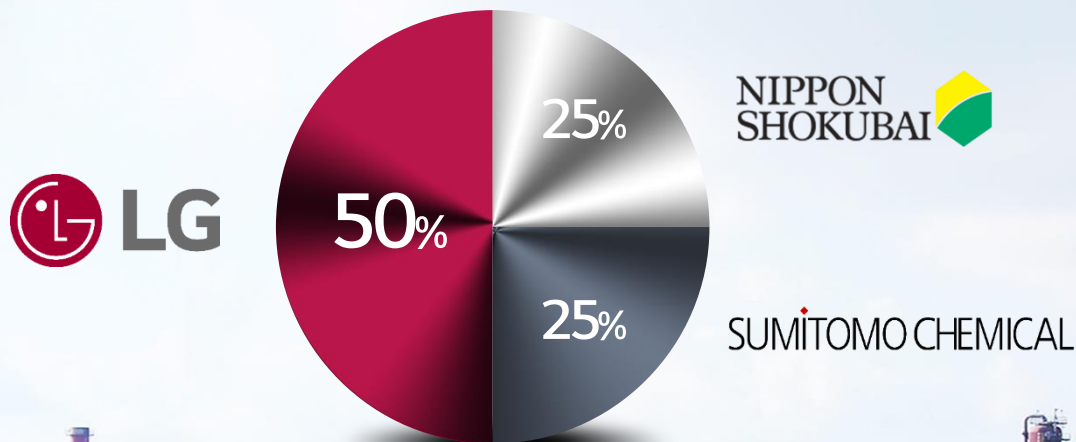

Introduction of LG MMA



LGMMA Overview

LG MMA was

Founded as a joint venture of LG Corp. and the prominent Japanese chemical company Sumitomo Chemical Co., Ltd., Japan Catalyst Inc. to localize methyl methacrylate(MMA) used as various industrial materials, contributing to enforce competitive power in international trade by stabilizing supply and demand by local companies, which have traditionally relied the whole quantity upon import. Founded as a joint venture of LG Corp. and the prominent Japanese chemical company Sumitomo Chemical Co., Ltd., Japan Catalyst Inc. to localize methyl methacrylate(MMA) used as various industrial materials, contributing to enforce competitive power in international trade by stabilizing supply and demand by local companies, which have traditionally relied the whole quantity upon import.



"Ever-growing market-leading company that offers differentiated materials and solutions "

Production Scale

(unit: ton/year)

Capacity	MMA	MAA	BMA	PMMA
	180,000	45,000	15,000	120,000

LGMMA History



2010's

- 2016** New SMMA commercial manufacture production (20,000MT/yr)
- 2015** New BMA commercial manufacture production (15,000MT/yr)
- 2012** MAA Capa-up (20,000MT/yr → 50,000MT/yr)
- 2011** MAA Capa-up (20,000MT/yr → 50,000MT/yr)
- 2010** PMMA capa-up (90,000MT/yr → 101,000MT/yr)

2000's

- 2008** Completion of MMA Plant 3 and commercial manufacture production (100,000MT/yr → 180,000MT/yr)
- 2005** Completed PMMA Plant 2 (50,000MT/yr → 90,000MT/yr)
- 2003** Completed MMA Plant 2 (50,000MT/yr → 100,000MT/yr)

1990's

- 1999** Took over PMMA business of LG Chem, Ltd.
- 1994** Changed the firm name to LG MMA Corp
- 1993** Completed MMA Plant 1
- 1991** Lucky MMA Corp. established

