

Enjoy Our Excellence & Expertise

— **starex**®

ABS, ABS Alloy, ASA



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Global Network 27

starex[®] is the styrene product brand of LOTTE Chemical which provides **excellent** integrated solutions backed by our **exclusive** experiences and **expertise** in materials technology.



EXCLUSIVE



EXPERTISE



EXCELLENT

Product Portfolio



ABS	
General	
Extrusion	
Flame Retardant	
Halogen	
Non-halogen	
Heat Resistant	
Metal Plating/Painting	

ABS Alloy	
Transparent MABS	
Scratch Resistant MABS	
ABS/GF	
General	
Flame Retardant	

EPS	
General	
Flame Retardant	
High Heat Insulation	

Specialty	
Weatherable Materials	
ASA/PMMA	
ASA	
High Weatherability	
Luminous	
Medical	
General	
Transparent	
Antimicrobial	
Eco-friendly	
ABS	
ABS/PET	

Product

APPLICATIONS

 E&E

 HA

 Automotive Exterior

 Motorcycle (Bike)

 Sundries Stationery, Toys



APPLICATIONS

 Refrigerator inner

 Building & Construction

 Pipe

General Purpose ABS

Versatile material to multiple purposes

KEY FEATURES

 Flowability

 Surface quality

 Heat stability

 Balanced properties

PRODUCT LINE-UP			
General	High Flow	High Impact	Chemical Resistant
SD-0150 SD-0150GP SD-0150 W HP-0500 HG-0760AT HG-0760TV HG-0760GP	General HF-0660I High Flow HF-0670 HF-0680 Super High Flow HF-0690 M	High Impact SD-0170HX Super High Impact SD-0190HX	EG-0763 EG-7000 EG-0191F
Food Contact	Rapid Molding	Low Gloss	Antistatic
FP-0140 (GB, EN10) FP-0140P (NSF 42) FP-0160 (NSF 61)*	RM-0760	General SL-0100 High Gloss SL-0620	EA-0640

* Under Development

Extrusion ABS

Top-notch thin-wall vacuum moldability

PRODUCT LINE-UP	
Refrigerator General	Refrigerator-Chemical Resistant
SV-0157 (CP, General) QU-0191 S (CP, Thin-wall) FP-0191 (CP, EN10·GB)	SU-0191LH (Mixed blowing agent)) EU-0191S (LBA) FL-0189 (LBA, EN10·GB)*
Construction Material	PIPE
General SH-0160 SV-0167 UV SV-0165 U	High Impact SP-0170 Pressure Resistant SP-0180

KEY FEATURES

 Thin-wall vacuum forming capability

 Gloss surface

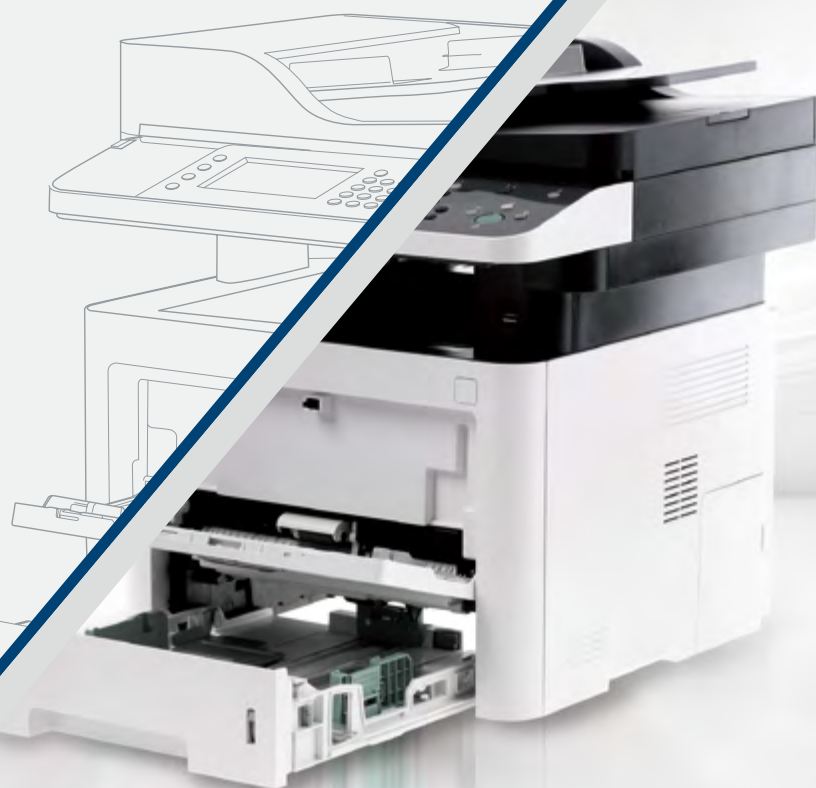
 Impact strength

 Chemical & Crack resistance

* Under Development

APPLICATIONS

-  E&E
-  HA
Washing machine,
Refrigerator,
Air-conditioner
-  OA machines
Printer, Copier
-  Wiring devices



APPLICATIONS

-  Automotive
Interior, Exterior,
Lighting



Flame Retardant ABS

Flame retardant solution with a material property balance

KEY FEATURES

-  Flammability
-  Heat stability
-  Processability
-  Colorability

PRODUCT LINE-UP

Halogen

- 1.5mm V-0
 - VE-0800
 - VE-0812
 - VE-0856
(2.0mm 5VB,
3.0mm 5VA, RTI 80°C)
 - VE-0856 U
(Weatherability)
 - VE-0856 G (Low Gloss)
- VE-0860
(2.5mm 5VB, RTI 95°C)
 - VE-0860 P
(High Heat Resistant)
 - VE-0860 T (High Impact)
 - VE-0860EX (Extrusion)

- 2.0mm V-0
 - VE-0817
 - VE-0815
- 2.1mm V-0
 - VE-0858 (2.5mm 5VA)
- 2.5mm V-0
 - VE-0810
- 3.0mm V-2
 - VE-0865EL (Extrusion)

Non-halogen

- 0.75mm V-2
 - NH-0825 S
 - NH-0826
- 1.0mm V-2
 - NH-0927

Heat Resistant ABS

Excellent long-term heat stability

PRODUCT LINE-UP

Injection

- Semi Heat Resistant
 - General
 - SR-0315 V (VST 102)
 - SR-0300 (VST 102, High Impact)
 - Low Gloss
 - LH-0300 (VST 100)
- Heat Resistant (Below VST 105)
 - SR-0310FM
- High Heat Resistant
(VST 106~110)
 - General
 - SR-0320 K
 - Low TVOC
 - SR-0320LT
 - SR-0320LI

- Super Heat Resistant
(Over VST 110)
 - General
 - SR-0325
 - SR-0330M
 - SR-0340M
 - Low TVOC
 - SR-0325LT
 - SR-0325L
 - SR-0330L
 - SR-0340L

Extrusion

- General
 - BM-0320 E
- Blow Molding
 - BM-0320J
 - BM-0325H

KEY FEATURES

-  Heat resistance
-  Flowability,
Processability
-  Chemical resistance
-  Low TVOC



APPLICATIONS

-  Automotive exterior
-  E&E TV
-  Bath, Sanitary
-  Sundries
Cosmetics container,
Dinnerware



