

PMMA SMMA

Polymethyl methacrylate &
Styrene-Methyl methacrylate
copolymer





Introduction to LX MMA

As the leader of the domestic PMMA industry, LX MMA has integrated production facilities from MMA to PMMA and also maintains a technical service system capable of responding immediately to customer needs. LX MMA was established in 1991 as a joint venture between LG Chem, Sumitomo Chemical and Japan Catalyst.

After its establishment, LX MMA constructed its MMA Plant 1 in 1993 and acquired a PMMA business from LG Chem in 1999. This was followed by the completion of MMA Plant 2 in 2003, PMMA Plant 2 in 2005, MMA Plant 3 in 2008, a PMMA Plant 1 expansion in 2011, and a revamping of MMA Plant 3 in 2019. The company currently has a production capacity of 260 kilotons for MMA and 120 kilotons for PMMA, which has further solidified its position as the nation's No. 1 supplier and an emerging global MMA company.

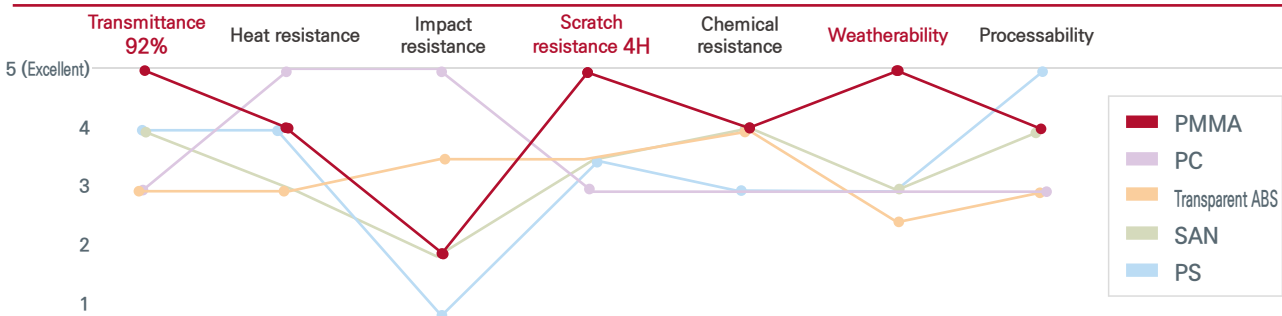
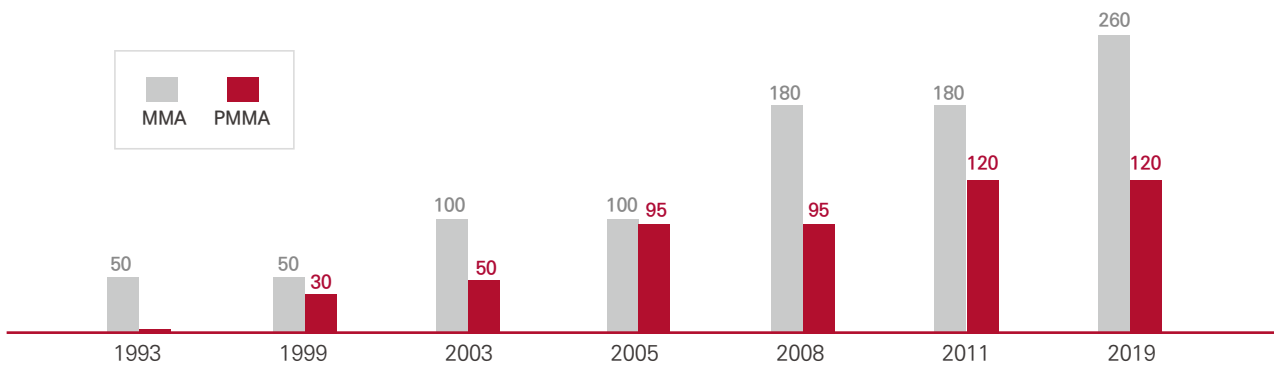
 **Production Capacity**

 **Comparison of LX PMMA with Other Transparent Resins**

 **Outstanding Characteristics of LX PMMA**

 **Standards and Certifications**

Capacity : 1,000MT/year



PMMA is an acrylic resin made of MMA monomer as the main material. It is a high-molecular material that is widely used for automotive, electric, and electronic components, as well as building materials, due to its excellent transparency, weatherability, and coloring properties.

High Transparency



The most excellent transparency among all plastics (Transmits more than 92% of the visible light spectrum).



Excellent Weatherability



The most excellent weatherability among all plastics.



