, Printer Mechanism, Gas Meter Component
• **Industrial Parts & Others**	Spring, Bearing, Spray Guns, Power Cylinder, Watch Gear, Alarm Clock Base, Hot Water Pot Housing, Gear Housing, Table Top Chain Runner, Zipper, Partition Corner Piece Curtain Runner, Blind Gear, Door Runner, Office Furniture Parts, Accessories, Comb, Pressure Container

Modified					Reinforced		
HI525L	**FW700N**	**FW700S**	**FW715CS**	**FW720F**	**GC210**	**GC225**	**GC240**
1.31	1.39	1.40	1.49	1.52	1.48	1.59	1.72
–	–	–	–	0.13	–	–	–
–	–	–	–	0.08	–	–	–
–	–	–	–	7	32	40	46
65	–	80	70	70	83	85	87
1.7 ~ 2.0	1.8 ~2.2	2.0 ~ 2.2	1.7 ~ 2.1	1.3 ~ 1.6	0.6 ~ 1.1	0.4 ~ 0.9	0.3 ~ 0.7
370	540	550	440	500	1,000	1,300	1,500
85	35	70	120	40	5	3	3
410	710	800	660	800	1,300	2,000	2,800
12,200	18,400	24,000	20,200	23,000	50,000	80,000	120,000
8.1	4.6	9	5.1	4.5	5	9	12
9	15	10	10	–	–	–	–
75	90	105	90	100	160	160	165
–	–	155	–	155	165	165	165
High impact	Friction and wear resistance	Oil filled Friction and wear resistance	Friction and wear resistance	PTFE filled	Glass fiber filled High strength	Glass fiber filled High strength	Glass fiber filled High strength

KEYFLEX-BT

TPEE (Ester Type Elastomer)

KEYFLEX-BT resins are polyester type thermoplastic elastomers produced by polymerization and compounding technology.
They display flexibility of rubber and processability of thermoplastics. In addition, they offer very good thermal stability, chemical resistance and weather resistance. So, they can be available in field such as automotive, electrical and electronic, industrial parts and sport goods.
Furthermore, KEYFLEX resins can be widely accepted as the replacement of thermoset rubbers.

Properties		Unit	Test Method (ASTM)	Injection Molding								
				1028D	1030D	1033D	1035D	1040D	1045D	1047D	1055D	1063D
Physical												
Specific gravity		-	D792	1.05	1.07	1.09	1.11	1.13	1.14	1.17	1.20	1.23
Mold shrinkage (flow), 3.2mm		%	D955	0.4 ~ 0.8	0.4 ~ 0.8	0.4 ~ 0.8	0.4 ~ 0.8	0.6 ~ 1.0	0.6 ~ 1.0	0.8 ~ 1.2	1.1 ~ 1.5	1.3 ~ 1.7
Mechanical												
Tensile strength@ break (2mm)		kg/cm²	D638	200	220	240	200	260	280	300	350	420
Tensile elongation@ break (2mm)		%		900	850	800	750	700	650	600	500	450
Flexural modulus, 6.4mm		kg/cm²	D790	–	–	–	–	700	800	1,000	2,000	3,100
Izod impact strength (6.4mm)	23°C	kg.cm/cm	D256	NB	NB	NB	NB	NB	NB	NB	NB	NB
	(-40°C)			NB	NB	NB	NB	NB	NB	NB	15	5
Hardness		Shore D	D2240	25	28	31	33	38	42	45	54	60
		Shore A		75	80	85	88	92	95	–	–	–
Thermal												
Melt flow rate	200°C, 2.16kgf	g/10min	D1238	–	–	–	–	20	–	–	–	–
	220°C, 2.16kgf			–	–	–	–	–	–	23	–	–
	230°C, 2.16kgf			25	25	25	25	–	25	–	25	24
	230°C, 5.00kgf			–	–	–	–	–	–	–	–	–
	240°C, 2.16kgf			–	–	–	–	–	–	–	–	–
Melt temperature@ peak		°C	D3418	155	165	185	165	178	180	190	205	212
HDT	4.6kg/cm²	°C	D648	–	–	–	–	60	65	70	100	115
Characteristic												
				Low modulus				Medium modulus				