APPLICATIONS

-  E&E
-  HA
Washing machine,
Vacuum cleaner
-  Sundries
Toys, Dispenser,
Food container,
Cosmetics container

Metal Plating/Painting ABS

Adhesion strength in plating and quality

KEY FEATURES

- Metal Plating**
 -  High adhesion strength, Etching ability
 -  Gloss retention
- Painting**
 -  Chemical resistance
 -  Dimensional Stability

PRODUCT LINE-UP

Metal Plating	Painting
- General - MP-0160 R - Surface Quality - MP-0670	- PT-0180 - PT-0180H - PT-0180J

Transparent MABS

Transparent solution to replace glass

PRODUCT LINE-UP

General	Specialty
- General - TX-0510T - TX-0520T - TX-0530T - High Flow - TX-0550K	- NSF Certification - TX-0510F - Chemical Resistant - TX-0520HR - Toughness - TX-0570 - Antistatic - TX-0550AT

KEY FEATURES

-  Clear transparency
-  Impact strength
-  Flowability, Processability
-  Color stability & consistency

APPLICATIONS

-  Automotive exterior
-  Building & Construction
-  Antenna
-  HA
-  Bath, Sanitary

Weather Resistant Material

Outstanding durability to external conditions

KEY FEATURES

-  Weatherability
-  Impact strength
-  Gloss retention
-  Color fastness

PRODUCT LINE-UP

ASA

Injection

- High Weatherability
 - WX-9120
- High Impact
 - WX-9130
- High Colorability
 - WX-9120HT
- High Flow
 - WX-9120HF
 - WR-9120 J
 - WX-9310J*

- Heat Resistant
 - WX-9300UV
 - WX-9310UV
 - WR-9300HF

- High Heat Resistant
 - WX-9330UV
 - WR-9330I
 - WR-9370

- Specialty (ASA/GF)
 - WX-9415

Extrusion

- High Weatherability
 - WX-9700
 - WX-9750
 - WX-9700A
- Low Gloss
 - WX-9730L
 - WX-9730LE

ASA/PMMA

- General
 - WX-9950
- High Weatherability
 - WX-9950UV
 - WX-9950U* (Scratch Resistant)
- High Impact
 - WX-9950S* (Scratch Resistant)

High Weather Resistant ABS

- WR-0790
- WR-0953 (Scratch Resistant)

* Under Development

Specialty

Paint-free Luminous

Various appearance and texture effect

PRODUCT LINE-UP

General

- LX-0760
- LX-0951 (High Flow)

Emotional Feeling

- LX-0951EF

Transparent

- LM-0990 (Injection)
- XM-0900 (Extrusion)
- LM-0780 (Texture of continuous flow)

KEY FEATURES

-  Fine exterior
Metallic-look,
Emotional feeling
-  Eco-friendly process
No painting,
No solvent use

APPLICATIONS

- HA
Refrigerator,
Vacuum cleaner,
Washing machine,
Water purifier,
Air cleaner
- E&E
TV
- Automotive interior

Medical Solution

Ensured materials for medical devices

PRODUCT LINE-UP

General

- MR-0130 (High Flow)
- ML-0750 (CFDA)

Transparent

- MR-0500 (High Modulus)*

KEY FEATURES

-  Biocompatibility
-  Chemical resistance
-  Color & Property
stability after
sterilization
(γ-ray, EtO)

APPLICATIONS

- Medical devices
Drop spike,
Flow regulator,
Infusion filter

Antimicrobial & Weatherable Material **evermoin**

Customized material with reliability

PRODUCT LINE-UP

ABS

- ABF-0200HF (High Flow)
- ABF-0280 (Flame)

PP

- ABF-6200*

KEY FEATURES

-  Antimicrobial
durability
-  Weatherability
-  Harmlessness to
human body

APPLICATIONS

- HA
Refrigerator,
Vacuum cleaner,
Humidifier,
Water purifier,
Air cleaner
- Bath, Sanitary

Eco-friendly Material **green**

Material solutions based on the mechanical and chemical recycling of waste products

PRODUCT LINE-UP

ABS

- GC-0735 (PCM 35%)*
- GC-0755 (PCM 50%)*
- GC-0785 (PCM 85%)*

ABS/PET

- GC-0703 (PCM 15%)
- GC-0700 (PCM 28%)
- GC-0710 (PCM 35%)
- GC-0730 (PCM 40%)

KEY FEATURES

-  Eco-friendly

APPLICATIONS

- OA machines
- E&E
TV/Monitor
- Fire alarm

* Under Development

Product Selection Guide

General Purpose ABS

				General							High Flow			High Flow		High Impact		Chemical Resistant			Food Contact		Rapid Molding	Low Gloss		Antistatic	
Properties	Test Method	Condition	Unit	SD-0150	SD-0150GP	SD-0150 W	HP-0500	HG-0760AT	HG-0760TV	HG-0760GP	HF-0660I	HF-0670		HF-0680	HF-0690 M	SD-0170HX	SD-0190HX	EG-0763	EG-7000	EG-0191F	FP-0140	FP-0140P	RM-0760	SL-0100	SL-0620	EA-0640	
PHYSICAL PROPERTIES																											
Specific Gravity	ASTM D792	-	-	1.04	1.04	1.04	1.05	1.04	1.04	1.04	1.04	1.04		1.04	1.04	1.02	1.02	1.04	1.08	1.04	1.04	1.04	1.05	1.03	1.04	1.05	
Melt Flow Index	ASTM D1238	200°C, 5kg	g/10min	2	1.8	2		3.5	5.5	4	3.6	4.5		5.5	8.5							2	1.5	4.5		2	1.8
		220°C, 10kg					16										8	8	12		15				7.5		
		250°C, 10kg																		35							
	ISO 1133	200°C, 5kg	g/10min	2	1.8	2		3.5	5.5	4	3.6	4.5		5.5	8.5							2	1.5	4.5		2	1.8
		220°C, 10kg					16										8	8	12		15				7.5		
		250°C, 10kg																		35							
Mold Shrinkage(MD)	ASTM D955	Flow at 3.2mm(MD)	%	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6		0.3-0.6	0.3-0.6	0.3-0.7	0.3-0.7	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.4-0.6	0.4-0.7	0.3-0.6		
X-Flow at 3.2mm(TD)		0.3-0.6		0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.4-0.6	0.4-0.7	0.3-0.6		
MECHANICAL PROPERTIES																											
Tensile Strength at yield	ASTM D638	5mm/min	kgf/cm²	420	360	464	480	400	420	400	400	380		420	400	370	350	390		440	430	410	460		320	450	
		50mm/min																	390					330			
	ISO 527	5mm/min	MPa																				30				
		50mm/min		51	35	44	40	42	42	40	40	42		40	40	35	30	36	38	35	40	40		35	34	40	
Flexural Strength	ASTM D790	2.8mm/min	kgf/cm²	630	590	657	700	620	620	600	600	580		630	580	600	570	550	570	630	620	620	675	450	480	750	
	ISO 178	2mm/min	MPa	76	65	70	60	63	62	60	60	68		60	58	60	55	55	55	50	60	60	50	57	54		
Flexural Modulus	ASTM D790	2.8mm/min	kgf/cm²	21,000	21,000	23,200	23,000	22,000	22,000	20,000	20,000	21,000		21,000	21,000	18,800	18,000	20,000	20,000	23,000	22,000	21,000	24,500	16,000	16,000	26,000	
	ISO 178	2mm/min	MPa	2,500	2,200	2,400	2,200	2,200	2,200	2,000	2,000	2,400		1,900	2,100	1,800	1,700	2,000	1,960	2,000	2,200	2,200	2,000	1,800	1,700	2,200	
Izod Impact Strength (Notched)	ASTM D256	1/4inch at 23°C	kgf·cm/cm	22	28	19.2	13	21	16	23	22	19		20	19	40	44	26	20	24	20	20	15	6		19	
		1/8inch at 23°C		35			13	22		24	26	21				50	53	32	21			20	7	18			
	ISO 180 1A	at 23°C, 4mm	kJ/m²	21	21	20	13	16	15	23	22	18		20					21	28	20	20		12	26	22	
Charpy Impact Strength (V-notched)	ISO 179 1eA	at 23°C, 4mm	kJ/m²	24	25	21	14	18	16	20	21	20		18	19	35	40	20		30	21	21	15	11	24	27	
Rockwell Hardness	ASTM D785	R-scale	-	109	105	111	114	109	110	108	108	108		107	104	90	88	100	95	98	106	110	112	97		95	
	ISO 2039-2	R-scale	-	109	105	109	114	109	110	108	108	109		107	104	88	85	100	95	98	106	110	111	93	91	95	
THERMAL PROPERTIES																											
Heat Deflection Temperature	ASTM D648	18.56kgf/cm², 6.4mm	°C	84			91	82		82	85	85		85	82			84	78				90	85	75	81	
		4.6kgf/cm², 6.4mm					99				93			90										96		96	
		18.56kgf/cm², 3.2mm																	78								
Heat Deflection Temperature (Unannealed)	ISO 75-2	1.8MPa, 4.0mm	°C		79	82	82	82	75	76	74	74			73				78					77	70	78	
		0.45MPa, 4.0mm					96			88	88	86			84				78					92		91	
Heat Deflection Temperature (Annealing)	ISO 75-2	1.8MPa, 4.0mm	°C						95	93									88					100			
		0.45MPa, 4.0mm							100	98									97					103			
VICAT Softening Temperature	ISO 306	B/50	°C	99	97	99	100	94	97	96	96	92		97	94	91	88	95	90	98	96	99	99	97	92	97	
		B/120																	91					100		100	
FLAME CHARACTERISTICS																											
Flammability	UL94	HB	mm	1.0, 1.5, 3.0, 6.0 HB	1.0, 1.5, 3.0, 6.0 HB	1.0, 1.5, 3.0, 6.0 HB	1.5 HB	1.5, 3.0, 6.0 HB	1.5 HB	1.5, 3.0, 6.0 HB	1.0, 1.5, 3.0, 6.0	1.5/3.0		1.5				1.5, 3.0, 6.0 HB	1.5, 3.0 HB	1.5, 3.0 HB				1.5, 3.2 HB	1.5, 3.0 HB		

