

Safety data sheet

June 20, 2018

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: Isobutyl methacrylate
Synonyms: Isobutyle; Isobutylmethacrylat; i-butyl methacrylate; ISOBUTYL METHACRYLATE; Isobutylemethacrylate; ISO-BUTYL METHACRYLATE; Methacrylated isobutyle; Isobutyl 2-methylacrylate
Suggestive Use: Isobutyl methacrylate is mainly used as monomer for production of polymers.
Supplier's details: CHINA PETROCHEMICAL DEVELOPMENT CORPORATION
Address: No. 1 Chinchian Road, Dashe Hsiang, Kaohsiung, Taiwan, R.O.C.
Telephone Number: 886-7-3918118
Emergency phone number: 886-7-3918118
Fax Number: 886-7-3918100

2. HAZARDS IDENTIFICATION

Hazard Class: Flammable liquid (Hazard category 3*) STOT single exposure (inhalation) (Hazard category 3) Skin corrosion/irritation (Hazard category 2) Skin Sensitization (Hazard category 1B*) Hazardous to the aquatic environment – Acute Hazard (Hazard category 3*) Classification according to UN-GHS Ver. 4 (2011)
Contents of Symbols:  Signal word: Danger
Hazard statement: H226 - Flammable liquid and vapour. H315 - Causes skin irritation. H317 - May cause an allergic skin reaction. H335 - May cause respiratory irritation. H402 - Harmful to aquatic life.
Other Hazards: —

3. COMPOSITION, INFORMATION ON INGREDIENT SUBSTANCE

Chemical Name: Isobutyl methacrylate
EINECS number: 202-613-0
CAS No.: 97-86-9
Content(%): ≥99.50%

4. FIRST AID MEASURE

Emergency Procedures General advice: Immediately remove contaminated clothing. If danger of loss of consciousness, place patient in recovery position and transport accordingly. Apply artificial respiration if necessary. First aid personnel should pay attention to their own safety.
If inhaled:

Keep patient calm, remove to fresh air, seek medical attention.
On skin contact: Flush with copious amounts of water for at least 15 minutes. Sterile protective dressing. Immediate medical attention required.
On contact with eyes: Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.
On ingestion: Immediately rinse mouth and then drink plenty of water, do not induce vomiting, seek medical attention.
Critical symptoms and effects of hazards: irritating sensation
Protection of First - aider: Wear protective and cold resistant clothing, chemical resistant goggles and clothing as needed.
Notes to Physician:---

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media: carbon dioxide, dry extinguishing media, water spray, foam Large-scale fires: Use regular foam or with fine water spray
Specific Hazards: Keep product and empty container away from heat and sources of ignition.
Special Fire Fighting Procedures: 1. Move container away from fire area if it can be done without risk. 2. Cool containers with water spray until well after the fire is out. 3. For tank, rail car or tank truck: Stop leak if possible without personal risk. Evacuation radius: 800 meters (1/2 miles). 4. Do not attempt to extinguish fire unless flow of material can be stopped first. Flood with fine water spray. 5. Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn.
Specific fire fighting equipments: Wear a self-contained breathing apparatus and full protective suit.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: 1. Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation.
Environmental Precautions: 1. Do not allow material to be released to the environment without proper governmental permits. 2. Do not allow product to reach sewage system or water bodies. 3. Do not allow to enter the ground/soil.
Methods for Cleaning Up: For large amounts: Pump off product. Dispose of absorbed material in accordance with regulations. For residues: Pick up with suitable absorbent material. Dispose of absorbed material in accordance with regulations. Clean contaminated floors and objects thoroughly with water and detergents, observing environmental regulations.

7. HANDLING AND STORAGE

【Handling】 Keep away from flames and hot surfaces. – No smoking. Handle in accordance with good industrial hygiene and safety practice. The substance/ product may be handled only by appropriately trained personnel. Facility parts must be checked for polymer residues

and cleaned on regular basis in order to avoid hazardous reactions.

Ensure thorough ventilation of stores and work areas. Encapsulation or exhaust ventilation required. When filling, transferring, or emptying of containers, adequate local exhaust ventilation is necessary. Vent waste air to atmosphere only through suitable separators. Check the condition of seals and connector screw threads. Do not open warm or swollen product containers. Remove persons to safety and alert fire brigade.

The temperatures which must be avoided are to be considered. Protect against heat. Protect from direct sunlight. Protect contents from the effects of light.

Ensure adequate inhibitor and dissolved oxygen level.

Protection against fire and explosion:

Substance/product can form explosive mixture with air. Ground all transfer equipment properly to prevent electrostatic discharge. Containers should be grounded against electrostatic charge. It is recommended that all conductive parts of the machinery are grounded. Avoid all sources of ignition: heat, sparks, open flame. Vapours may form explosive mixture with air. Ignitable mixtures can be formed in the emptied container.

Heated containers should be cooled to prevent polymerization. If exposed to fire, keep containers cool by spraying with water. Emergency cooling must be provided for the eventuality of a fire in the vicinity. Sealed containers should be protected against heat as this results in pressure build-up. Avoid influence of heat.

【Storage】

1. Store in a well-ventilated place. Keep cool.
2. Store locked up.
3. Further information on storage conditions: Prior to storage ensure that the transfer equipment used and the intended storage containers do not contain other substances/products. Before transfer to stock the identity of the product must be proved to be without doubt. The entrance to storage rooms is to be granted only to appropriately trained personnel. The stabilizer is only effective in the presence of oxygen. Maintain contact with atmosphere containing 5 - 21% oxygen. Never use tanks with inert-gas installation for storage.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

【Engineering Control】 Provide local exhaust ventilation system. Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits.