High Scratch Resistance

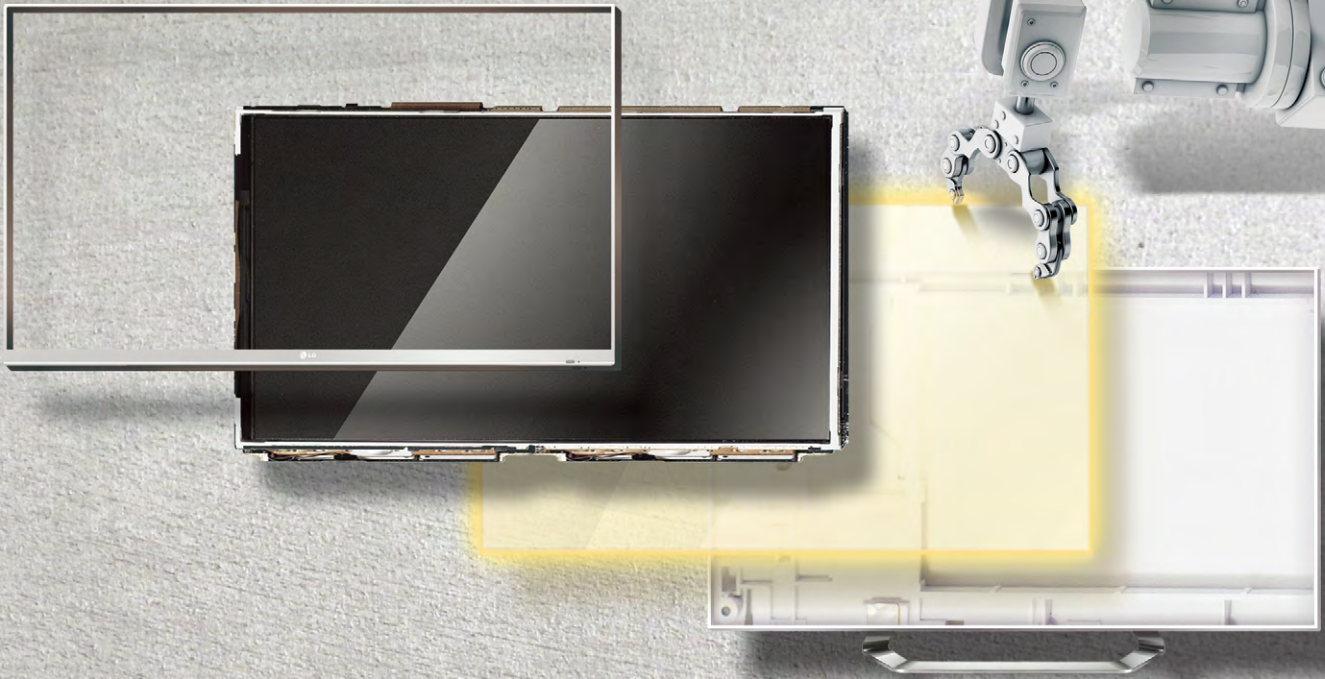


Excellent scratch resistance with its high degree of surface hardness among plastics

Item	LX PMMA	
Flame resistance	UL 94 (HB)	All Grades
Weatherability	AMECA	IH830, IH830A, IH830C, IH830CA, IH830HR, IH830L, IH830XT, IH830HF, EG920, EH910, HP202, HI835MS, HI835H, HI532, HI533
Hazardous materials	RoHS (Directive 2002/95/EC) IMDS / REACH	All Grades
FDA	US FDA regulation / 21CFR177.1010	IH830, IG840, IF850, IF870S, HI855M, HI855S, HI855H
Management system	ISO 14000 (Environment) / KGS 18000 (Safety) IATF 16949 (Quality)	All Grades



General PMMA Optical & Extrusion Grade



Examples of Applications

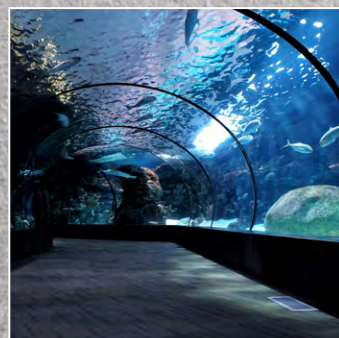
Light guide panels

- LED TVs
- Monitors
- Laptop computers



General Sheet

- Sign boards
- Advertisement boards
- Aquarium water tanks
- Soundproofing walls
- Sunlight domes
- Glazing



Material Properties

Item	Condition	Unit	Test method	Optical grade		Extrusion grade		
				HP202	HP05B	EG920	EH910	
Optical properties	Light transmittance	3mm	%	ISO 13468-1	92	92	92	92
	Haze	3mm	%	ISO 14782	<0.5	<0.5	<0.5	<0.5
Thermal properties	Melt Flow Index	230°C, 3.8kg	g/10min	ISO 1133	2.0	0.9	1.5	1.0
	VICAT Softening point	B/50	°C	ISO 306	109	110	105	108
	Heat Deflection Temperature	1.8MPa	°C	ISO 75	100	101	101	102
Mechanical properties	Charpy Impact strength	notched	kJ/m ²	ISO 179	1.5	1.5	1.5	1.5
	Rockwell hardness	M scale	-	ISO 2037-2	98	99	96	98
	Tensile strength	5mm/min	MPa	ISO 527	70	70	70	72
	Tensile elongation	5mm/min	%	ISO 527	6.8	6.8	8.1	7.5
	Tensile modulus	1mm/min	GPa	ISO 527	3.0	3.0	3.0	3.0
	Flexural strength	2mm/min	MPa	ISO 178	115	115	114	115
	Flexural modulus	2mm/min	GPa	ISO 178	3.0	3.1	3.0	3.0

Item	Condition	Unit	Test method	Values (common)	
General properties	Specific gravity	-	g/cm ³	ISO 1183	1.19
	Refractive index	nd	-	ISO 489	1.49
	Water absorption rate	24hr	%	ASTM D570	0.3
	Mold shrinkage rate	-	%	ASTM D955	0.2-0.6
	Linear expansion coefficient	-	1/°C	ASTM D696	6 × 10 ⁻⁵
	Flammability	1.5mm	Class	UL94	HB
Electrical properties	Volume resistivity	-	Ω · cm	ASTM D257	>10 ¹⁵
	Dielectric strength	4kV/s	kV/mm	ASTM D149	20
	Dielectric constant	60Hz	-	ASTM D150	3.1
	Dielectric tangent	60Hz	-	ASTM D150	0.05