LGMMA

Business Place Info



Seoul Office

23F, LG Seoulstation Bldg., 98, Huam-ro, Jung-gu, Seoul, 04637, Korea

Phone : +82-2-6930-3800



R&D Center

104-1, Munji-dong, Yuseong-gu, Daejeon, Korea

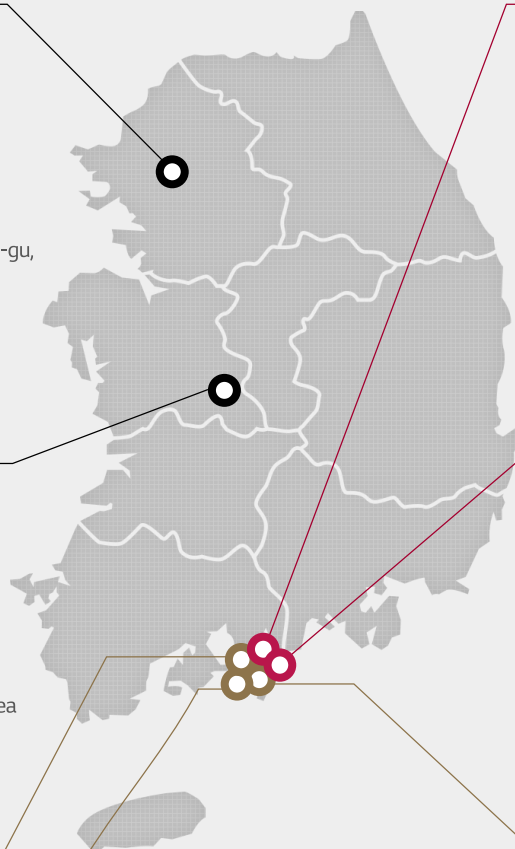
Phone : +82-42-866-5828



MMA 1 Plant

759, Jungheung-dong, Yeosu, Jollanam-do, Korea

Phone : +82-61-688-2600



PMMA 1 Plant

70-1, Whachi-dong, Yeosu, Jollanam-do, Korea

Phone : +82-1-680-1721



PMMA 2 Plant

762-5, Jungheun-dong, Yeosu, Jollanam-do, Korea

Phone : +82-61-805-3953



MMA 2 Plant

762-4, Jungheung-dong, Yeosu, Jollanam-do, Korea

Phone : +82-61-805-3932



MMA 3 Plant

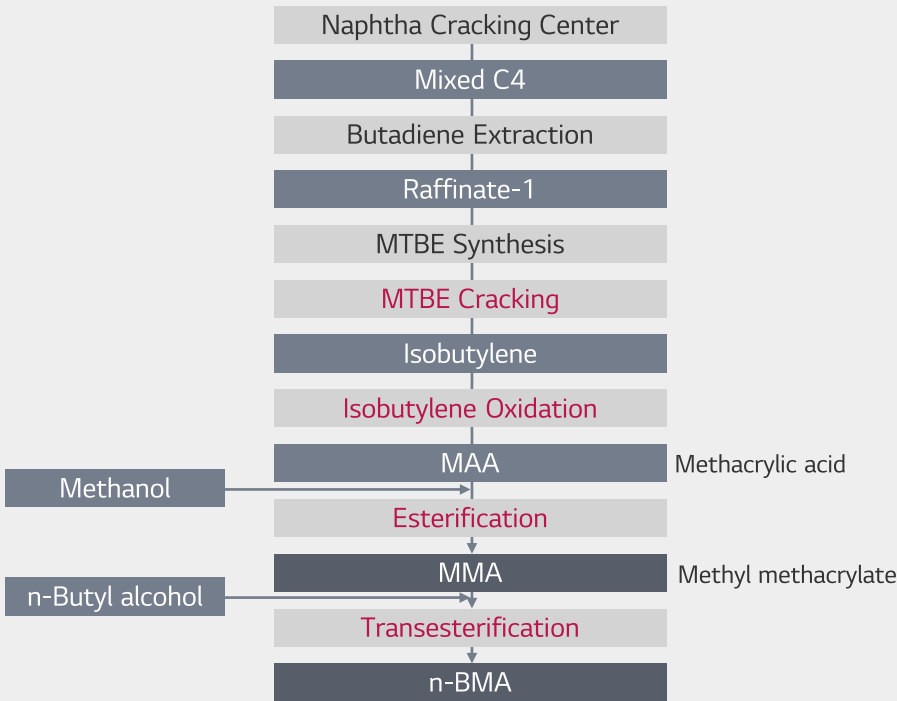
762-6, Jungheung-dong, Yeosu, Jollanam-do, Korea