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Application

• **Automotive**	Air Bag Covers, Boots and Bellows, Air Duct, Body Plug, Automatic Lever, Slide Plate, Door Latch Striker, Cup Holder Cover, Grommet, Emblem
• **Cable & Tube**	Wire Jacket, Convoluted Tubing, Vacuum Brake & Air Brake Tubes, Data & Power Cable, Optical Cable
• **Sports & Leisure**	Bed Spring, Golf Ball Inner Layer, Snowboard & Ski Boots Binder, Band, Shoe Parts
• **Industrial Parts**	Gear, Railway Pad, Breathable Film, Conveyor Belt, Sealing Parts, Seat Filament, Antenna Cover, Grip, Diaphram, Hair or Tooth Brush

Injection Molding				Extrusion Molding					Air Bag	Blow Molding	
1068D	**1072D**	**5035D**	**1245D**	**1140D**	**1155D**	**1163D**	**1172D**	**2140D**	**S5035(BK)**	**HB9242D(BK)**	**HB9255D(BK)**
1.24	1.26	1.11	1.13	1.12	1.18	1.21	1.25	1.14	1.18	1.14	1.16
1.4 ~ 1.8	1.5 ~ 1.9	1.0 ~ 1.4	1.4 ~ 1.8	0.6 ~ 1.0	1.0 ~ 1.4	1.1 ~ 1.5	1.5 ~ 1.9	1.1 ~ 1.5	1.5 ~ 1.7	1.5 ~ 1.9	1.5 ~ 1.9
450	480	250	300	260	350	380	460	300	330	300	400
400	400	700	600	750	550	450	400	700	550	700	500
4,300	7,000	500	1,000	600	1,700	2,200	4,800	600	3,500	600	2,000
20	10	NB	NB	NB	NB	NB	15	NB	NB	NB	NB
5	5	NB	NB	NB	20	10	5	NB	NB	NB	15
65	69	35	44	36	52	58	66	39	52	39	47
–	–	88	–	90	–	–	–	95	–	95	–
–	–	–	–	12	–	–	–	–	–	–	–
–	–	30	25	–	–	–	–	–	–	–	–
–	–	–	–	–	14	15	–	5	–	–	–
–	–	–	–	–	–	–	–	–	–	2.5	3
27	25	–	–	–	–	–	14	–	15	–	–
215	219	200	205	170	200	208	217	205	220	205	220
125	135	–	60	–	90	110	130	70	60	70	70
High modulus	High modulus	Low modulus Black color	Medium modulus Black color	Medium modulus		High modulus		Low modulus Special grade	Low modulus Black color	Low modulus Black color	Medium modulus Black color

KEYFLEX-TO

TPO (Olefin Type Elastomer)

KEYFLEX-TO resins are olefin type thermoplastic elastomers based on compounding technology.
KEYFLEX-TO have flexibility of rubber and processability of conventional thermoplastics.
They offer advantage of light weight and can be used for electric and automotive applications.

Application

- **Automotive** - Exterior : Air Spoiler, Mud Guard, Trim Sidemolding
  - Interior : Head Liner, Instrument Panel Skin, Glass Sealing, Door Trim Skin
  - Others : Handle Gasket, Boots Dust
- **Miscellaneous** Waterproof Sheets, Gaskets, Home Window Weather Strips, Frames, etc
- **Others** Hose, Packing, Phone Foots, Gasket, Insulation Sheet(Water Protection Sheet etc.), Grip

Properties		Unit	Test Method (ASTM)	1065A	1075AR	1192A
Physical						
Specific gravity		–	D792	0.97	0.96	0.93
Melt flow rate	230°C, 2.16kg	g/10min	D1238	30	40	20(10kg)
Mechanical						
Tensile strength		kg/cm_2	D638	45	45	100
Tensile elongation		%	D638	300	300	700
Izod impact strength	23°C	kg.cm/cm	D256	No break	No break	No break
	(-10°C)		D256	No break	No break	No break
Hardness		Shore A	D2240	65±3	75±3	89±3
Characteristic						
				Suitable for injection molding	Suitable for injection molding	Suitable for calendaring UV resistance