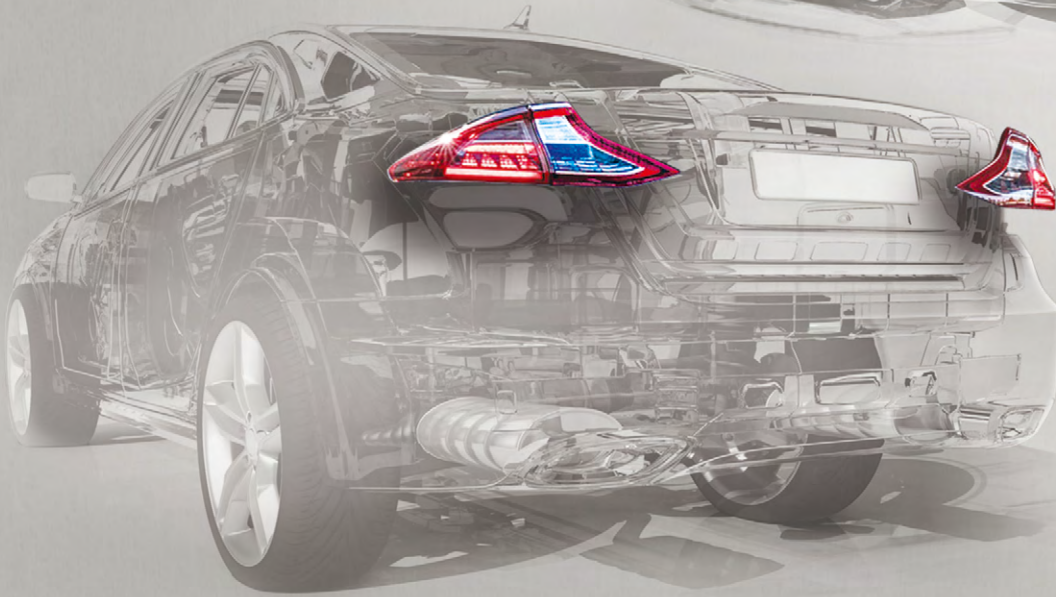
REMARKS : The listed values should be used for reference purpose only.

Typical Extrusion Forming Conditions

Item	Temperature condition(°C)	
Cylinder	Feed zone	170 – 200
	Melting zone	220 – 250
	Metering zone	230 – 260
Die Guide Roll	220 – 250	
	80 – 100	



General PMMA Injection molding & Heat resistant grade



Examples of Applications

Electric & Electronic items

- Display windows for appliances



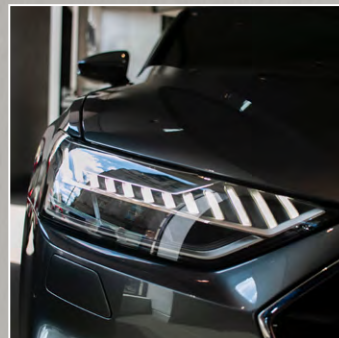
General goods

- Cosmetic containers
- Food containers
- Stationery
- Accessories



Automotive

- Tail lamps
- Instrument panels
- Head lamp light pipes and non-spherical lenses
- Pillar garnishes
- Stop lamps (CHMSL)
- Direction indication lamps
- Emblems
- Indoor lamps



Material Properties

Item	Unit	Injection molding grade									
		IH830	IH830C	IH830CA	IH830L	IH830LH	IH830HF	IH830A	IF850	IF870S	
Optical properties	Light transmittance	%	92	92	92	92	92	92	92	92	92
	Haze	%	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Thermal properties	Melt Flow Index	g/10min	2.3	2.0	1.0	2.4	1.9	3.3	5.3	12.5	23.0
	VICAT Softening point	°C	109	108	107	110	111	108	102	92	90
	Heat Deflection Temperature	°C	101	100	100	102	99	100	95	88	86
Mechanical properties	Charpy Impact strength	kJ/m ²	1.5	1.5	1.5	1.5	1.5	1.4	1.5	1.5	1.5
	Rockwell hardness	–	95	97	96	95	96	99	95	92	89
	Tensile strength	MPa	71	74	70	72	72	73	65	62	56
	Tensile elongation	%	5.0	6.5	8.1	5.0	7.6	5.0	5.0	4.0	2.8
	Tensile modulus	GPa	3.3	3.4	3.2	3.1	2.7	3.3	2.9	2.8	2.8
	Flexural strength	MPa	111	113	115	113	120	118	103	101	94
	Flexural modulus	GPa	3.0	3.0	3.0	3.0	3.0	3.3	2.9	2.9	2.8

Item	Unit	Heat resistant grade			
		IH830HR	IH830XT	IH830HT	
Optical properties	Light transmittance	%	92	92	92
	Haze	%	<0.5	<0.5	<0.5
Thermal properties	Melt Flow Index	g/10min	1.7	2.4	1.7
	VICAT Softening point	°C	115	114	115
	Heat Deflection Temperature	°C	105	104	104
Mechanical properties	Charpy Impact strength	kJ/m ²	1.5	1.5	1.5
	Rockwell hardness	–	99	99	99
	Tensile strength	MPa	73	68	70
	Tensile elongation	%	5.3	4.0	4.5
	Tensile modulus	GPa	3.0	3.1	3.2
	Flexural strength	MPa	120	115	118
	Flexural modulus	GPa	3.2	3.2	3.1

Item	Condition	Unit	Test method	Values (common)	
General properties	Specific gravity	–	g/cm ³	ISO 1183	1.19
	Refractive index	nd	–	ISO 489	1.49
	Water absorption rate	24hr	%	ASTM D570	0.3
	Mold shrinkage rate	–	%	ASTM D955	0.2–0.6
	Linear expansion coefficient	–	1/°C	ASTM D696	6 × 10 ⁻⁵
	Flammability	1.5mm	Class	UL94	HB
Electrical properties	Volume resistivity	–	Ω · cm	ASTM D257	>10 ¹⁵
	Dielectric strength	4kV/s	kV/mm	ASTM D149	20
	Dielectric constant	60Hz	–	ASTM D150	3.1
	Dielectric tangent	60Hz	–	ASTM D150	0.05

REMARKS : The listed values should be used for reference purpose only.



