

PRODUCT	MSDS-PMMA-111
PMMA	

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

A. PRODUCT NAME: PMMA

B. APPLICATION: LCD Light Guide Plate, Mobile Phone LCD Cover.

C. COMPANY IDENTIFICATION LG MMA Corporation PMMA plant
#70-1, Whachi-dong, Yeosu-si, Jeollanam-do, Korea
Phone: +82-61-680-1281 / Fax: +82-61-680-6034

2. HAZARDS IDENTIFICATION

A. GHS CLASSIFICATION

PHYSICAL HAZARDS

Explosives: Not Classified.
Flammable gases: Not Classified.
Flammable aerosols: Not Classified.
Oxidizing gases: Not Classified.
Gasses under pressure: Not Classified.
Flammable liquids: Not Classified.
Flammable solids: Not Classified.
Self-reactive substances: Not Classified.
Pyrophoric liquids: Not Classified.
Pyrophoric solids: Not Classified.
Self-heating substances: Not Classified.
Substances which, in contact with water, emit flammable gases: Not Classified.
Oxidizing liquids: Not Classified.
Oxidizing solids: Not Classified.
Organic peroxides: Not Classified.
Corrosive to metals: Not Classified.

HEALTH HAZARDS

Acute toxicity (Oral): Not Classified.
Acute toxicity (Skin): Not Classified.
Acute toxicity (Inhalation (Gas or Vapor or Dust/mist/fume)): Not Classified.
Skin corrosion/irritation: Not Classified.
Serious eye damage/eye irritation: Not Classified.
Sensitization (Respiratory): Not Classified.
Sensitization (Skin): Not Classified.
Germ cell mutagenicity: Not Classified.
Carcinogenicity: Not Classified.
Reproductive toxicity: Not Classified.
Specific target organ systemic toxicity (Single exposure): Not Classified.
Specific target organ systemic toxicity (Repeated exposure): Not Classified.
Aspiration hazard: Not Classified.

ENVIRONMENTAL HAZARDS

Hazards to the aquatic environment (Acute): Not Classified.
Hazards to the aquatic environment (Chronic): Not Classified.

B. WARNING LABELS, PICTOGRAMS, HAZARD STATEMENT AND PREVENTIVE MEASURE STATEMENTS

PICTOGRAMS

No Symbol

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SIGNAL WORD:

Not applicable.

HAZARD STATEMENTS

Not applicable.

PRECAUTIONARY STATEMENTS**PREVENTION**

Not applicable.

RESPONSE

Not applicable.

STORAGE

Not applicable.

DISPOSAL

Not applicable.

C. HAZARDS NOT INCLUDED IN GHS CLASSIFICATION

Molten PMMA may cause thermal burns. Irritating fumes may produce at process temperatures.

3. COMPOSITION / INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS No.	ENCS Number*	%(w/w)
Poly(methyl methacrylate) (PMMA)	9011-14-7	6-524	> 99.9

* ENCS Number: Japanese Existing and New Chemical Substances.

4. FIRST AID MEASURES**A. EYE CONTACT**

Flush affected area with plenty of water. If symptoms develop, seek medical advice.

B. SKIN CONTACT

Flush affected area with water. If symptoms develop, seek medical advice.

C. INHALATION

If symptoms develop, remove to fresh air. If symptoms develop, seek medical advice.

D. INGESTION

Not a likely route of exposure. Do not induce vomiting without medical advice. If symptoms develop, seek medical advice.

E. MAJOR TOXIC SYMPTOMS AND EFFECTS

There are no specific notes.

F. NOTE TO PHYSICIAN

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If molten PMMA is in contact with skin, treat as any thermal burn. Based on the individual reactions of the patient, the physician's judgment should be used to control symptoms and clinical condition.

5. FIRE FIGHTING MEASURES**A. SUITABLE EXTINGUISHING MEDIA**

Foam, powder, carbon dioxide, water spray. Do NOT use straight streams of water.

B. SPECIFIC HAZARDS ARISING FROM THE CHEMICAL

Combustible. No explosion hazard.

During a fire, carbon dioxide, carbon monoxide, dense smoke and monomer vapors may be generated by thermal decomposition or combustion.

C. SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE FIGHTERS

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit. Keep containers cool with water spray.

6. ACCIDENTAL RELEASE MEASURES**A. PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES**

The product may cause slippery floor conditions. Restrict access to area as appropriate until clean-up operations are complete. Stop or reduce any leaks if it is safe to do so. Ventilate spill area if possible. Do not touch spilled material. Have emergency equipment (for fires, spills, leaks, etc.) readily available.