Extrusion ABS

				Refrigerator General			Refrigerator Chemical Resistant		Construction Material			Pipe		
Properties	Test Method	Condition	Unit	SV-0157	QU-0191 S	FP-0191	SU-0191LH	EU-0191S	SH-0160	SV-0167	SV-0165 U	SP-0170	SP-0180	
PHYSICAL PROPERTIES														
Specific Gravity	ASTM D792	-	-	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	
Melt Flow Index	ASTM D1238	220°C, 10kg	g/10min	5.5	4.3	4.5	3.5	2.5	8	5.2	8.2	6.4	6	
	ISO 1133	220°C, 10kg		5.5	4.3	4.5	3.5	2.5	8	5.2	8.2	6.4	6	
Mold Shrinkage(MD)	Flow at 3.2mm(MD)		%	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	
Mold Shrinkage(TD)	ASTM D955	X-Flow at 3.2mm(TD)		0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	
MECHANICAL PROPERTIES														
Tensile Strength at yield	ASTM D638	5mm/min	kgf/cm²	430	485	420	500	510	360	390	400	390	370	
	ISO 527	5mm/min	MPa					47						
		50mm/min		45	50	43			52	35	40	45	40	45
Flexural Strength	ASTM D790	2.8mm/min	kgf/cm²	600	740	650	720	720	550	600	770	540	550	
	ISO 178	2mm/min	MPa	65	75	65	72	75			65	80	60	65
		5mm/min								55				
Flexural Modulus	ASTM D790	2.8mm/min	kgf/cm²	23,000	24,300	22,000	24,500	24,000	18,000	20,000	26,000	17,500	19,000	
	ISO 178	2mm/min	MPa	2,400	2,500	2,300	2,500	2,400			2,000	2,700	1,900	2,100
		5mm/min								1,800				
Izod Impact Strength (Notched)	ASTM D256	1/4inch at 23°C	kgf·cm/cm	25	22	32	30	29	33	35	22	39	38	
		1/8inch at 23°C		30	27			32	40	45	45	25	48	
	ISO 180 1A	at 23°C, 4mm	kJ/m²	30	26	31	30	40			33	25	34	36
Charpy Impact Strength (V-notched)	ISO 179 1eA	at 23°C, 4mm	kJ/m²	30	26	32	31	43	27	35	25	34	38	
Rockwell Hardness	ASTM D785	R-scale	-	108	109	103	108	107	101	100	92	94	98	
	ISO 2039-2	R-scale	-	108	108	102	108	107	101	100	95	101	101	
THERMAL PROPERTIES														
Heat Deflection Temperature	ASTM D648	18.56kgf/cm², 6.4mm	°C	89	91			89	92	90	85	88	88	
		4.6kgf/cm², 6.4mm		95	95		95	99	95		98			
		18.56kgf/cm², 3.2mm					101							
Heat Deflection Temperature (Unannealed)	ISO 75-2	1.8MPa, 4.0mm	°C	80	81	83	84	85			78	81	81	77
		0.45MPa, 4.0mm		90	94	95	96	97			92	94	93	92
Heat Deflection Temperature (Annealing)	ISO 75-2	1.8MPa, 4.0mm	°C									99	99	100
		0.45MPa, 4.0mm										103	103	104
VICAT Softening Temperature	ISO 306	B/50	°C	100	102	101	102	102	99	100	90	99	97	
		B/120									103		99	
FLAME CHARACTERISTICS														
Flammability	UL94	HB	mm	1.5, 3.0, 6.0 HB	0.75-3.0 HB	0.75 HB			1.5, 3.0 HB	1.5, 3.0 HB	1.5, 3.0 HB	1.5, 3.0 HB	1.5, 3.0 HB	
		5VA												
Flammability	UL94	HB	mm											
		V-2												
		V-0		1.5-3.0	1.5-3.0	1.5-3.0	1.5-3.0	1.5-3.0	1.5-3.0	1.5-3.0	1.5, 2.5-2.7	1.5, 2.5-2.7	1.5, 2.5-2.7	
		5VA								3	3	3		
		5VB								2.0, 2.5	2.0, 2.5	2.0, 2.5	2.5-2.7	