Impact Resistant PMMA

Transparent Impact Resistant grade

Opaque Impact Resistant grade



Examples of Applications

Appliances/Mobile devices

- Appliance housings
- Decoration sheets for furniture
- Front/back faces of smartphones
- TV bezels
- Audio front panels
- Lighting profiles



	Item	Condition	Unit	Test method	Values (common)
General properties	Refractive index	nd	-	ISO 489	1.49
	Water absorption rate	24hr	%	ASTM D570	0.4
	Mold shrinkage rate	-	%	ASTM D955	0.4-0.8
	Linear expansion coefficient	-	1/°C	ASTM D696	7×10^{-5}
	Flammability	1.5mm	Class	UL94	HB
Electrical properties	Volume resistivity	-	$\Omega \cdot \text{cm}$	ASTM D257	$>10^{15}$
	Dielectric strength	4kV/s	kV/mm	ASTM D149	15
	Dielectric constant	60Hz	-	ASTM D150	3.1
	Dielectric tangent	60Hz	-	ASTM D150	0.04

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Material Properties

Item	Unit	Transparent Impact Resistant grade HI8 Series							
		HI835MS	HI835M	HI835S	HI835H	HI855M	HI855S	HI855H	
Optical properties	Light transmittance	%	91	91	91	91	91	91	91
	Haze	%	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Thermal properties	Melt Flow Index	g/10min	1.8	3.3	2.6	2.0	6.4	5.4	3.8
	VICAT Softening point	°C	102	93	95	92	88	87	86
	Heat Deflection Temperature	°C	98	90	91	84	86	86	85
Mechanical properties	Charpy Impact strength	kJ/m ²	2.6	3.2	4.5	5.5	3.2	4.3	5.5
	Rockwell hardness	-	78	70	64	47	62	53	38
	Tensile strength	MPa	67	43	39	38	41	38	35
	Tensile elongation	%	30	35	35	42	38	46	47
	Tensile modulus	GPa	2.5	2.0	1.9	1.8	2.0	2.0	1.7
	Flexural strength	MPa	85	81	78	68	78	74	65
	Flexural modulus	GPa	2.4	2.0	2.1	1.8	2.0	2.1	1.8
General properties	Specific gravity	g/cm ³	1.18	1.17	1.17	1.16	1.17	1.17	1.16

Item	Unit	Transparent Impact Resistant grade HI5 Series							
		HI517	HI527	HI533	HI537	HI552	HI553	HI555	HI572
Optical properties	Light transmittance	%	91	91	91	91	91	91	91
	Haze	%	<2.0	<2.0	<1.5	<2.0	<1.5	<1.5	<1.5
Thermal properties	Melt Flow Index	g/10min	0.9	1.8	3.1	1.2	7.2	6.4	4.3
	VICAT Softening point	°C	88	96	95	88	92	88	85
	Heat Deflection Temperature	°C	84	92	92	85	88	87	84
Mechanical properties	Charpy Impact strength	kJ/m ²	7.0	6.5	3.5	7.9	2.9	3.5	5.8
	Rockwell hardness	-	35	45	67	46	78	62	51
	Tensile strength	MPa	36	45	44	36	52	40	38
	Tensile elongation	%	50	52	37	50	27	30	45
	Tensile modulus	GPa	1.2	1.2	2.4	1.5	2.2	2.0	1.6
	Flexural strength	MPa	56	60	82	48	92	71	65
	Flexural modulus	GPa	1.5	1.5	2.3	1.5	2.4	2.0	1.8
General properties	Specific gravity	g/cm ³	1.16	1.16	1.17	1.16	1.17	1.17	1.17

Item	Unit	Opaque Impact Resistant grade EMMA HC Series				
		HC308	HC349	HC353	HC556	
Thermal properties	Melt Flow Index	g/10min	8.0	9.7	3.6	6.7
	VICAT Softening point	°C	83	89	94	86
	Heat Deflection Temperature	°C	77	82	90	80
Mechanical properties	Charpy Impact strength	kJ/m ²	10.0	3.5	4.7	5.2
	Rockwell hardness	-	55	71	77	63
	Tensile strength	MPa	33	42	42	37
	Tensile elongation	%	30	24	20	34
	Tensile modulus	GPa	2.1	3.0	2.5	2.3
	Flexural strength	MPa	65	79	84	72
	Flexural modulus	GPa	2.1	2.4	2.6	2.2
General properties	Specific gravity	g/cm ³	1.13	1.16	1.16	1.16

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SMMA Optical & Injection Molding Grade

Examples of Applications

Optical light guide panels

- LED TVs
- Monitors
- Laptop computers

General injection molding

- Cosmetic containers
- Food containers

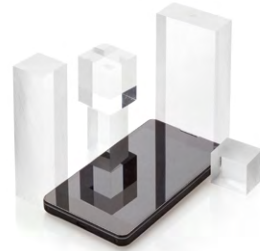


- Excellent optical characteristics
- Low rate of water absorption
- Excellent weatherability
- Excellent processability
- Low residual stress inside molded products
- Low specific gravity (1.11 g/cm²)

Characteristics of SMMA

SMMA resin is a transparent copolymer made of MMA (Methyl methacrylate) and SM (Styrene monomer) as the main materials. Its advantages are acrylic resin-level optical properties and transparency, good processability, and a low residual stress in molded products.

In particular, the water absorption rate is lower than that of ordinary acrylic resin, so the SMMA resin can be applied under high temperature and humid conditions, and can be used for various applications such as light guide plates, lighting covers, and cups.



Material Properties

Item	Condition	Unit	Test method	Optical grade		Injection grade	
				HX238	HX208	HX700	
Optical properties	Light transmittance	3mm	%	ISO 13468-1	91	91	91
	Haze	3mm	%	ISO 14782	<0.5	<0.5	<0.5
Thermal properties	Melt Flow Index	230°C, 3.8kg	g/10min	ISO 1133	8.0	8.0	8.0
	VICAT Softening point	B/50	°C	ISO 306	105	100	105
	Heat Deflection Temperature	1.8MPa	°C	ISO 75	100	97	100
Mechanical properties	Charpy Impact strength	notched	kJ/m ²	ISO 179	1.4	1.4	1.4
	Rockwell hardness	M scale	-	ISO 2039-2	84	72	84
	Tensile strength	5mm/min	MPa	ISO 527	65	63	65
	Tensile elongation	5mm/min	%	ISO 527	5.4	3.7	5.2
	Tensile modulus	1mm/min	GPa	ISO 527	3.0	3.1	3.0
	Flexural strength	2mm/min	MPa	ISO 178	105	104	105
General properties	Flexural modulus	2mm/min	GPa	ISO 178	3.2	3.1	3.2
	Specific gravity	-	g/m ³	ISO 1183	1.15	1.11	1.15
	Refractive index	nd	-	ISO 489	1.53	1.55	1.53
	Water absorption rate	24hr	%	ASTM D570	0.18	0.12	0.18
	Mold shrinkage rate	-	%	ASTM D955	0.2-0.6	0.2-0.6	0.2-0.6
	Linear expansion coefficient	-	1/°C	ASTM D696	6X10 ⁻⁵	6X10 ⁻⁵	6X10 ⁻⁵
	Flammability	1.5mm	class	UL94	HB	HB	HB