Phone : +82-61-805-3813

MMA, MAA, BMA

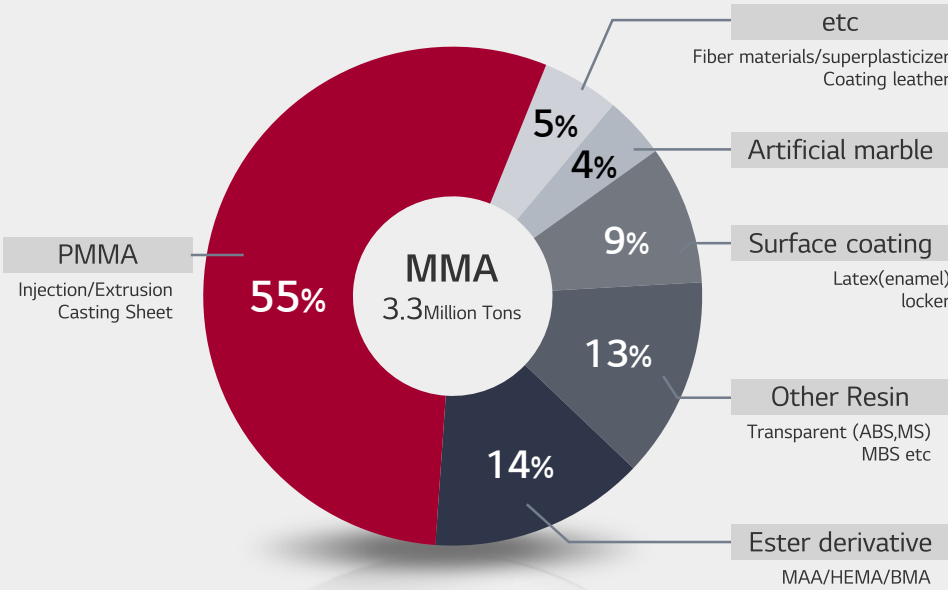
Manufacturing process of LG MMA uses isobutylene vapor phase oxidation (C4 direct oxidation) developed and industrialized by Japanese Sumitomo Chemicals and Nippon Shokubai. Unlike conventional manufacturing process, isobutylene vapor phase oxidation does not produce pollutants. It is a high-tech manufacturing process producing high quality MMA, which oxidizes isobutylene in vapor phase extracted from C4 residue crude, produces methacrylic acid (MAA), and esterifies methacrylic acid with methanol, MMA .

Chemical Down-Stream



Global MMA Rate of Application

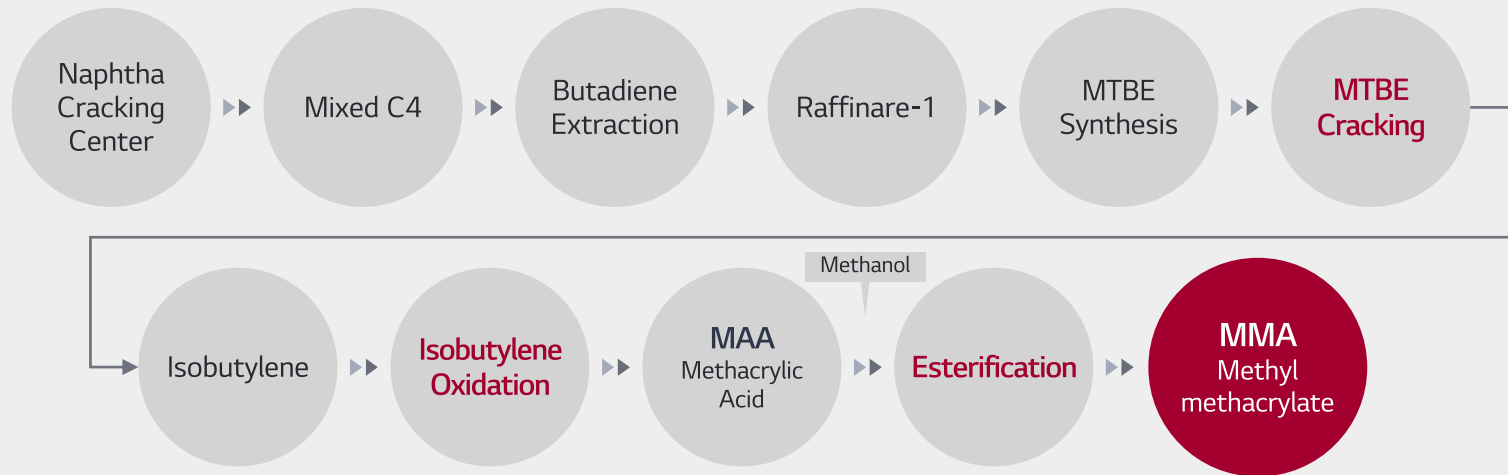
※ Ref : Acrylic Resins and Plastics(Chemical Economics Handbook)