Flame Retardant ABS

				Halogen											
Properties	Test Method	Condition	Unit	VE-0800	VE-0812	VE-0856	VE-0856 U	VE-0856 G	VE-0860	VE-0860 P	VE-0860 T	VE-0860EX			
PHYSICAL PROPERTIES															
Specific Gravity	ASTM D792	-	-	1.16	1.16	1.15	1.16	1.17	1.17	1.18	1.17	1.18			
Melt Flow Index	ASTM D1238	200°C, 5kg	g/10min	3.7	3.3	3.5	3.6	3.5	1.6						
		220°C, 10kg								14	12	16			
	ISO 1133	200°C, 5kg	g/10min	3.7	3.3	3.5	3.6	3.5	1.6						
		220°C, 10kg								14	12	16			
Mold Shrinkage(MD)	Flow at 3.2mm(MD)			0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6			
Mold Shrinkage(TD)	ASTM D955	X-Flow at 3.2mm(TD)	%	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6			
MECHANICAL PROPERTIES															
Tensile Strength at yield	ASTM D638	5mm/min	kgf/cm²	410	400	400	400	370	440	420	350	440			
	ISO 527	5mm/min	MPa					43	42	45	43	40			
		50mm/min		40	44			47			47				
Flexural Strength	ASTM D790	2.8mm/min	kgf/cm²	550	550	540	570	570	650	650	600	600			
	ISO 178	2mm/min	MPa	62	68	66	64	75	66	70	60	72			
		2.8mm/min													
Flexural Modulus	ASTM D790	2.8mm/min	kgf/cm²	19,500	19,000	20,000	20,000	22,000	23,000	22,000	20,000	21,000			
	ISO 178	2mm/min	MPa	2,000	2,200	2,238	2,100	2,400	2,350	2,300	2,000	2,300			
		2.8mm/min													
Izod Impact Strength (Notched)	ASTM D256	1/4inch at 23°C	kgf·cm/cm	19	15	16	14			14	12	24	20		
		1/8inch at 23°C						17	18	16	14	15	15	28	
		ISO 180 1A	at 23°C, 4mm	kJ/m²	18	20	25	21	12	14	13	23	25		
Charpy Impact Strength (V-notched)	ISO 179 1eA	at 23°C, 4mm	kJ/m²	22	18	24	23			16	16	24	23		
Rockwell Hardness	ASTM D785	R-scale	-	97	99	96	95	105	104	102	97	98			
	ISO 2039-2	R-scale	-	102	103	96	95	100	104	97	97	98			
THERMAL PROPERTIES															
Heat Deflection Temperature	ASTM D648	18.56kgf/cm², 6.4mm	°C	80	80	80	80	78	85	89	80	82			
		4.6kgf/cm², 6.4mm						89	98	92					
Heat Deflection Temperature (Unannealed)	ISO 75-2	1.8MPa, 4.0mm	°C					73	75	72	76	85	80	80	78
		0.45MPa, 4.0mm						85	87	84	87	98	92	92	90
Heat Deflection Temperature (Annealing)	ISO 75-2	1.8MPa, 4.0mm	°C							87			84		
		0.45MPa, 4.0mm						92							
VICAT Softening Temperature	ISO 306	B/50	°C	88	89	88	90	94	96	99	95	94			
		B/120													
FLAME CHARACTERISTICS															
Flammability	UL94	HB	mm												
		V-2													
		V-0		1.5-3.0	1.5-3.0	1.5-3.0	1.5-3.0	1.5-3.0	1.5, 2.5-2.7	1.5, 2.5-2.7	1.5, 2.5-2.7	1.5, 2.5-2.7			
		5VA						3	3	3					
		5VB								2.0, 2.5	2.0, 2.5	2.0, 2.5	2.5-2.7	2.5-2.7	2.5-2.7

Flame Retardant ABS

				Halogen					Non-Halogen		
Properties	Test Method	Condition	Unit	VE-0817	VE-0815	VE-0858	VE-0810	VE-0865EL	NH-0825 S	NH-0826	NH-0927
PHYSICAL PROPERTIES											
Specific Gravity	ASTM D792	-	-	1.17	1.15	1.15	1.15	1.16	1.05	1.05	1.05
Melt Flow Index	ASTM D1238	200°C, 5kg	g/10min	6.8	4	3.5	5		6.5	6	3.5
		220°C, 10kg					7				
	ISO 1133	200°C, 5kg	g/10min	7.5	4	3.5	5		6.5		3.6
		220°C, 10kg					7		65		
Mold Shrinkage(MD)	ASTM D955	Flow at 3.2mm(MD)	%	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.4-0.7	0.3-0.6	0.3-0.6	0.3-0.6
Mold Shrinkage(TD)		X-Flow at 3.2mm(TD)		0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.4-0.7	0.3-0.6	0.3-0.6	0.3-0.6
MECHANICAL PROPERTIES											
Tensile Strength at yield	ASTM D638	5mm/min	kgf/cm²	374	420	400	410	420	420	430	550
	ISO 527	5mm/min	MPa	42							
		50mm/min		45	41		41	43	41	48	50
Flexural Strength	ASTM D790	2.8mm/min	kgf/cm²	567	560	550	550	600	640	650	670
	ISO 178	2mm/min	MPa	70	62	65	60	64	70	76	78
		2.8mm/min									
Flexural Modulus	ASTM D790	2.8mm/min	kgf/cm²	20,266	19,000	19,000	18,000	21,000	23,000	23,000	26,000
	ISO 178	2mm/min	MPa	2,200	2,000	2,200	2,000	2,200	2,400	2,400	2,600
		2.8mm/min									
Izod Impact Strength (Notched)	ASTM D256	1/4inch at 23°C	kgf·cm/cm	20		20	17	14	20	14	16
		1/8inch at 23°C		18.4		21		15	21	15	18
	ISO 180 1A	at 23°C, 4mm	kJ/m²	14	19	25	15	14	18	15	21
Charpy Impact Strength (V-notched)	ISO 179 1eA	at 23°C, 4mm	kJ/m²	14	23	25	20	13	24	18	21
Rockwell Hardness	ASTM D785	R-scale	-	100.7	97	92	96	100	105	111	110
	ISO 2039-2	R-scale	-	108	103	95	102	100	105	113	112
THERMAL PROPERTIES											
Heat Deflection Temperature	ASTM D648	18.56kgf/cm², 6.4mm	°C	80		70	79	84	82		88
		4.6kgf/cm², 6.4mm		100				90	94		
Heat Deflection Temperature (Unannealed)	ISO 75-2	1.8MPa, 4.0mm	°C	73		75		82	74	75	78
		0.45MPa, 4.0mm		75		87		89	87		90
Heat Deflection Temperature (Annealing)	ISO 75-2	1.8MPa, 4.0mm	°C								89
		0.45MPa, 4.0mm							85		
VICAT Softening Temperature	ISO 306	B/50	°C	91	88	90	87	97	93	94	96
		B/120		91				99			
FLAME CHARACTERISTICS											
Flammability	UL94	HB	mm					HB			
		V-2						V-2	0.75-3.0	0.75-3.0	1.0, 2.5-2.7
		V-0		2.0-3.0	2.0-3.0	2.1-3.0	2.5-3.0				
		5VA		2.5, 3.0							
		5VB									