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LUSEP

PPS & SPS Compound

LUSEP resins are the trade name of LG Chemical's high performance engineering resin based on Syndiotactic Polystyrene, Polyphenyl Sulfide.
A number of specific grades are available, including general grades, reinforced grades and flame retardant grades.
The characteristics of LUSEP are excellent mechanical properties, high heat resistance, high impact strength and dimensional stability, etc...
LUSEP SP grades are reinforced SPS engineering polymers designed to meet extreme heat resistance levels in high temperature applications and post processing environments.
LUSEP GP grades are produced by application compounding technique of LG Chemical company to the PPS resin.
Also LUSEP has some kinds of grades formulated with glass fibers and mineral fibers.

Properties		Unit	Test Method (ASTM)	SPS Base		PPS Base	
				SP2300	SP2306F	GP2400	GP4600
Physical							
Specific gravity		-	D792	1.25	1.40	1.65	1.89
Mold shrinkage		%	D955	0.3 ~ 0.9	0.3 ~ 0.9	0.1 ~ 0.2	0.1 ~ 0.2
Mechanical							
Tensile strength		kg/cm²	D638	1,200	1,150	1,550	1,140
Elongation		%		2	2	1 ~ 2	1 ~ 2
Flexural strength		kg/cm²	D790	1,800	1,750	2,300	1,850
Flexural modulus		kg/cm²		90,000	95,000	120,000	190,000
Impact strength	23°C	kg.cm/cm	D256	12	10	7	5.5
Thermal							
Heat deflection temperature	18.6Kg/cm²	°C	D648	245	245	> 260	> 260
	4.6Kg/cm²			–	–	–	–
Electrical							
Dielectric strength		kv/mm	D149	–	–	16.5	15
Volume resistivity		Ω.cm	D257	–	–	4.5×10^{16}	3.8×10^{15}
Arc resistance		sec	D495	–	–	120	180
Characteristic							
				GF 30% reinforced	GF 30% reinforced Flame retardant	GF 40% reinforced	GF+MF 60% reinforced

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LUCON

ABS, PS, PC, mPPO, PPS Compound

LUCON resins are conductive thermoplastic compounds containing various conductive fillers.
LUCON 6000 series are electrically conductive compounds, where the electronic conductivity ranges from antistatic or ESD to EMI shielding purpose. Carbon nanotubes are used as well as conventional conductive fillers to ensure stable ESD characteristics with better conductivity in LUCON compounds.
LUCON 9000 series are thermally conductive compounds, in which electrically conductive or insulating characteristics can be combined.
LUCON 9000 series are developed by unique ceramic dispersion technique to obtain best thermal conductivity,
exhibiting also striking physical properties in dimensional stability, impact resistance, and gas barrier with wide processing window.

Properties		Unit	Test Method (ASTM)	Electrostatic Dissipation (ESD)					
				CP6052	**CP6051F**	**CP6080LP**	**CP6054**	**CP6067**	**PX6067**
Physical									
Specific gravity		-	D792	1.24	1.12	1.30	1.33	1.23	1.32
Mold shrinkage		%	D955	0.4 ~ 0.7	0.4 ~ 0.6	0.2 ~ 0.4	0.3 ~ 0.5	0.3 ~ 0.4	0.2 ~ 0.3
Mechanical									
Tensile strength		kg/cm²	D638	650	580	950	1,100	1,000	1,200
Tensile elongation		%		7	7	6	8	7	8
Flexural strength		kg/cm²	D790	1,000	1,000	1,400	1,400	1,500	1,800
Flexural modulus		kg/cm²		30,000	29,000	50,000	51,000	64,000	79,000
Izod impact strength (23°C)		kg.cm/cm	D256	4.5	2	6	8	3.3	7
Thermal									
Melt flow rate	220°C	g/10min	D1238	–	–	–	–	–	–
	250°C			7(10kg)	30(10kg)	–	–	–	12(2.16kg)
	300°C			–	–	21(2.16kg)	30(5kg)	50(2.16kg)	–
HDT	18.6Kg/cm²	°C	D648	117	88	136	135	135	200
	4.6Kg/cm²			–	–	–	–	–	–
Flammability									
Flammability		class (mm)	UL94	–	V-0 (1.6mm)	–	–	–	–
Electrical									
Surface resistivity		Ω/sq	D257	10^{4-6}	10^{4-7}	10^{7-11}	10^{4-6}	10^{5-6}	10^{6-8}
EMI shielding efficiency		dB	D4935	–	–	–	–	–	–
Optical									
Transparency				–	–	–	–	–	–
Haze				–	–	–	–	–	–
Characteristic									
				High conductive Improved impact strength	Flame retardant Low viscosity	Low LPC Low tribocharge	High strength High conductivity	High strength Low viscosity	Improved impact strength Low viscosity