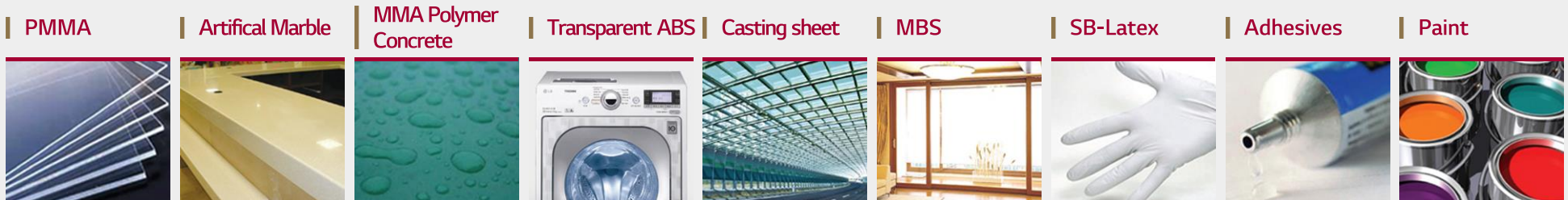
MMA Manufacturing Process and Application

MMA, a clear, colorless liquid, is easily triggered to polymerization by light, heat and radiation. It is the main material of PMMA as well as transparent ABS, MBS, etc.

Manufacturing Process



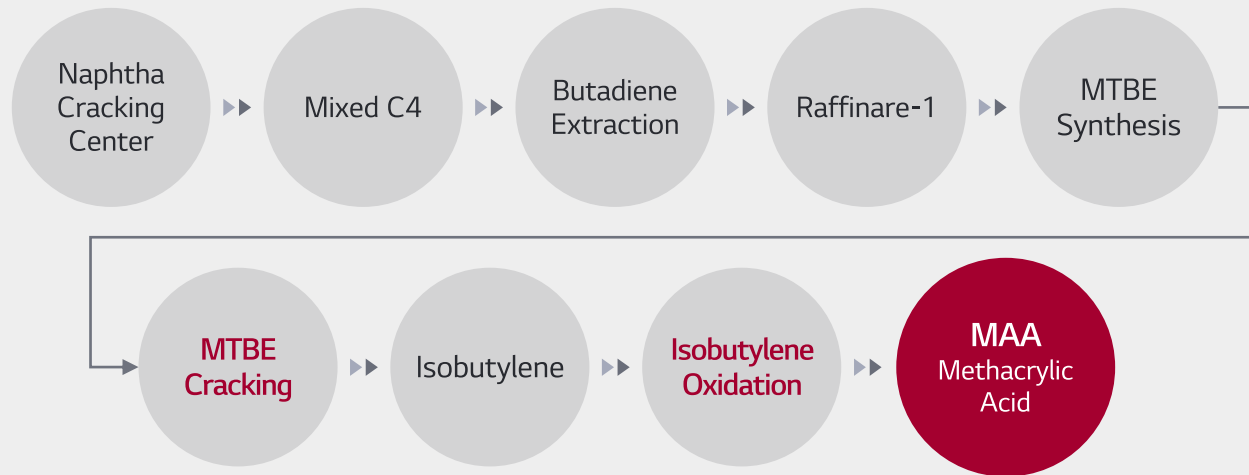
MMA Application



MAA Manufacturing Process and Application

As a clear, colorless liquid with a pungent smell, MAA is extensively used as a necessary material in products of daily life such as paint, cement superplasticizer, textile paste and adhesive..