Heat Resistant ABS

				Injection								
Properties	Test Method	Condition	Unit	SR-0315 V	SR-0300	LH-0300	SR-0310FM	SR-0320 K	SR-0320LT	SR-0320LI	SR-0330M	
PHYSICAL PROPERTIES												
Specific Gravity	ASTM D792	–	–	1.04	1.05	1.04	1.06	1.06	1.05	1.05	1.07	
Melt Flow Index	ASTM D1238	220°C, 10kg	g/10min	26	13	10	20	9	10	6	3	
		250°C, 2.16kg									2	
	ISO 1133	220°C, 10kg	g/10min	26	13	10	20	9	10	6	3	
		250°C, 2.16kg									2	
Mold Shrinkage(MD)	ASTM D955	Flow at 3.2mm(MD)	%	0.3-0.6	0.3-0.6	0.4-0.7	0.4-0.7	0.4-0.7	0.4-0.7	0.4-0.7	0.4-0.7	
Mold Shrinkage(TD)		X-Flow at 3.2mm(TD)		0.3-0.6	0.3-0.6	0.4-0.7	0.4-0.7	0.4-0.7	0.4-0.7	0.4-0.7	0.4-0.7	
MECHANICAL PROPERTIES												
Tensile Strength at yield	ASTM D638	5mm/min	kgf/cm²	400		354	400	420	460	400	420	
		50mm/min		450								
	ISO 527	50mm/min	MPa	42	48	36	50	48	50	45	48	
Flexural Strength	ASTM D790	2.8mm/min	kgf/cm²	640	620	465	640	650	700	610	640	
		10mm/min										
	ISO 178	2mm/min	MPa	73	76	58	78	76	80	74	78	
Flexural Modulus	ASTM D790	2.8mm/min	kgf/cm²	22,000	23,000	17,593	21,000	22,000	23,800	20,000	22,510	
		10mm/min										
	ISO 178	2mm/min	MPa	2,500	2,500	2,060	2,600	2,450	2,500	2,400	2,350	
Izod Impact Strength (Notched)	ASTM D256	1/4inch at 23°C	kgf·cm/cm	21	23	10	15	17	17	22	12	
		1/8inch at 23°C		25	30	15			20	24	13	
		1/4inch at -30°C										7
		1/8inch at -30°C										6
	ISO 180 1A	at 23°C, 4mm	kJ/m²	24	22	17	17	17	18	23	14	
at -30°C, 4mm										9		
Charpy Impact Strength (V-notched)	ISO 179 1eA	at 23°C, 4mm	kJ/m²	24	23	16	17	15	18	24	15	
		at -30°C, 4mm										10
Rockwell Hardness	ASTM D785	R-scale	–	109	110	100	109	110	113	110	113	
	ISO 2039-2	R-scale	–	108	110	100	109	110	113	110	113	
THERMAL PROPERTIES												
Heat Deflection Temperature	ASTM D648	18.56kgf/cm², 6.4mm	°C	90	88	88	90	94	94	95	104	
		4.6kgf/cm², 6.4mm		99		99					116	
		18.56kgf/cm², 3.2mm						90				
Heat Deflection Temperature (Unannealed)	ISO 75-2	1.8MPa, 4.0mm	°C	80	82	80	80	86	85	86	96	
		0.45MPa, 4.0mm		93	95	94	97	100			112	
Heat Deflection Temperature (Annealing)	ISO 75-2	1.8MPa, 4.0mm	°C					100	105		103	
		0.45MPa, 4.0mm						103	108		112	
VICAT Softening Temperature	ISO 306	B/50	°C	100	102	100	103	106	106	107	118	
		B/120		102			106	109			119	
FLAME CHARACTERISTICS												
Flammability	UL94	HB	mm	HB	HB	HB	HB	HB	HB	HB	HB	

Heat Resistant ABS

				Injection					Extrusion	
Properties	Test Method	Condition	Unit	SR-0340M	SR-0325LT	SR-0325L	SR-0330L	SR-0340L	BM-0320 E	BM-0320J
PHYSICAL PROPERTIES										
Specific Gravity	ASTM D792	-	-	1.07	1.06	1.06	1.07	1.07	1.05	1.04
Melt Flow Index	ASTM D1238	220°C, 10kg	g/10min	2.5	4	8	3.5	2.6	3.3	6
		250°C, 2.16kg								
	ISO 1133	220°C, 10kg	g/10min	2.5	4	8	3.5	2.6	3.3	6
		250°C, 2.16kg								
Mold Shrinkage(MD)	ASTM D955	Flow at 3.2mm(MD)	%	0.4-0.7	0.4-0.7	0.4-0.7	0.4-0.7	0.4-0.7	0.3-0.6	0.3-0.6
Mold Shrinkage(TD)		X-Flow at 3.2mm(TD)		0.4-0.7	0.4-0.7	0.4-0.7	0.4-0.7	0.4-0.7	0.4-0.7	0.4-0.7
MECHANICAL PROPERTIES										
Tensile Strength at yield	ASTM D638	5mm/min	kgf/cm²	430	440				450	
		50mm/min				500	520	490		432
	ISO 527	50mm/min	MPa	47	50	48	51	48	44	42
Flexural Strength	ASTM D790	2.8mm/min	kgf/cm²	640	620				620	585
		10mm/min				750	720	720		
	ISO 178	2mm/min	MPa	78	85	75	78	85	70	63
Flexural Modulus	ASTM D790	2.8mm/min	kgf/cm²	22,000	21,000				20,000	18,441
		10mm/min				24,000	24,000	24,000		
	ISO 178	2mm/min	MPa	2,500	2,500	2,400	2,400	2,500	2,300	2,157
Izod Impact Strength (Notched)	ASTM D256	1/4inch at 23°C	kgf-cm/cm	14	12	12	13	9	15	26
		1/8inch at 23°C		16	15	15	14	11	20	
		1/4inch at -30°C								
		1/8inch at -30°C								
	ISO 180 1A	at 23°C, 4mm	kJ/m²	14	15	13	14	10	20	
		at -30°C, 4mm			7		8			
Charpy Impact Strength (V-notched)	ISO 179 1eA	at 23°C, 4mm	kJ/m²	13	15	13	13	11	20	30
at -30°C, 4mm										
Rockwell Hardness	ASTM D785	R-scale	-	110	113	115	115	115	105	101
	ISO 2039-2	R-scale	-	110	113	115	114	115	105	101
THERMAL PROPERTIES										
Heat Deflection Temperature	ASTM D648	18.56kgf/cm², 6.4mm	°C		100	103	107	112	97	91
		4.6kgf/cm², 6.4mm			110				107	
		18.56kgf/cm², 3.2mm								
Heat Deflection Temperature (Unannealed)	ISO 75-2	1.8MPa, 4.0mm	°C		92	93	98	103	86	
		0.45MPa, 4.0mm			105				98	90
Heat Deflection Temperature (Annealing)	ISO 75-2	1.8MPa, 4.0mm	°C							
		0.45MPa, 4.0mm								
VICAT Softening Temperature	ISO 306	B/50	°C	120	113	115	120	126	108	
		B/120								
FLAME CHARACTERISTICS										
Flammability	UL94	HB	mm	HB	HB	HB	HB	HB	HB	HB