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Application

• **Semiconductor Industry**	IC tray, Wafer Carrier, LCD Cassette Tray, LCD Module Tray, etc.
• **Electronic Device**	Connector, Computer HDD Tester, Printer inner parts or housings, Paper Tractors or Sorter, Laptop housings, LED Lamp housings, etc.
• **Automotive**	Fuel line, Fuel filter, Fuel Tank, Instrument Bezzel, etc.
• **Other Industrial Parts**	Heat Exchanger Tube, Motor Housing, Heat sink, Cooling Interface Pad, Electric Card Box

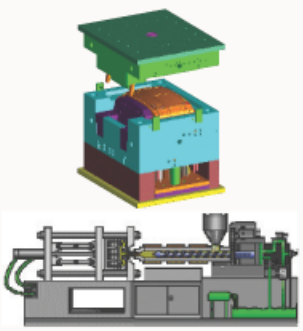
Electrostatic Dissipation (ESD)				Antistatic	EMI shielding		Insulation		Non-Insulation
PO6062	**PO6063**	**CP6062EX**	**PS6080EX**	**MA6120TR**	**CP6042EM**	**PN6037EM**	**SP9306FL**	**PN9008**	**PN9051**
1.30	1.25	1.20	1.07	1.16	1.22	1.50	1.45	1.95	1.54 ~ 1.59
0.1 ~ 0.3	0.1 ~ 0.3	0.5 ~ 0.7	0.5 ~ 0.7	–	0.2 ~ 0.4	0.1 ~ 0.2	0.2 ~ 0.8	0.4 ~ 1.0	0.4 ~ 0.8
1,700	1,000	600	440	560	900	1,200	1,200	750	550
8	2.5	14	10	30	6	5	2	5	2
2,400	1,450	1,000	780	22,000	1,200	1,600	1,800	1, 300	820
100,000	97,000	28,000	26,000	870	54,000	270,000	110,000	132,000	75,000
9	6	3.5	7	5	5	4	7	2	2
–	–	–	10(2.16kg)	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–
2(2.16kg)	37(10kg)	20(2.16kg)	–	–	–	–	–	–	–
195	131	110	88	90	122	10(2.16kg)	230	–	–
–	–	–	–	–	–	265	260	250	215
–	–	–	–	–	–	–	V-0 (1.6mm)	V-0 (0.8mm)	V-0 (0.8mm)
10^{4-6}	10^{4-6}	10^{4-6}	10^{6-11}	10^{12}	10^{2-4}	10^{1-3}	10^{15}	10^{16}	10^{3-5}
–	–	–	–	–	48(2mm)	53(2mm)	–	–	–
–	–	–	–	75%	–	–	–	–	–
–	–	–	–	10%	–	–	–	–	–
High strength Heat stability	High strength Low warpage	For extrusion Improved impact strength	General purpose	Transparent Improved impact strength	Improved impact strength	High strength Heat stability	–	–	High thermal conductivity