B. ENVIRONMENTAL PRECAUTIONS

Prevent material from entering sewers or waterways. Notify appropriate government, occupational health and safety and environmental authorities.

C. METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP

SMALL SPILLS: Sweep up and place in disposal container. Wash affected area.

LARGE SPILLS: Sweep up and place in disposal container. Clean contaminated surfaces with water or aqueous cleaning agents. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

7. HANDLING AND STORAGE**A. PRECAUTIONS FOR SAFE HANDLING**

Do not get in eyes, on skin, on clothing. Do not take internally. Avoid formation of dust. Use with adequate ventilation. Do not breathe vapors/gases/dust. Do not use, store, spill or pour near heat, sparks or open flame.

B. CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Store away from heat and sources of ignition. Store separately from incompatibles.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**A. OCCUPATIONAL EXPOSURE LIMITS**KOREA

Korea. OELs (ISHL Article 42; MOL Public Notice No. 1986-45, as amended through MOL Public Notice No. 2007-25, June 8, 2007)

Not an established exposure limit.

JAPAN

Japan. OELs - JSOH (Japan Society of Occupational Health: Recommendation of Occupational Exposure Limits, 2007)

Not an established exposure limit.

OSHA

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Not an established exposure limit.

ACGIH

ACGIH Threshold Limit Values (2007)

Not an established exposure limit.

NIOSH

NIOSH. Pocket Guide to Chemical Hazards, 2005

Not an established exposure limit.

B. ENGINEERING MEASURES

Local and/or general ventilation is recommended.

C. INDIVIDUAL PROTECTION MEASURES

GENERAL ADVICE

The use and choice of personal protection equipment is related to the hazard of the product, the workplace and the way the product is handled.

RESPIRATORY PROTECTION

Not required for properly ventilated areas. If significant mists, vapors or aerosols are generated an approved respirator is recommended. A suitable filter material depends on the amount and type of chemicals being handled.

HAND PROTECTION

Wear general gloves. Where contact may occur with hot material, wear thermal resistant gloves.

SKIN PROTECTION

No special protection required. Wear standard protective clothing.

EYE PROTECTION

Wear safety glasses or goggles under normal conditions. Keep an eye wash fountain available.

9. PHYSICAL AND CHEMICAL PROPERTIES

A. PHYSICAL APPEARANCE:	Transparent/colorless plastic with amorphous structure.
B. ODOR:	Odorless.
C. ODOR THRESHOLD:	No data available.
D. pH:	Not applicable.
E. MELTING/FREEZING POINT:	165°C
F. INITIAL BOILING POINT/BOILING POINT RANGE:	200°C
G. FLASH POINT:	> 280°C
H. EVAPORATION RATE:	Not applicable.
I. FLAMMABILITY (GAS, SOLID):	Combustible.
J. UPPER AND LOWER EXPLOSION LIMITS:	Not applicable.
K. VAPOUR PRESSURE:	Not applicable.
L. SOLUBILITY:	Immiscible
M. RELATIVE VAPOUR DENSITY:	Not applicable.
N. SPECIFIC GRAVITY:	1.18
O. n-OCTANOL/WATER PARTITION COEFFICIENT:	No data available.
P. AUTOIGNITION TEMPERATURE:	No data available.
Q. DECOMPOSITION TEMPERATURE:	No data available.
R. VISCOSITY:	No data available.

10. STABILITY AND REACTIVITY

A. CHEMICAL STABILITY

Stable under normal conditions. Do not heat above 280°C.

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B. POSSIBILITY OF HAZARDOUS REACTIONS

None known.

C. CONDITIONS TO AVOID

Open flame and ignition sources.

D. INCOMPATIBLE MATERIALS

Contact with acids, alkalis and strong oxidizing agents.

E. HAZARDOUS DECOMPOSITION PRODUCTS

Oxides of carbon (CO_x).

11. TOXICOLOGICAL INFORMATION**A. INFORMATION ON THE LIKELY ROUTES OF EXPOSURE**

EYE CONTACT: Yes.

SKIN CONTACT: Yes.

INGESTION: No.

INHALATION: Yes (mist).

B. SYMPTOMS RELATED TO THE PHYSICAL, CHEMICAL AND TOXICOLOGICAL CHARACTERISTICS

No data available.