Metal Plating/Painting ABS

				Metal Plating		Painting		
Properties	Test Method	Condition	Unit	MP-0160 R	MP-0670	PT-0180	PT-0180 H	PT-0180C
PHYSICAL PROPERTIES								
Specific Gravity	ASTM D792	-	-	1.04	1.04	1.04	1.04	1.04
Melt Flow Index	ASTM D1238	200°C, 5kg	g/10min	1.5	2.3	3.6	2.3	
		220°C, 10kg		17			15	
	ISO 1133	200°C, 5kg	g/10min	1.5	2.3	3.6	2.3	
		220°C, 10kg		17			15	
Mold Shrinkage(MD)	ASTM D955	Flow at 3.2mm(MD)	%	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.4-0.7
Mold Shrinkage(TD)		X-Flow at 3.2mm(TD)		0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.4-0.7
MECHANICAL PROPERTIES								
Tensile Strength at yield	ASTM D638	5mm/min	kgf/cm²	480	450	400	380	380
	ISO 527	50mm/min	MPa	49	51	42	42	39
Flexural Strength	ASTM D790	2.8mm/min	kgf/cm²	690	660	610	600	530
	ISO 178	2mm/min	MPa	68	72	75	66	62
Flexural Modulus	ASTM D790	2.8mm/min	kgf/cm²	23,000	21,500	20,000	20,000	18,500
	ISO 178	2mm/min	MPa	2,300	2,350	2,400	2,100	2,000
Izod Impact Strength (Notched)	ASTM D256	1/4inch at 23°C	kgf-cm/cm	28	24	20	33	36
		1/8inch at 23°C		30				39
		1/4inch at -30°C		9				
		1/8inch at -30°C		10				
	ISO 180 1A	at 23°C, 4mm	kJ/m²	26	27	20	32	37
Charpy Impact Strength (V-notched)	ISO 179 1eA	at 23°C, 4mm	kJ/m²	27	25	24	32	36
Rockwell Hardness	ASTM D785	R-scale	-	109	108	106	105	98
	ISO 2039-2	R-scale	-	109	108	106	105	98
THERMAL PROPERTIES								
Heat Deflection Temperature	ASTM D648	18.56kgf/cm², 6.4mm	°C	88			84	83
		4.6kgf/cm², 6.4mm		97				
Heat Deflection Temperature (Unannealed)	ISO 75-2	1.8MPa, 4.0mm	°C	80				76
		0.45MPa, 4.0mm		93				
VICAT Softening Temperature	ISO 306	B/120	°C	100	98	97	97	
FLAME CHARACTERISTICS								
Flammability	UL94	HB	mm				1.5, 3.0	

Transparent MABS

				General				Specialty			
Properties	Test Method	Condition	Unit	TX-0510T	TX-0520T	TX-0530T	TX-0550K	TX-0510F	TX-0520HR	TX-0570	TX-0550AT
PHYSICAL PROPERTIES											
Specific Gravity	ASTM D792	-	-	1.1	1.1	1.1	1.08	1.1	1.08	1.08	1.09
Melt Flow Index	ASTM D1238	220°C, 10kg	g/10min	16	15	14	27	14	10	4	25
	ISO 1133	220°C, 10kg		16	15	14.1	27	14	10	4	25
Mold Shrinkage(MD)	ASTM D955	Flow at 3.2mm(MD)	%	0.4-0.8	0.4-0.8	0.4-0.8	0.4-0.8	0.4-0.8	0.4-0.8	0.4-0.8	0.4-0.8
		X-Flow at 3.2mm(TD)		0.4-0.8	0.4-0.8	0.6-0.8	0.4-0.8	0.4-0.8	0.6-0.8	0.4-0.8	0.4-0.8
MECHANICAL PROPERTIES											
Tensile Strength at yield	ASTM D638	5mm/min	kgf/cm²	450	430	385	400	430	400	400	400
	ISO 527	5mm/min	MPa	40				47	47		30
		50mm/min		47	47	42		50			
Flexural Strength	ASTM D790	2.8mm/min	kgf/cm²	650	600	600		600	550	550	620
	ISO 178	2mm/min	MPa	70	70	61		70	45		62
		2.8mm/min		60			55				
Flexural Modulus	ASTM D790	2.8mm/min	kgf/cm²	21,000	20,000	19,500		20,000	19,000	17,000	22,000
	ISO 178	2mm/min	MPa	2,200	2,200	1,805		2,200	2,000	2,200	
		2.8mm/min				1,870			1,700		
Izod Impact Strength (Notched)	ASTM D256	1/4inch at 23°C	kgf·cm/cm	17			16	16	16	14	
		1/8inch at 23°C		15	16	17	18	16	18	18	15
	ISO 180 1A	at 23°C, 4mm	kJ/m²	12	12	15	17	12	15	12	
Charpy Impact Strength (V-notched)	ISO 179 1eA	at 23°C, 4mm	kJ/m²	13	12	15	15	12	15	13	13
Rockwell Hardness	ASTM D785	R-scale	-	109	106	101	105	106	101	102	100
	ISO 2039-2	R-scale	-	110	110	102	106	106	101	102	100
THERMAL PROPERTIES											
Heat Deflection Temperature	ASTM D648	18.56kgf/cm², 6.4mm	°C	75			81	80	75	80	77
		4.6kgf/cm², 6.4mm					88				
Heat Deflection Temperature (Unannealed)	ISO 75-2	1.8MPa, 4.0mm	°C	70	71	70	80	71	75	80	77
		0.45MPa, 4.0mm		83	81			81			
Heat Deflection Temperature (Annealing)	ISO 75-2	1.8MPa, 4.0mm	°C	80	80						
		0.45MPa, 4.0mm		86	85						
VICAT Softening Temperature	ISO 306	B/50	°C	88	87	87	90	89	86	91	85
FLAME CHARACTERISTICS											
Flammability	UL94	HB	mm	1.5, 3.0	1.5, 3.0			1.5-3.0			
OTHERS											
Yellow Index	ASTM D1925	3.2mm	-				-1.4				
Transmissivity	ASTM D1003	3.2mm	-	88	88	88	90	88	90	90	88
Haze	ASTM D1003	3.2mm	-	2.8	3	3	2	3	2	2	4

Weather Resistant Material

				ASA						
Properties	Test Method	Condition	Unit	WX-9120	WX-9130	WX-9120HT	WX-9120HF	WR-9120 J	WX-9300UV	WX-9310UV
PHYSICAL PROPERTIES										
Specific Gravity	ASTM D792	-	-	1.06	1.06	1.07	1.07	1.07	1.08	1.08
Melt Flow Index	ASTM D1238	220°C, 10kg	g/10min	16	3	18	39	26	10	6
		250°C, 2.16kg								
	ISO 1133	220°C, 10kg	g/10min	16	3	18	39	26	10	6
		250°C, 2.16kg								
Mold Shrinkage(MD)	ASTM D955	Flow at 3.2mm(MD)	%	0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.4-0.7	0.4-0.7	0.4-0.7
Mold Shrinkage(TD)		X-Flow at 3.2mm(TD)		0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.4-0.7	0.4-0.7	0.4-0.7
MECHANICAL PROPERTIES										
Tensile Strength at yield	ASTM D638	5mm/min	kgf/cm²	460	430	400	400	450		440
		50mm/min							440	
	ISO 527	5mm/min	MPa							
		50mm/min		43	45	35	40	43	47	49
Flexural Strength	ASTM D790	2.8mm/min	kgf/cm²	650	550	560	600	650	630	680
	ISO 178	2mm/min	MPa	67	65	65	65	72	70	70
Flexural Modulus	ASTM D790	2.8mm/min	kgf/cm²	21,000	19,000	16,400	19,000	21,000	20,000	22,000
	ISO 178	2mm/min	MPa	2,100	2,000	2,100	2,000	2,260	2,250	2,400
Izod Impact Strength (Notched)	ASTM D256	1/4inch at 23°C	kgf·cm/cm	10			7	9	8	9
		1/8inch at 23°C		18	50	18	12	21	16	18
		1/4inch at -30°C								
		1/8inch at -30°C								
	ISO 180 1A	at 23°C, 4mm	kJ/m²	18	12	15	12	9	10	16
	at -30°C, 4mm									
Rockwell Hardness	ASTM D785	R-scale	-	104	98	97	108	105	104	105
	ISO 2039-2	R-scale	-	104	98	98	108	105	104	106
THERMAL PROPERTIES										
Heat Deflection Temperature	ASTM D648	18.56kgf/cm², 6.4mm	°C	82		81	75	87		90
		4.6kgf/cm², 6.4mm		92			85			97
		18.56kgf/cm², 3.2mm								
		4.6kgf/cm², 3.2mm								
Heat Deflection Temperature (Unannealed)	ISO 75-2	1.8MPa, 4.0mm	°C	77	77	72	75	77	77	80
		0.45MPa, 4.0mm		88			85	91		96
Heat Deflection Temperature (Annealing)	ISO 75-2	1.8MPa, 4.0mm	°C					94		102
		0.45MPa, 4.0mm						99		106
VICAT Softening Temperature	ISO 306	B/50	°C	97	94	89	95	98	96	101
		B/120							99	103
FLAME CHARACTERISTICS										
Flammability	UL94	HB	mm							