Manufacturing Process



MAA Application

Paint



Superplasticize For concrete / cement



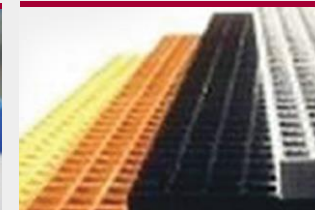
Fiber Materials (fiber sizing agent)



Adhesives



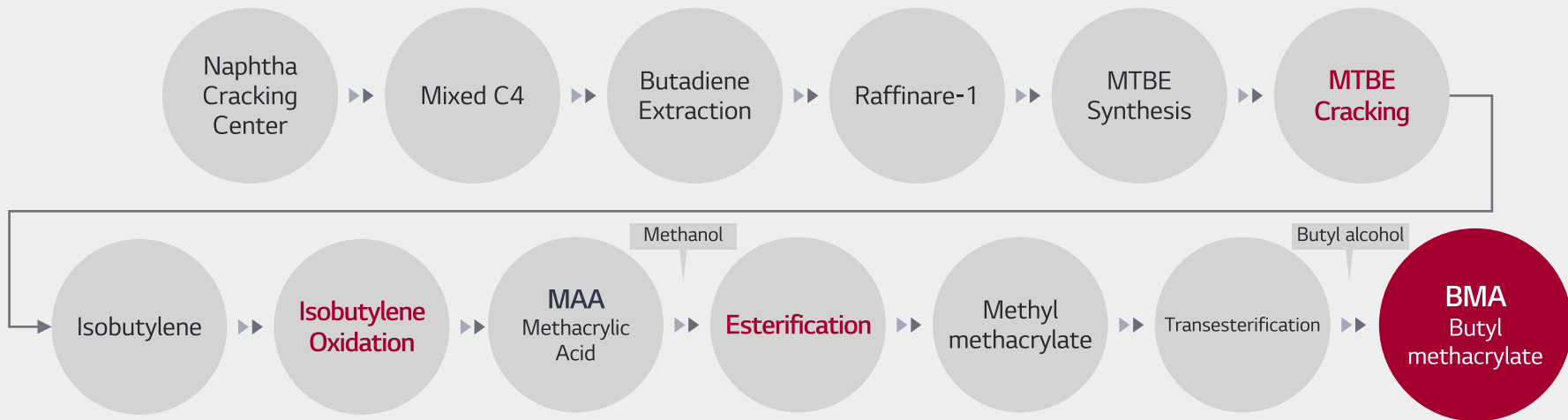
UP resin(Unsaturated polyester) | NBR latex



BMA Manufacturing Process and Application

As a clear, colorless liquid , BMA is extensively used as a necessary material in products of daily life such as paint, lubricating additive, paper finishing agent and textile paste. .