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PMMA applied in a PC Alloy

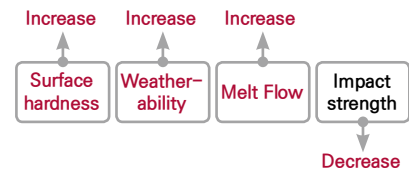
Examples of Applications

- Back covers for mobile phones
- Display windows
- Appliance housings



Characteristics of PMMA applied in a PC Alloy

By creating a compound with PC, this product can enhance the surface hardness, which is a weak point of PC. It contains SA256 (for transparent products) and SA232 (for opaque products). The hardness of the PC ranges from the level of pencil hardness B to pencil hardness H when SA256 is applied.



Examples of PMMA Applications in a PC Alloy

SA256 can be applied for use in mobile phone back covers, display windows, and appliance housings because, when used in a PC compound, it can improve the surface hardness while maintaining the transparency of general PC.

Material Properties

					PC (Melt flow index 10*)				PC+SA256												
SA256 contents(%)					0				20		25		30								
Injection temperature(°C)					-				260	280	300	320	260	280	300	320	260	280	300	320	
	Item	Condition	Unit	Test method																	
Optical properties	Light transmittance	3mm	%	ISO 13468-1	90.3	90.8	90.9	90.8	90.2	90.6	90.6	90.2	89.8	90.9	90.9	90.3	89.6				
	Haze	3mm	-	ISO 14782	0.6	0.5	0.6	0.6	1.0	0.5	0.6	0.5	1.1	0.5	0.6	0.5	1.7				
Thermal properties	Melt flow index	230°C, 3.8kg	g/10min	ISO 1133	1.6	3.0			3.2				3.9								
	VICAT softening point	B/50	°C	ISO 306	149	134			130				127								
Mechanical properties	Charpy impact strength	notched	kJ/m²	ISO 179	70	3.5	3.5	3.5	3.4	3.0	3.0	3.0	3.0	2.8	2.8	2.8	2.8				
		unnotched			No Break																
	Rockwell hardness	M scale	-	ISO 2039-2	46	76	77	77	79	80	80	80	82	83	83	83	84				
	Pencil hardness	1kgf	-	ASTM D3363	48	F			F				H								

*at 300°C, 1.2 kgf



IMMA Acrylic Impact Modifier

Examples of Applications

- Appliance & automotive exteriors
- Sheets and profiles for buildings
- PMMA/ABS Co-extrusion sheets



Characteristics of the IMMA Acrylic Impact Modifier

Our PR700 has excellent weatherability as an acrylic impact modifier. In addition, since it is designed to have the same refractive index as PMMA, it can maintain the high transparency that is an advantage of PMMA. As the impact modifier content increases, the impact strength of the impact resistant PMMA also increases. By considering other properties such as the melt flow index/heat resistance/surface hardness, the content can be adjusted according to the desired characteristics of the final product.

Material Properties

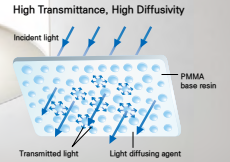
Major Material Properties with the Impact Modifier	Condition	Unit	Test Method	PMMA 100%	PMMA 70% + PR700 30%
Light transmittance	3mm	%	ISO 13468-1	92.0	91.5
Haze	3mm	%	ISO 14782	<0.5	<1.5
Charpy impact strength	notched	kJ/m ²	ISO 179	1.5	4.4
Weatherability chrominance (ΔE)	4,500kJ/m ²	-	SAE J2527	0.25	0.35

*PMMA=LX PMMA IG840

Diffusion PMMA

Examples of Applications

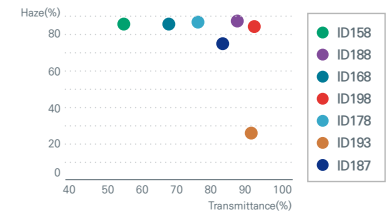
- Diffusion lamp covers
- Automotive tail lamps



Diffusion Grade for Lighting Applications

The LX PMMA "ID" Grade provides high light transmittance and high diffusion characteristics as a result of adding our unique diffusion agent, which can maximize the lighting equipment efficiency while not exposing the LED light source. Depending on the required lighting characteristics, we can provide products with high transmittance/low diffusion, high transmittance/high diffusion, and low transmittance/high diffusion properties.

Haze vs. Tt



Material Properties for the ID Series

Property	Thickness	Unit	Method	ID Grade									
				ID191	ID193	ID195	ID198	ID188	ID178	ID168	ID68	ID1558	ID1559
Tt	2mm	%	JIS K 7361	92	91	90	87	82	73	64	64	54	52
	3mm			92	91	89	83	74	62	53	54	46	45
Haze	2mm	%	JIS K 7136	15	38	81	96	98	99	99	99	99	99
	3mm			20	49	89	98	99	99	99	99	99	99
Base PMMA				IH830C, IH830A, IF850 etc									

Each of the three digits after "ID" refers to the base PMMA, transmittance rate, and haze.
For the base PMMA, an injection molding grade, extrusion grade, or an impact resistant grade can be applied.