Weather Resistant Material

				ASA										ASA/PMMA				High Weather Resistant ABS	
Properties	Test Method	Condition	Unit	WR-9300HF	WX-9330UV	WR-9330I	WR-9370	WX-9415	WX-9700		WX-9750	WX-9700A	WX-9730L	WX-9730LE	WX-9950	WX-9950UV	WR-0790	WR-0953	
PHYSICAL PROPERTIES																			
Specific Gravity	ASTM D792	-	-	1.07	1.09	1.07	1.07	1.24	1.07		1.07	1.06	1.06	1.06	1.12	1.16	1.06	1.09	
Melt Flow Index	ASTM D1238	220°C, 10kg	g/10min	12	4	5	3	5	9		4	5	3	3.5	6	5	30	20	
		250°C, 2.16kg		6.5															
	ISO 1133	220°C, 10kg	g/10min	12	4	5	3	5	9		4	5	3	3.5	6	5	30	20	
		250°C, 2.16kg		6.5															
Mold Shrinkage(MD)	ASTM D955	Flow at 3.2mm(MD)	%	0.3-0.6	0.4-0.7	0.4-0.7	0.4-0.7	0.2-0.4	0.7-0.9		0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.4-0.7	0.4-0.7	0.3-0.6	0.4-0.7	
Mold Shrinkage(TD)		X-Flow at 3.2mm(TD)		0.3-0.6	0.4-0.7	0.4-0.7		0.2-0.4	0.78		0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.4-0.7	0.4-0.7	0.3-0.6	0.4-0.7	
MECHANICAL PROPERTIES																			
Tensile Strength at yield	ASTM D638	5mm/min	kgf/cm²	450	450	480	500	850	430		410	400	320	340			450	470	
		50mm/min												500	640				
	ISO 527	5mm/min	MPa	44	45			80	44		43		30	30					
		50mm/min				52	49					40	27	28	46	65	45	50	
Flexural Strength	ASTM D790	2.8mm/min	kgf/cm²	680	640	710	710	1,062	620		570	600	430	440	700	780	650	680	
	ISO 178	2mm/min	MPa	67	73	80	70	130	65		62	60	50	50	68	90	70	75	
Flexural Modulus	ASTM D790	2.8mm/min	kgf/cm²	22,000	21,000	23,000	23,000	61,000	20,000		18,000	19,000	14,000	14,100	20,000	23,000	22,000	23,000	
	ISO 178	2mm/min	MPa	2,100	2,300	2,400	2,160	6,100	2,030		1,950	2,100	1,550	1,500	2,100	2,600	2,200	2,400	
Izod Impact Strength (Notched)	ASTM D256	1/4inch at 23°C	kgf-cm/cm	10	8			3.5	10						7	4	20		
		1/8inch at 23°C		15	22	14	15	3.5	50		53	55	18	20	7	4	24	18	
		1/4inch at -30°C		4.5												1.8			
		1/8inch at -30°C		3.5												2			
	ISO 180 1A	at 23°C, 4mm	kJ/m²	12		9	9	4.2	10		41					4	18		
		at -30°C, 4mm		5.5															
Rockwell Hardness	ASTM D785	R-scale	-	106	103	107	106	115	99		95	95	81	80	108	118	110	112	
	ISO 2039-2	R-scale	-	106	103	108	106	115	96		95	95	81	78	107	118	110	115	
THERMAL PROPERTIES																			
Heat Deflection Temperature	ASTM D648	18.56kgf/cm², 6.4mm	°C	87	92		94	109	77		72		77	77		85	75		
		4.6kgf/cm², 6.4mm		92	101			110		87									
		18.56kgf/cm², 3.2mm		73															
		4.6kgf/cm², 3.2mm		86															
Heat Deflection Temperature (Unannealed)	ISO 75-2	1.8MPa, 4.0mm	°C	80		82	87	109	75		77		72	73		77	74	75	
		0.45MPa, 4.0mm				97	103	110	88		88								
Heat Deflection Temperature (Annealing)	ISO 75-2	1.8MPa, 4.0mm	°C			103	104												
		0.45MPa, 4.0mm				107	109												
VICAT Softening Temperature	ISO 306	B/50	°C	100	103	104	109	115	95		94	97	87	86	95	102	93	96	
		B/120																	
FLAME CHARACTERISTICS																			
Flammability	UL94	HB	mm	1.5															

