 LG MMA Corporation 762-4, Jungheung-dong, Yeosu-si, Jeollanam-do, 555-805 Korea Tel : (061) 805 - 3936~8 Fax : (061) 805 - 3949	Material Safety Data Sheet	Reg. No.	MSDS-MMA2-055
		Crea. date	2016.05.12
		()th	-
		Rev. date	
		Rev. Item	-
Product Name : i-BMA CAS No : 97-86-9			


1. IDENTIFICATION

- A. Product name : i-BMA (Isobutyl methacrylate)
- B. Recommended use and restriction on use
- General use : Paint, adhesive, etc.
 - Restriction on use : Not available
- C. Manufacturer/Supplier/Distributor information
- Company name : LG MMA Corporation
 - Address : 495, Sandanjungang-ro, Yeosu-si, Jeollanam-do, Korea
 - Emergency telephone number : +82-61-805-3832
 - Dept : Production 2 team

2. HAZARD IDENTIFICATION

- A. GHS Classification :
- Flammable liquids : Category 3
- Skin corrosion/irritation : Category 2
- Serious eye damage/irritation : Category 2A
- Skin sensitization : Category 1
- Specific target organ toxicity(Single exposure) : Category 3(Respiratory tract irritation)
- Acute aquatic toxicity : Category 1

B. GHS label elements

<input type="radio"/> Hazard symbols	<input type="radio"/> Signal words	<input type="radio"/> Hazard statements
	Warning	Flammable liquid and vapour Causes skin irritation Causes serious eye irritation May cause an allergic skin reaction May cause respiratory irritation Very toxic to aquatic life

- Precautionary statements :

Prevention

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Keep container tightly closed.

<p>Ground/bond container and receiving equipment.</p> <p>Use explosion-proof electrical/ventilating/lighting/equipment.</p> <p>Use only non-sparking tools. Flammable liquids (chapter 2.6) 1, 2, 3</p> <p>Take precautionary measures against static discharge.</p> <p>Avoid breathing dust/fume/gas/mist/vapours/spray.</p> <p>Wash hands thoroughly after handling.</p> <p>Use only outdoors or in a well-ventilated area.</p> <p>Contaminated work clothing should not be allowed out of the workplace.</p> <p>Avoid release to the environment.</p> <p>Wear protective gloves/protective clothing/eye protection/face protection.</p>
<p>Response</p> <p>IF ON SKIN: Wash with plenty of soap and water.</p> <p>IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing.</p> <p>Rinse skin with water/shower.</p> <p>IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.</p> <p>IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p> <p>Call a POISON CENTER or doctor/physician if you feel unwell.</p> <p>Specific treatment</p> <p>If skin irritation occurs: Get medical advice/attention.</p> <p>If skin irritation or rash occurs: Get medical advice/attention.</p> <p>If eye irritation persists: Get medical advice/attention.</p> <p>Take off contaminated clothing and wash before reuse.</p> <p>Wash contaminated clothing before reuse.</p> <p>In case of fire: Use Suitable extinguishing media for extinction(Refer Section MSDS 5).</p> <p>Collect spillage.</p>
<p>Storage</p> <p>Store in a well-ventilated place. Keep container tightly closed.</p> <p>Store in a well-ventilated place. Keep cool.</p> <p>Store locked up.</p>
<p>Disposal</p> <p>Dispose of contents/container in accordance with local/regional/national /international regulation</p>

C. Other hazards which do not result in classification : (NFPA Classification)

○ NFPA : Health: 2, Flammability: 2, Reactivity: 0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No	Contents(%)
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2-Methyl-2-propenoic acid 2-methylpropyl ester	ISOBUTYL-ALPHA-METHACRYLATE	97-86-9	> 99.9
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4. FIRST AID MEASURES

- A. Eye contact :
- Do not rub your eyes.
 - Immediately flush eyes with plenty of water for at least 20 minutes and call a doctor/physician.
- B. Skin contact :
- Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
 - Laundering enough contaminated clothing before reuse.
- C. Inhalation contact :
- When exposed to large amounts of steam and mist, move to fresh air.
 - Take specific treatment if needed.
- D. Ingestion contact :
- About whether I should induce vomiting Take the advice of a doctor.
 - Rinse your mouth with water immediately.
- E. Delayed and immediate effects and also chronic effects from short and long term exposure :
- Not available
- F. Notes to physician :
- Notify medical personnel of contaminated situations and have them take appropriate protective measures.