LF Series Characteristics

The LX PMMA "LF" Grade provides PMMA with a unique and elegant appearance, good weatherability, high hardness, matt features, and a frosted optical effect on the surface created based on the matt functional light diffusion technology of LX MMA. It can be applied as a material for lighting covers and automotive light guides, by processes such as injection molding, extrusion molding, and profile extrusion. In particular, in extrusion molding a unique and remarkable matt effect is realized, while in the case of co-extruded sheets with supermatt applied, it maintains the matt effect even after thermal forming for use as a sheet for appliance exteriors or bathtubs.

Material Properties for the LF Series

Property	Thickness	Unit	Method	LF Grade		
				LF193	LF198	LF188
Light transmittance (Tt)	1mm	%	JIS K 7361	91	90	90
	2mm			90	88	87
	3mm			90	84	81
Haze	1mm	%	JIS K 7136	40	90	91
	2mm			43	96	97
	3mm			47	98	99



Non-painting PMMA



Lower body panels



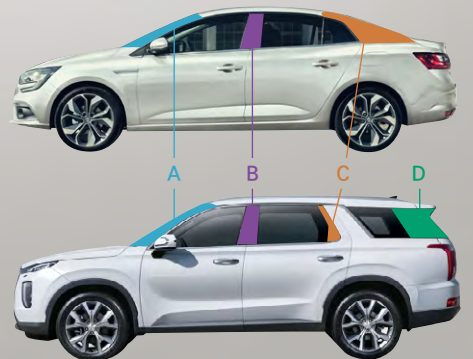
Fog lamp trims



Wing Mirror base plate

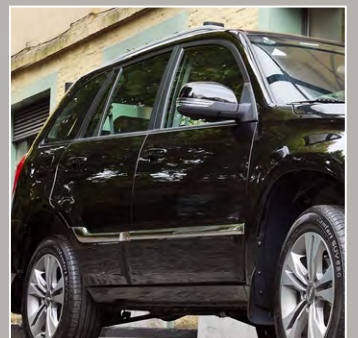
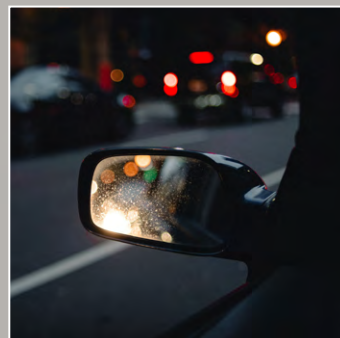


pillar garnish ABCD



Examples of Applications

- Pillars (A~D)
- Side-view mirrors
- Front grill decor



Introduction to the Products

Our non-painting materials can be applied to parts as exterior decor without going through the painting process, thanks to excellent weatherability, coloring property, and anti-scratch surface properties, resulting in an active solution for cost savings and environmental protection. They can be used for automotive exterior decor elements including pillars (A~D), side-view mirrors, and other decor parts, which are currently being supplied to global OEMs (Hyundai/Kia, Renault, etc.) after having been formally approved.

Material Properties

	Item	Unit	IH830 -9678	IH830HF -9678	IH830HR -9678	HI835MS -9678	HI542 -S9678	HI543 -S9678	HI753 -9678	HI781 -9678
Thermal properties	Melt Flow Index	g/10min	2.3	3.8	1.7	1.8	3.1	3.0	1.7	1.0
	VICAT Softening point	°C	108	109	115	102	100	107	93	91
	Heat Deflection Temperature	°C	101	102	107	98	98	106	92	90
Mechanical properties	Charpy Impact strength	kJ/m ²	1.5	1.5	1.5	2.6	4.5	2.9	6.8	8.2
	Rockwell hardness	-	95	96	99	78	70	75	40	30
	Tensile strength	MPa	71	65	75	67	60	60	59	40
	Tensile elongation	%	5.0	4.5	4.7	30	30	30	33	60
	Tensile modulus	GPa	2.8	2.8	3.1	2.5	2.4	2.4	2.1	2.0
	Flexural strength	MPa	111	100	117	85	83	83	79	65
	Flexural modulus	GPa	3.0	2.8	3.0	2.4	2.3	2.3	2.3	1.6
General properties	Specific gravity	g/cm ³	1.19	1.19	1.19	1.18	1.17	1.18	1.15	1.14
Applications	Simple covers/panels [decorative function]		●●●●	●●●●	●●●●	○○○○	○○○○	○○○○	○○○○	○○○○
	Pillar covers [B,C,D]		●●●●	●●●●	●●●●	●●●●	●●●●	○○○○	○○○○	○○○○
	Pillar covers [A]		○○●●	○○○○	○○○○	○○●●	○○●●	○○○○	○○○○	○○○○
	Mirror housings and base plate covers		○○○○	○○○○	○○○○	○○○○	○○●●	●●●●	●●●●	●●●●
	Rear and side spoiler		●●●●	○○○○	○○○○	○○○○	○○○○	○○○○	●●●●	○○○○
	Front/rear Bumper trim.		○○○○	○○○○	○○○○	○○○○	○○○○	○○○○	○○○○	●●●●
	Roof Modules		○○○○	○○○○	○○●●	○○○○	○○○○	●●●●	○○○○	○○○○