Specialty

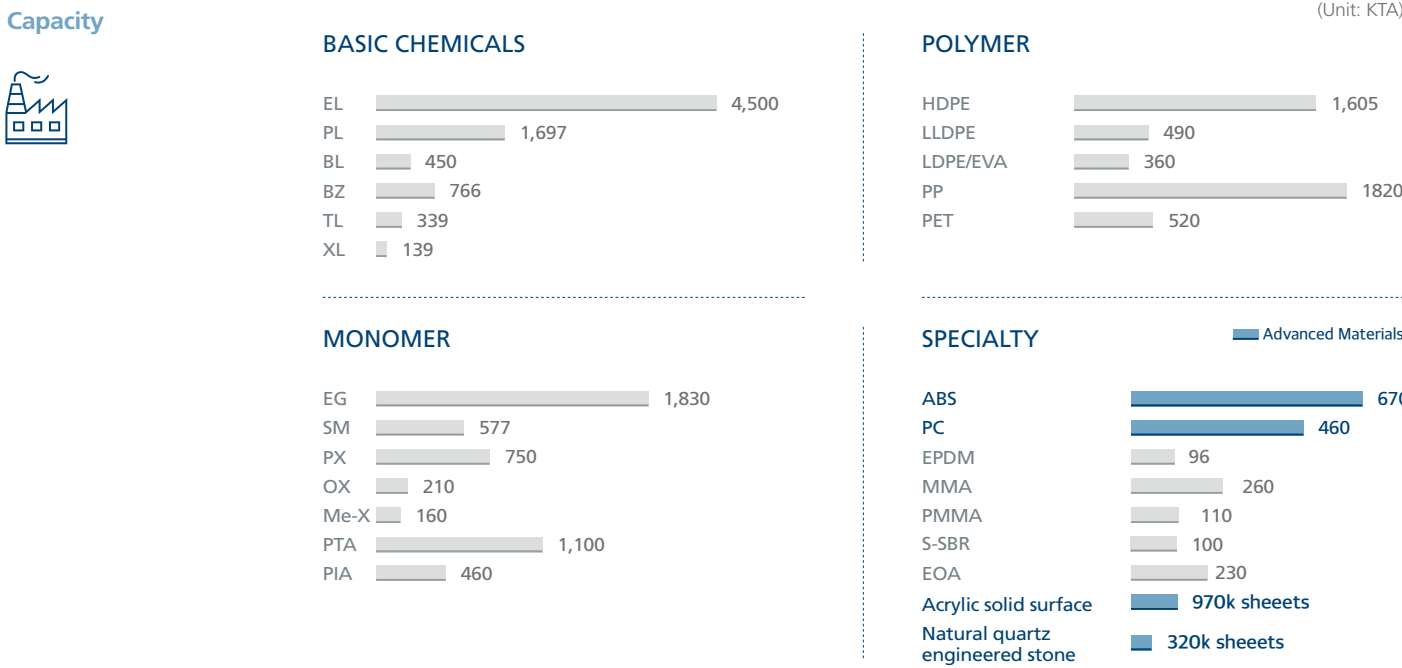
				LUMINOUS								Medical		evermoin		Eco-friendly			
Properties	Test Method	Condition	Unit	LX-0760	LX-0951	LM-0990	XM-0900	LM-0780	LX-0951EF		MR-0130	ML-0750	ABF-0200HF	ABF-0280	GC-0703	GC-0700	GC-0710	GC-0730	
PHYSICAL PROPERTIES																			
Specific Gravity	ASTM D792	-	-	1.04	1.05	1.1	1.09	1.07	1.04		1.05	1.04	1.07	1.19	1.07	1.1	1.12	1.12	
Melt Flow Index	ASTM D1238	200°C, 5kg	g/10min	3.2				5	5.5			4	4.5	5.5					
		220°C, 10kg			29	15	4.5			40									
	ISO 1133	200°C, 5kg	g/10min	3.2				5	5.5			4	4.5						
		220°C, 10kg			29	15	4.5			40									
Mold Shrinkage(MD)	ASTM D955	Flow at 3.2mm(MD)	%	0.3-0.6	0.3-0.6	0.4-0.8	0.4-0.8	0.3-0.6	0.3-0.6		0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.5-0.9	0.5-0.9	0.5-0.9	0.5-0.9	
Mold Shrinkage(TD)		X-Flow at 3.2mm(TD)		0.3-0.6	0.3-0.6	0.4-0.8	0.4-0.8	0.3-0.6	0.3-0.6		0.3-0.6	0.3-0.6	0.3-0.6	0.3-0.6	0.5-0.9	0.5-0.9	0.5-0.9	0.5-0.9	
MECHANICAL PROPERTIES																			
Tensile Strength at yield	ASTM D638	5mm/min	kgf/cm²				500	450	400		410	410	400						
		50mm/min		420	460	490						360	400	460	410	400			
	ISO 527	5mm/min	MPa								35								
		50mm/min		45	50	50	50	47	37		45	40	40	37	40	40			
Flexural Strength	ASTM D790	2.8mm/min	kgf/cm²	610	690	610	700	730	620		630	650	610	580	520	560	620	550	
	ISO 178	2mm/min	MPa	72	79	70	75	78	71		50	74	60		50	55	60	55	
Flexural Modulus	ASTM D790	2.8mm/min	kgf/cm²	21,000	24,000	20,000	22,000	27,000	21,500		22,000	23,000	22,000	22,000	17,000	19,000	19,100	17,000	
	ISO 178	2mm/min	MPa	2,400	2,600	2,240	2,100	2,800	2,400		2,100	2,400	2,100		1,900	1,800	1,900	1,700	
Izod Impact Strength (Notched)	ASTM D256	1/4inch at 23°C	kgf·cm/cm	14	14	12	7	6	14		18	22	22	10	17	16	12	12	
		1/8inch at 23°C		14	15	14	8	7	15		21	23			30	48	28	57	
	ISO 180 1A	at 23°C, 4mm	kJ/m²	17	14	13	6	6	14			16	21		15	12	5	35	
Charpy Impact Strength (V-notched)	ISO 179 1eA	at 23°C, 4mm	kJ/m²	19	15	12	6		16		10	19	23		15	13	5.2		
Rockwell Hardness	ASTM D785	R-scale	-	107	108	107	110	108	108		109	111	104	96	94	100	96	91	
	ISO 2039-2	R-scale	-	107	111	112	113	112	109		108	110	104		94	96	100	91	
THERMAL PROPERTIES																			
Heat Deflection Temperature	ASTM D648	18.56kgf/cm², 6.4mm	°C	85	85	81	83	85	86				84	75	70	80	80	74	
		4.6kgf/cm², 6.4mm		94			92		90					80	89				
Heat Deflection Temperature (Unannealed)	ISO 75-2	1.8MPa, 4.0mm	°C	77	77	70	75	75	78				84		70	71	70	70	
		0.45MPa, 4.0mm			90	82	83		89				80	83	83				
Heat Deflection Temperature (Annealing)	ISO 75-2	1.8MPa, 4.0mm	°C		95												85		
		0.45MPa, 4.0mm			99											96			
VICAT Softening Temperature	ISO 306	B/50	°C	96	96	88	98	96	97		93	94	95	86	91		94	91	
		B/120			99												97		
FLAME CHARACTERISTICS																			
Flammability	UL94	HB	mm			3		1.5/3.0						2.0T V0, 2.5T 5VA	1.5, 3.0HB	1.5, 3.0HB	1.5, 3.0HB	1.5, 3.0HB	



At a Glance

LOTTE Chemical's technologies help to enrich our daily lives.

Field of Business	Basic Chemicals	Basic/Intermediate Petrochemicals	Ethylene, Propylene, BD, SM, OX, C5
		Polymer	PE, PP, PET
		Monomer	EO/EG/GE, EOA, PIA/PTA/MMA
Advanced Materials	High Performance Plastic Materials	starex [®] Styrene & general product	ABS, ABS Alloy, ASA, EPS, PP
		INFINO [®] Engineering plastics	PC, PC Alloy, PBT, mPPE, PA, PPA, PPS, PCT, TPE
		Performance materials	TPE, Modified adhesive resin, TPO, LFT, EPP
	Construction Materials	staron [®] Acrylic solid surface	
		Radianz [®] Natural quartz engineered stone	
	Water Treatment Membrane	Locelain [®] Engineered porcelain surface	
		MEMBRIO	



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22

Countries

24

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- HQ Seoul
- R&D Uiwang, Daejeon
- PRODUCTION PLANT
- Asia Malaysia, Indonesia, Uzbekistan, Pakistan, South Korea*, China*, Vietnam*, India* ('20. 4Q)
- Europe Hungary*, Turkey* (E-stone)
- America U.S, Mexico*
- SALES CORPORATION
- Asia China*, Thailand*, Japan*
- Europe Germany*, Poland*
- America/Africa U.S*, Nigeria

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