5. FIREFIGHTING MEASURES

- A. Suitable(Unsuitable) extinguishing media :
- Alcoholic foam, carbon dioxide, water spray
 - Dry sand or earth for extinguishing
- B. Specific hazards arising from the chemical
- Containers may explode when heated.
 - Flammable liquid and vapor : Easily ignited by the heat, sparks, flame.
 - Steam explosion hazard - Indoor, outdoor and sewer
 - Can form an explosive mixture at or above the flash point.
 - Vapors may form explosive mixtures with air.
 - Vapors may be ignited transferred to an ignition source.
 - May emit irritating and very toxic gas during burning or thermal decomposition.
- C. Special protective actions for firefighters :
- Cool containers with water until well after fire is out.
 - Keep unauthorized personnel out.
 - Wear appropriate protective equipment.
 - Keep containers cool with water spray.

6. ACCIDENTAL RELEASE MEASURES

A. Personal precautions, protective equipment and emergency procedures :

- Must work against the wind, let the upwind people to evacuate.
- Do not touch spilled material. Stop leak if you can do it without risk.
- Move container to safe area from the leak area.
- Handling the damaged containers or spilled material after wearing protective equipment.

B. Environmental precautions :

- Prevent runoff and contact with waterways, drains or sewers.
- If large amounts have been spilled, inform the relevant authorities.

C. Methods and materials for containment and cleaning up :

- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notification to central government, local government. When emissions at least of the standard amount.
- Dispose of waste in accordance with local regulation.
- Appropriate container for disposal of spilled material collected.

7. HANDLING AND STORAGE

A. Precautions for safe handling :

- Avoid direct physical contact.
- Get the manual before use.
- Refer to Engineering controls and personal protective equipment.
- Do not handle until all safety precautions have been read and understood.

B. Conditions for safe storage, including any incompatibilities :

- Check regularly for leaks.
- Do not apply any physical shock to container.
- Please pay attention to incompatibilities materials and conditions to avoid.
- No open fire.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

A. Exposure limits

- ACGIH TLV : Not available

B. Engineering controls

- A system of local and/or general exhaust is recommended to keep employee exposures above the Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. The use of local exhaust ventilation is recommended to control emissions near the source.

C. Personal protective equipment

- Respiratory protection

- Under conditions of frequent use or heavy exposure, Respiratory protection may be needed.
- Respiratory protection is ranked in order from minimum to maximum.
- Consider warning properties before use.

- Eye protection

– Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield.

– Provide an emergency eye wash station and quick drench shower in the immediate work area.

Hand protection

– Wear appropriate glove.

Skin protection

– Wear appropriate clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance : Colorless liquid

B. Odor : Characteristic odor

C. Odor threshold : Not available

D. pH : Not applicable

E. Melting point/Freezing point : -61°C

F. Initial Boiling Point/Boiling Ranges : 155°C

G. Flash point : 49°C (c.c)

H. Evaporation rate : Not available

I. Flammability(solid, gas) : Not applicable

J. Upper/Lower Flammability or explosive limits : 8–1%

K. Vapour pressure : 3.63 mmHg (20°C)

L. Solubility : 439 mg/L (25°C)(very poor)

M. Vapour density : 4.9

N. Specific gravity : 0.9

O. Partition coefficient of n-octanol/water : 2.95

P. Autoignition temperature : 390°C

Q. Decomposition temperature : Not available

R. Viscosity : Not available

10. STABILITY AND REACTIVITY

A. Chemical stability

– This material is stable under recommended storage and handling conditions.

B. Possibility of hazardous reactions

– Hazardous Polymerization will not occur.

C. Conditions to avoid

– Avoid contact with incompatible materials and condition.

– Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces – No smoking

D. Incompatible materials

– Not available

E. Hazardous decomposition products

– May emit irritating and very toxic gas if involved in fire.