Engineering Services

Engineering Service Fields

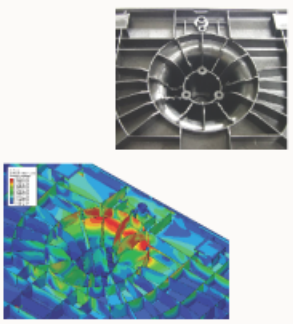
Injection Molding

- Mold design/analysis
- Trouble shooting



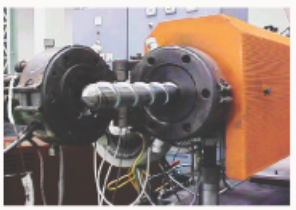
Product Design

- Structural analysis
- Reliability evaluation



Extrusion & CFD

- Process optimization
- Screw & die design



Advanced Material Characterization

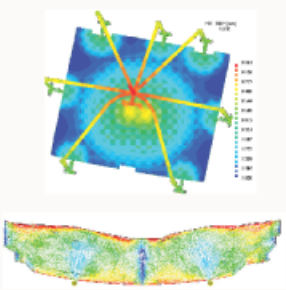
- Material evaluation
- CAE D/B management



Virtual CAE Services

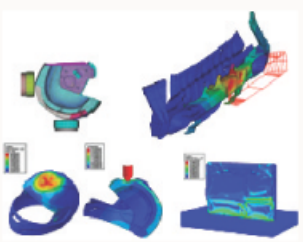
Injection Molding

- Filling & cooling analysis
- Gate & runner design



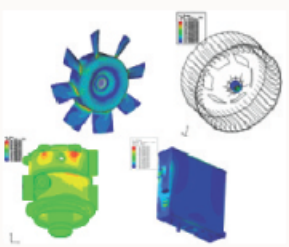
Impact & Crash

- Safety analysis without actual destructive testing



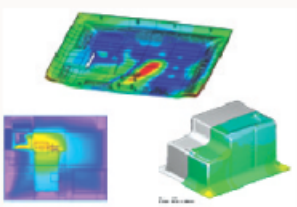
Vibration / Pressure

- Natural frequency extraction
- Structural behavior of pressurized components



Thermal & Heat Transfer

- Thermal deformation analysis
- Heat path design



Reliability Evaluation

Material Evaluation

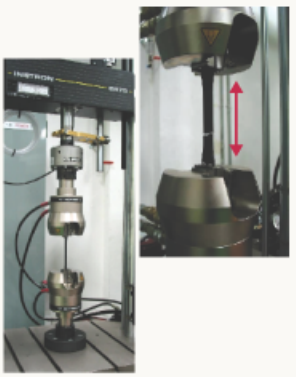
Creep Test

- Deformation behavior under flexural or tensile loading



Fatigue Test

- Repeated cyclic loading
- Formation of S-N curve



Falling Weight Test

- DAQ of crack initiation & propagation Energy



High Strain Rate Test

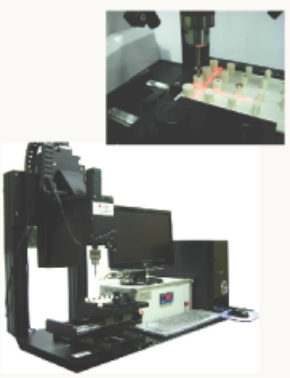
- Stress-strain behavior under dynamic conditions



Product Evaluation

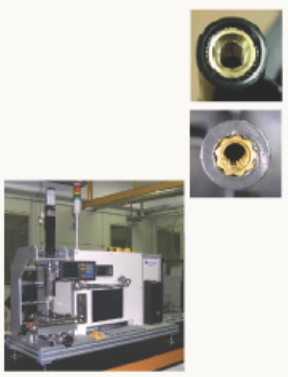
Torque Test

- Screw/boss design
- Real-time torque DAQ



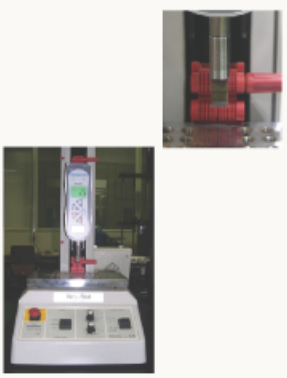
Press-fit Test

- Press-fit insert design
- Heating & press-fit



Snap-fit Test

- Hook sensitivity test
- Real-time force DAQ



Free Drop Test

- Control of impact angle
- Measurement of damage