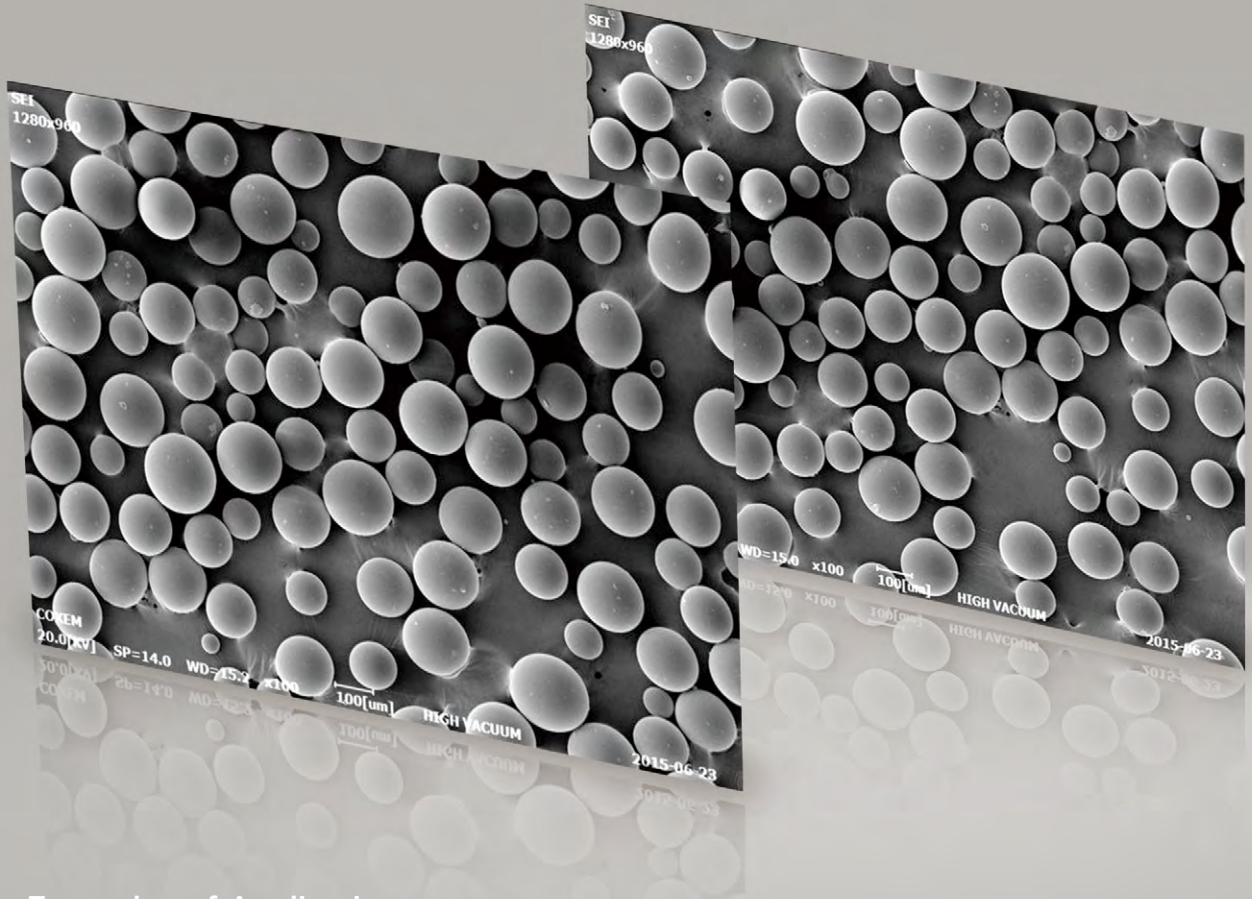
Color and Brilliance

Product	IH830-9678	HI835MS-9678
Thickness	3mm	3mm
L*	0.86	1.10
a*	0.06	-0.13
b*	-0.34	-0.43
High gloss :20°	83.40	83.70
Mid gloss: 60°	88.70	88.90

*Measurement instruments and methods: Light source for the measurement of D65-10 deg. (SCE, reflection mode)

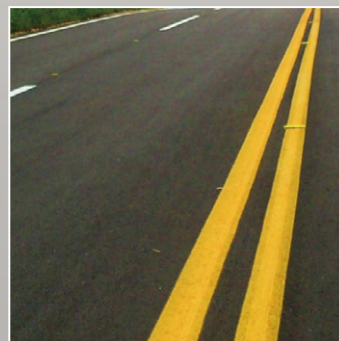


Acryl Bead



Examples of Applications

- Ink
- Plastic coatings
- Concrete coatings
- Street lane paints
- Paints for ships and containers



Introduction to the Product

LX MMA manufactures a variety of acrylic resins for coating purposes, which are created based on our own copolymerizing technology. Our acrylic resins are used for various inks, paints, acrylic coatings, acrylic adhesives, surface coating agents, low shrinkage agents, etc. They will dissolve in various solvents including aromatics, esters, and ketones.

In accordance with the customer's requirements, the molecular weight, Tg, and acid values can be adjusted.

Characteristics of the Acrylic Resin for Coating

- Excellent weather resistance and durability
- Excellent transparency and brilliance
- Works with various solvents
- Manifestation of elegant colors

Product Appearance

- Solid, Bead polymer (average particle size : 200~300 μ m)

Material Properties

Grade	Base Composition	Typical Properties ¹⁾			Viscosity in Various Solvents ²⁾								
		Tg	Mw	A.V	Alcohol		Ester			Aromatics		Ketone	
					Ethanol	Methanol	Methyl Acetate	Ethyl Acetate	Isopropyl Acetate	Toluene	Xylene	Acetone	MEK
BA030	MMA/EA	38	80,000	2	I.S.	I.S.	100 ³⁰	105 ³⁰	810	700	170 ³⁰	250	260
BN070	MMA/BMA	50	140,000	<1	I.S.	I.S.	-	-	1,900	830	1,220	-	490
BA122	MMA/BMA	60	60,000	4	I.S.	I.S.	290	410	610	310	480	150	140
BA123	MMA/BMA	60	60,000	3.5	I.S.	I.S.	300	410	660	350	555	150	140
BA124	MMA/BMA	61	60,000	8	I.S.	I.S.	230	270	-	465	635	100	105
BA140	MMA/EA	55	100,000	3.5	I.S.	I.S.	170 ³⁰	2,340	330 ³⁰	2,300	75 ²⁰	490	610
BA141	MMA/BMA	55	100,000	3	I.S.	I.S.	100 ³⁰	1,150	190 ³⁰	830	1,400	360	350
BA410	MMA/BMA	80	40,000	3.5	I.S.	I.S.	315	445	790	340	600	160	160
BA525	MMA/EA	90	70,000	16	I.S.	I.S.	200 ³⁰	280 ³⁰	560	130 ²⁰	P.S.	970	1,050
BA531	MMA	105	100,000	2	I.S.	I.S.	770 ³⁰	80 ²⁰	3,130 ³⁰	8,500	90 ²⁰	7,280	330 ³⁰
BA611	MMA	105	40,000	2	I.S.	I.S.	110 ³⁰	1,600	360 ³⁰	1,070	50 ²⁰	530	520
BN600	MMA	101	20,000	<1	I.S.	I.S.	170	240	440	210	70 ³⁰	80	95
BN640	MMA	105	100,000	<1	I.S.	I.S.	-	-	-	-	-	-	450 ³⁰
BN720	MMA	116	50,000	2	I.S.	I.S.	270 ³⁰	440 ³⁰	1,460 ³⁰	2,430	65 ²⁰	155 ³⁰	2,130