11. TOXICOLOGICAL INFORMATION

A. Information on the likely routes of exposure :

(Respiratory tracts) : Irritating

(Oral) : Not classified

(Skin) : Irritating

(Eye) : Irritating

B. Delayed and immediate effects and also chronic effects from short and long term exposure :

- Acute toxicity :
 - Oral – LD50 > 2,000 mg/kg Rat
 - Dermal – LD50 17,760 mg/kg Guinea pig
 - Inhalation – LD50 > 29 mg/kg
- Skin corrosion/irritation : Irritating
- Serious eye damage/irritation : Irritating
- Respiratory sensitization : Not available
- Skin sensitization : Sensitizing
- Carcinogenicity : Not available
- Germ cell mutagenicity : In vivo, Dominant lethal assay – negative
- Reproductive toxicity : genetic mutations, chromosome mutations and the influence of zeal are observed from in vitro and in vivo test.
- STOT–repeated exposure : Respiratory irritation is reported in test animals.
- STOT–repeated exposure : Spleen disorder is reported in the test animals.
- Aspiration hazard : Not available

12. ECOLOGICAL INFORMATION

A. Ecotoxicity :

- Fish : LC50 20 mg/l 96 hr (Oncorhynchus mykiss) (Estimated)
- Crustaceans : EC50 23mg/l 48hr (Daphnia magna) (Estimated)
- Algae : EC50 0.29 mg/l 96hr (Selenastrum capricornutum) (Estimated)

B. Persistence and degradability : Not available

- Persistence : Log Kow 2.95
- Degradability : Not available

C. Bioaccumulative potential :

- Bioaccumulative potential : BCF = 39.2
- Biodegradation : 74.3 % 28 day

D. Mobility in soil : Not available

E. Other adverse effects : Not available

13. DISPOSAL CONSIDERATIONS

A. Disposal methods :

- Since more than two kinds of designaed waste is mixed, it is difficult to treat seperatly, then can be reduction or stabilization by incineration or similar process.
- If water separation is possible, pre–process with Water separation process.
- Dispose by incineration.

B. Special precautions for disposal :

- The user of this product must disposal by oneself or entrust to waste disposer or person who other's waste recycle and dispose, person who establish and operate waste disposal facilities.
- Dispose of waste in accordance with all applicable laws and regulations.

14. TRANSPORT INFORMATION

A. UN No. (IMDG) : 2283

B. Proper shipping name : ISOBUTYL METHACRYLATE, STABILIZED

C. Hazard Class : 3

D. IMDG Packing group : III

E. Marine pollutant applicable Not applicable

F. Special precautions for user related to transport or transportation measures

- Local transport follows in accordance with Dangerous goods Safety Management Law.
- Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.
- EmS FIRE SCHEDULE : F-E (Non-water-reactive flammable liquids)
- EmS SPILLAGE SCHEDULE : S-D (Flammable liquids)

15. REGULATORY INFORMATION

A. National and/or international regulatory information :

POPs Management Law : Not applicable

Information of EU Classification :

* Classification : R10 Xi; R36/37/38 R43 N; R50

* Risk Phrases : R10, R36/37/38, R43, R50

* Safety Phrase : S2, S24, S37, S61

U.S. Federal regulations :

* OSHA PROCESS SAFETY (29CFR1910.119) : Not applicable

* CERCLA Section 103 (40CFR302.4) : Not applicable

* EPCRA Section 302 (40CFR355.30) : Not applicable

* EPCRA Section 304 (40CFR355.40) : Not applicable

* EPCRA Section 313 (40CFR372.65) : Not applicable

Rotterdam Convention listed ingredients : Not applicable

Stockholm Convention listed ingredients : Not applicable

Montreal Protocol listed ingredients : Not applicable

16. OTHER INFORMATION

A. Reference :

- The information contained herein is believed to be accurate. It is provided independently of any sale of the product for purpose of hazard communication. It is not intended to constitute performance information concerning the product. No express warranty, or implied warranty of merchantability or fitness for a particular purpose is made with respect to the product or the information contained herein.

- This Safety Data Sheet was compiled with data and information from the following sources: KOSHA, NITE, ESIS, NLM, SIDS, IPCS

B. Issue date

- 2016. 05. 12

C. Revision number and Last date revised

- Not applicable

D. Other

- This MSDS is prepared according to the Globally Harmonized System (GHS).

<Other Data>

Preparing person	Deliberator	Approver
Production 2 team IM DAE GUEN	Safety&Environment KIM JIN HO	Production 2 team CHOI YOUNG EUN

LGMMA Corporation

A4(210mm X 297mm)