C. DELAYED AND IMMEDIATE EFFECTS AND ALSO CHRONIC EFFECTS FROM SHORT AND LONG TERM EXPOSURE**ACUTE TOXICITY:**

- Oral: The product is not acute toxic based on similar chemicals.
- Skin: The product is not expected to acute toxic.
- Inhalation: Mist or vapor from heated may irritate the respiratory tract.

SKIN CORROSION/IRRITATION:

No toxic symptoms reported. Monomer vapors from heated PMMA may cause irritation.

SERIOUS EYE DAMAGE/IRRITATION:

No toxic symptoms reported. Monomer vapors from heated PMMA may cause irritation.

RESPIRATORY OR SKIN SENSITIZATION:

No data available. However, based on our hazard characterization, the product is not expected to cause respiratory or skin sensitization due to low contents of the MMA (0.03%).

GERM CELL MUTAGENICITY:

Not expected to cause mutagenicity based on its monomer and PMMA structure.

CARCINOGENICITY:

IARC Overall Evaluation: 3 (not classifiable as to carcinogenicity in humans).

ACGIH Carcinogen Category: Not Classified.

None of the substances in this product are listed as carcinogens in humans by the International Agency for Research on Cancer (IARC), American Conference of Governmental Industrial Hygienists (ACGIH) or the National Toxicology Program (NTP).

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REPRODUCTIVE TOXICITY:

No data available.

SPECIFIC TARGET ORGAN/SYSTEMIC TOXICITY – SINGLE EXPOSURE:

No data available.

SPECIFIC TARGET ORGAN/SYSTEMIC TOXICITY – REPEATED EXPOSURE:

No data available.

ENVIRONMENTAL HEALTH CRITERIA:

None known. No data available.

ASPIRATION HAZARD:

None known. No data available.

D. NUMERICAL MEASURES OF TOXICITY (SUCH AS ACUTE TOXICITY ESTIMATES)

ACUTE ORAL TOXICITY:

Species	LD50	Test Descriptor / Reference
Rat	> 5,000 mg/kg	<i>Estimated</i>

ACUTE DERMAL TOXICITY:

Species	LD50	Test Descriptor / Reference
Rabbit	> 5,000 mg/kg	<i>Estimated</i>

ACUTE INHALATION TOXICITY:

Species	LC50	Test Descriptor / Reference
Rat	-	<i>No data available</i>

SKIN IRRITATION:

No data available.

EYE IRRITATION:

No data available.

MUTAGENICITY:

No data available.

SENSITIZATION:

No data available.

12 ECOLOGICAL INFORMATION

A. TOXICITY

Toxicity studies have not been conducted concerning the environmental fate of the PMMA. Not expected to cause ecological effects based on present knowledge.

B. PERSISTENCE AND DEGRADABILITY

PMMA is considered inert material and not expected to be biodegradable.

C. BIOACCUMULATIVE POTENTIAL

PMMA is not expected to bioaccumulate.

D. MOBILITY IN SOIL

No data available.

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E. OTHER ADVERSE EFFECTS
None known. No data available.

13. DISPOSAL CONSIDERATIONS**A. DISPOSAL METHODS**

Dispose of wastes in an approved incinerator or waste treatment/disposal site, in accordance with all applicable regulations.

B. PRECAUTIONS (ON DISPOSAL OF COTAMINATED CONTAINERS AND PACKAGES)

No special precautions required. Combustion products are carbon monoxide, carbon dioxide and water.

14. TRANSPORT INFORMATION

* The following results are for the product.

- A. UN NUMBER: Not regulated.
- B. UN PROPER SHIPPING NAME: Not regulated.
* Technical Name(s) -
- C. TRANSPORT HAZARD CLASS(ES): Not regulated.
- D. PACKING GROUP, IF APPLICABLE: Not regulated.
- E. ENVIRONMENTAL HAZARDS: Not regulated.
- F. SPECIAL PRECAUTIONS FOR USER: No data available.

15. REGULATORY INFORMATION**SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS**

EUROPE: This chemical substance is not hazardous according to the Annex I of Directive 67/548/EEC.

U.S. FEDERAL, ENVIRONMENT

Clean Air Act Section 111, SOCM I Intermediate or Final Volatile Organic Compounds (40 CFR 60.489)
Not regulated.

Clean Air Act Section 112, Hazardous Air Pollutants, as amended by 40 CFR 63 (December 19, 2005)
Not regulated.