Typical Properties¹⁾

- Tg : Glass transition temperature (°C)
- Mw : Molecular weight (g/mol)
- A.V : Acid value (mg KOH/g)

Viscosity in Various Solvents²⁾

- Values are Brookfield viscosity (cP), at 23°C of a 40% solids solution, except as noted
- Superscript indicates % solids
- I.S. : Insoluble P.S. : Partially soluble
(Test Method : Solubility 20wt% resin at room temperature)

Molding Process Guide

Preliminary Drying

When PMMA and SMMA resin is stored for a long period of time, or if it is stored under unsuitable conditions, the resin may absorb moisture. If the absorption rate is 0.1% or higher, silver streaks may appear on the surface of the molded part or bubbles may appear inside the resin. Therefore, it is recommended that preliminary drying is conducted, according to the following conditions.

Grade	Temperature	Time
Optical grade, General PMMA, SMMA	70~80℃	4~6 hours
Impact resistant PMMA	60~70℃	

Annealing

In the event the molded part comes into contact with paint or an organic liquid compound, annealing is essential to prevent crazing or cracking resulting from internal stresses in the molded part. It is most effective to anneal the part at the highest temperature that does not cause any deformation of the part.

Grade	Temperature	Time
HP202, EH910, EG920	Max. 90℃	Min. 5 hours
IH830, IH830C, IH830A	Max. 80℃	
IF850, IF870S, SMMA (HX238, HX208)	Max. 70℃	
Impact resistant PMMA	Max. 60℃	

Injection Molding Conditions

Grade	Melting Temperature	Mold Temperature
HP202, EH910, EG920, Heat resistant PMMA	230~260℃	60~80℃
IH830, IH830C, IH830A	220~250℃	50~70℃
IF850, IF870S, SMMA (HX238, HX208)	210~240℃	
Impact resistant PMMA		

Handling & Use

Static Electricity

The surrounding dust is easily attracted due to static electricity. Therefore, it is important to maintain cleanliness around the material storage site and the injection molding machine.

Cautions in mixing with other grades and resins

When molding the products, make sure that no resin of a different grade or other resin is mixed in.

Moisture Absorption

Do not leave even dry resins unattended in the atmosphere. Do not leave the resin bags open and unattended.

Chemical Resistance

Suitable	Requires attention	Unsuitable	
<p>Dilute acid</p> <ul style="list-style-type: none"> Hydrochloric acid (10%) Sulfuric acid (30%) Nitric acid (30%) Acetic acid (10%) <p>Alkali</p> <ul style="list-style-type: none"> Sodium hydroxide (50%) Aqueous ammonia (10%) <p>Aliphatic hydrocarbon</p> <ul style="list-style-type: none"> n-Hexane n-Heptane n-Octane Paraffin <p>Inorganic salt solution</p> <ul style="list-style-type: none"> Aqueous salt solution (10%) <p>Oil and fats</p> <ul style="list-style-type: none"> Turpentine oil Kerosene Gasoline Solvent naphtha <p>Water</p> <ul style="list-style-type: none"> Sea water Soapy water (1%) Oxygenated water (10%) <ul style="list-style-type: none"> Dibutyl phthalate Diethyl phthalate Formaline (40%) Ethylene diamine Diethylamine 	<ul style="list-style-type: none"> Hydrochloric acid <p>Alcohol</p> <ul style="list-style-type: none"> Methanol Ethanol Isopropyl alcohol Butyl alcohol <p>Ether</p> <ul style="list-style-type: none"> Methyl ether Diethyl ether Isopropyl ether <p>Cyclohexane</p> <p>Tetrachloromethane</p> <p>Cyclohexanon</p> <p>Benzaldehyde</p>	<p>Acid</p> <ul style="list-style-type: none"> Sulfuric acid Nitric acid Acetic acid Formic acid <p>Aromatic hydrocarbon</p> <ul style="list-style-type: none"> Benzene Toluene Xylene Phenol <p>Alicyclic hydrocarbon</p> <ul style="list-style-type: none"> Chlorobenzene <p>Alcohol</p> <ul style="list-style-type: none"> Benzyl alcohol Furfuryl alcohol <p>Chlorinated aliphatic</p> <ul style="list-style-type: none"> Methylene dichloride Ethylene dichloride Ethylene drichloride Chloroform Nitromethane Nitroethane Nitrobenzene <p>Acetaldehyde</p> <ul style="list-style-type: none"> Propylene oxide <p>Dioxane</p> <ul style="list-style-type: none"> Ethyl formate <p>Acetonitrile</p> <ul style="list-style-type: none"> Acrylonitrile <p>Dimethyl formamide</p> <ul style="list-style-type: none"> Aniline 	<p>Ketone</p> <ul style="list-style-type: none"> Acetone Methyl ethyl ketone Methyl Isobutyl ketone <p>Ether</p> <ul style="list-style-type: none"> Furan Tetrahydrofuran <p>Ester</p> <ul style="list-style-type: none"> Methyl methacrylate Methyl acrylate Methyl acetate Ethyl acetate Propyl acetate



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