Manufacturing Process



BMA Application

| Paint



| Lubricating additive



| Paper finishing agent



| Textile paste



PMMA

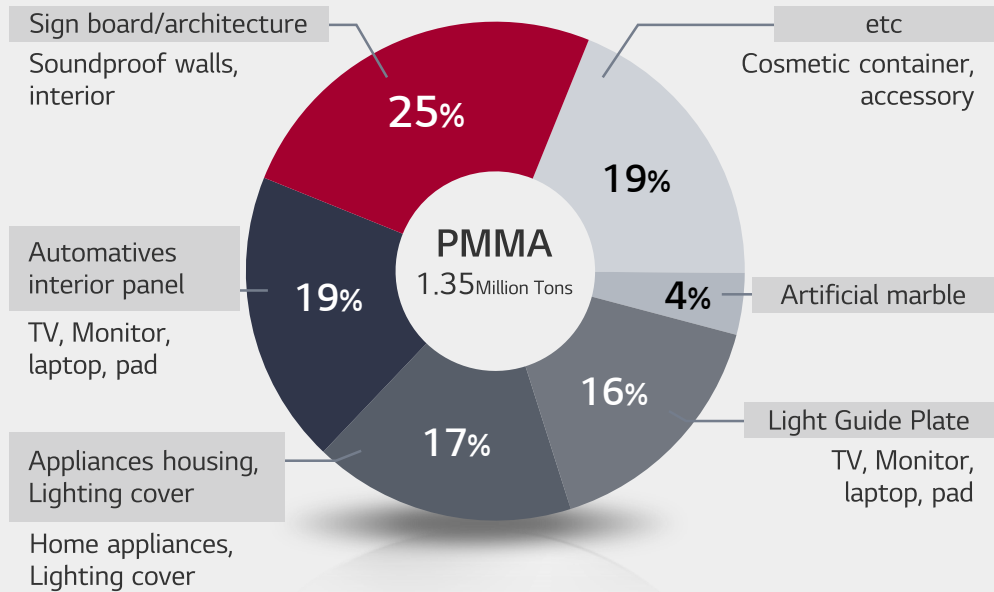
Manufacturing method of PMMA uses suspension polymerization and bulk polymerization industrialized by Sumitomo Chemicals. Suspension method needs dehydration process to control temperature and suitable for small quantity batch production. After the dehydration, it produces type of Bead and extruded Pellet. The bulk polymerization is suitable for continuous mass production and only produces type of extruded Pellet, it does not have dehydration process because of no water used.

PMMA Process Capacity

	Process	Products	MT/Year
PMMA No.1	Suspension Batch	Bead Pellet	70,000
PMMA No.2	Bulk Continuous	Pellet	50,000

Global PMMA Rate of Application

※ ref : Acrylic Resins and Plastics(Chemical Economics Handbook)



PMMA Manufacturing Process and Application

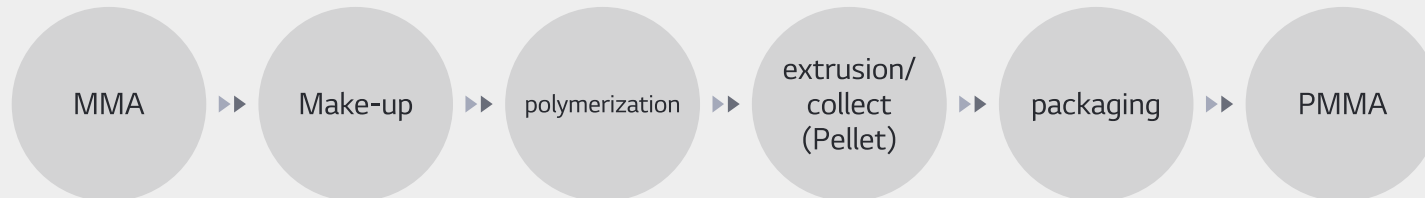
PMMA, MMA monomer-based synthetic resin. It has excellent weather and scratch resistance and the ability to be tinted, so it is widely used as a material for vehicles, optical products, and electrical/electronic instruments.

Manufacturing Process

Suspension Batch Process



Bulk Continuous Process



PMMA Application



PMMA Grade



General PMMA

Optical grade is of the best optical characteristics among our products. Applied to laptop displays and light guide panels inside LCD monitors, it is of high brightness and transparency



Impact Resistant PMMA

PMMA is excellent in impact resistance compared to general glasses, but relatively lower among plastics so it is demanded to be improved in this respect



SMMA

SMMA resin is a transparent co-polymer based on MMA and SM. While possessing optical characteristics and transparency similar to acrylic resin, it also has low moisture absorption rate compared to general acrylic resin allows for application to high temperature and humidity.



Acrylic Coating Resin

With its unique polymerization technology, LG MMA Corp. produces Bead Grades used for artificial marbles, acryl coatings, acrylic adhesives and paints. Low Tg, high thermal expansion, excellent gloss, acid values required in some cases



Characteristics of PMMA



High Transparency

The most excellent transparency among all plastics (Transmits more than 92% of the visible ray area)



Excellent Weatherability

The most excellent weatherability among plastics



High Scratch Resistance

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



Thank you



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