Hazardous Organic NESHAP (HON) Synthetic Organic Chemicals (40 CFR 63.100-.106, Table 1)
Not regulated.

Hazardous Organic NESHAP (HON) Hazardous Air Pollutants (40 CFR 63.100-.106, Table 2)
Not regulated.

Clean Water Act Section 311 Hazardous Chemicals (40 CFR 116.4)
Not regulated.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)
Not regulated.

RCRA Appendix VII: Hazardous Constituents (40 CFR 261, App. VII, Basis for Listing Hazardous Waste)
Not regulated.

RCRA Appendix VIII List of Hazardous Constituents (40 CFR 261)
Not regulated.

RCRA D List of Characteristic Hazardous Wastes (40 CFR 261.21-24)
Not regulated.

NIOSH Recommended Safety and Health Standards for Hazardous Agents in the Workplace, Health Effects

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Not regulated.

U.S. FEDERAL, RIGHT-TO-KNOW

CERCLA Hazardous Substances [other than radionuclides] (40 CFR 302.4)

Not regulated.

EPCRA (SARA Title III) Section 313 Toxic Chemical (Reporting Form R Instructions for 2006, as revised January 2007)

Not regulated.

HMIS Chemical Ratings (Hazardous Materials Information System, Chemical Ratings Guide, Third Edition, 2002)

Not regulated.

CPSC Banned & Regulated Substances in Consumer Products (Consumer Product Safety Commission, 16 CFR 1000-1750)

Not regulated.

CANADA

Canada. WHMIS Ingredient Disclosure List (Can. Gaz., Part II, Vol.122, No.2, January 20, 1988)

Not regulated.

Quebec. Guidance WHMIS Classifications (CSST/SRT), May 5, 2007

CAS RN: 9011-14-7

Name: METHYL METHACRYLATE POLYMER

Classification: Uncontrolled product

U.S. STATE, TEXAS

Texas. Effects Screening Levels (Texas Commission on Environmental Quality, October 1, 2003)

CAS RN: 9011-14-7

Name: ACRYLOID

Short-Term ESL: 50 ug/m³

Short-term exposure time: 1 hr

Annual ESL: 5 ug/m³

CHINA

China. List of Dangerous Goods (GB 12268-2005)

Not regulated.

China. Classification and Labeling of Dangerous Chemical Substances Commonly Used (GB 13690 - 92)

Not regulated.

KOREA

Korea. Dangerous Substances Threshold Quantity (Presidential Decree of Dangerous Substances Safety Management Act No. 18406, Schedule 1, May 29, 2004)

Not regulated.

NATIONAL FIRE PROTECTION ASSOCIATION - NFPA Ratings (USA)

No data available.

INTERNATIONAL CHEMICAL CONTROL LAWS

EUROPE

The substance in this product is included in or exempted from the EINECS or ELINCS inventories.

U.S.

The substance in this product are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710).

JAPAN

The substance in this product is comply with the Law Regulating the Manufacture and Importation of Chemical Substances and are listed on the Ministry of Economy, Trade and Industry (METI).

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KOREA

The substance in this product is comply with the Toxic Chemical Control Law (TCCL) and is listed on the Existing Chemicals Inventory (KECI).

Toxic Chemicals List - None of the component of this product is regulated under TCCL.

Observational Chemicals List - None of the component of this product is regulated under TCCL.

16. OTHER INFORMATION

This product material safety data sheet provides health and safety information. The above information is believed to be correct but does not propose to be all inclusive and shall be used only as a guide. LG MMA Corporation shall not be held liable for any damage resulting from handling or from contact with the above product. Each individual should make a determination as to the suitability of the information for their particular purpose(s). Various government agencies may have specific regulations regarding the transportation, handling, storage, use, or disposal of this product which may not be covered by this MSDS. The user is responsible for full compliance.

A. REFERENCES

Guideline for Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Regulated chemicals info. produced by the National Institute of Technology and Evaluation (Japan).

WHO/IPCS: International Chemical Safety Cards (ICSC).

EU European Chemicals Bureau (ECB): International Uniform Chemical Information Database (IUCLID).

Hazardous Substances Data Bank (HSDB)

Ariel WebInsight DB (3E Company).

B. OTHER INFORMATION

- Date issued: 11 July 2012

- Version number (GHS): 2.0

- Technical Support on the MSDS: RGB Chemicals Co., Ltd. (<http://rgbchemicals.com>).