Personal Protection Equipment:

Respiratory protection:

Suitable respiratory protection for lower concentrations or short-term effect: Gas filter for gases/vapours of organic compounds (boiling point >65 °C, e. g. EN 14387 Type A)

Hand protection:

Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN 374): butyl rubber (butyl) - 0.7 mm coating thickness

Eye protection:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Body protection:

Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting

boots, chemical-protection suit (according to DIN-EN 465).

Respiratory Protection

Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

General safety and hygiene measures:

Handle in accordance with good industrial hygiene and safety practice

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance: Clear,colorless liquid	Odor: ester-like
Odor Threshold Value: Not available	Melting Point: -35°C
pH: Not available	Boiling Point/Boiling Range: 155°C
Flammability Classification: Not available	Flash Point: 42.5 °C (closed cup)
Decomposition Temperature: Not available	Flammable Limits: Not available
Autoignition Temperature: Not available	Vapor Density (air=1): 5.4
Vapor Pressure: 2.11 hPa (20 °C)	Solubility (water): 470 mg/l (20 °C)
Density: 0.888 @25°C (H ₂ O=1)	Evaporation Rate (N-Butyl Acetate=1): Not available
Octanol/H ₂ O Coeff.(log Kow): log Pow: 2.95	Viscosity (25°C , cps): 0.9

10.STABILITY AND REACTIVITY

Stability: Stable under recommended storage conditions.
Possible Hazardous Reactions: Explosion and fire hazard exists under confined conditions. Ignitable air mixtures can form when the product is heated above the flash point and/or when sprayed or atomized. Formation of explosive gas/air mixtures. Risk of spontaneous and violent self-polymerization if inhibitor is lost or product is exposed to excessive heat. Risk of spontaneous polymerization when heated or in the presence of UV radiation. With unstabilised product, spontaneous polymerisation may occur e.g. through ambient heat.Polymerization coupled with heat formation. Polymerization produces gases which may burst closed or confined containers. Reactions may cause ignition.
Materials to Avoid: radical formers, free radical initiators, peroxides, mercaptans, nitro-compounds, perborates, azides, ether, ketones, aldehydes, amines, nitrates, nitrites, oxidizing agent, reducing agents, strong bases, acid anhydrides, acid chlorides, concentrated mineral acids, metal salts
Hazardous Decomposition Products: Thermal decomposition can lead to release of irritating gases and vapors

11. TOXICOLOGICAL INFORMATION

Routes of Exposure :skin, eye, inhalation, ingestion
Acute toxicity Skin contacted:May cause moderate skin irritation. Inhaled:May cause upper respiratory tract and mucous membrane irritation. Eye Contacted:Cause severe eye irritation. Ingested:May cause gastrointestinal tract irritation with nausea, vomiting, cramps, and diarrhea. Toxicology Experimental Data (Experimental animals, Exposure Route): LD50: 2 g/kg(Rat, oral),11990 mg/kg (rabbit,Ingested) LC50:--
Chronic Toxic Effects 1.Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury or death.

2. Irritating to eyes and skin on contact.
 3. Inhalation causes irritation of the lungs and respiratory system.
 4. Inflammation of the eye is characterized by redness, watering, and itching.
 5. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.
 6. May cause adverse reproductive effects and birth defects (teratogenic) based on animal test data.
- May cause cancer based on animal test data. There is inadequate evidence in humans for carcinogenicity. May affect genetic material (mutagenic)

12. ECOLOGICAL INFORMATION

Ecotoxicity: LC ₅₀ (Fish): 330000 µg/L/48H EC ₅₀ (invertebrate aquatics):- Biological concentration factor (BCF):62
Persistence/Degradability: 1. Volatilization from moist soil surfaces is expected to be an important fate process. 2. Volatilization from water surfaces is expected to be attenuated by adsorption to suspended solids and sediment in the water column. 3. Vapor-phase Isobutyl methacrylate will be degraded in the atmosphere by reaction with photochemically - produced hydroxyl radicals; the half - life for this reaction in air is estimated to be 17 hrs. Half-life in atmosphere: — Half-life in the surface of water: 5.62~100hr Half-life in the ground water: — Half-life in the soil: —
Bioaccumulation/Accumulation: -
Mobility in Soil:-
Other harmful effects:-

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

1. Refer to the local relevant laws and regulations for treatment.
2. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

14. TRANSPORT INFORMATION

UN/NA#: 2283
Shipping Name: Isobutyl methacrylate
Hazard Class: 3
Packing Group: III
Pollutant of sea (yes/no) : --
Specific shipping requirements: —

15. REGULATORY INFORMATION

R.O.C. Regulations:

1. Occupational Safety and Health Act
2. Enforcement Rules of the Occupational Safety and Health Act
3. Standards of Permissible Exposure Limits of Airborne Hazardous Substances in Workplace

4. Regulation of Labelling and Hazard Communication of Dangerous and Harmful Materials

16.OTHER INFORMATION

Reference Literatures	1.CHEMINFO 資料庫,CCINFO 光碟,2006-1 2. HAZARDTEXT 資料庫,TOMWS PLUS 光碟,Vol.68,2006 3. RTECS 資料庫,TOMWS PLUS 光碟,Vol.68,2006 4. HSDB 資料庫,TOMWS PLUS 光碟,Vol.68,2006 5.OHS SDS ON DISC,MIDL 出版公司,2006
Made By	CHINA PETROCHEMICAL DEVELOPMENT CORPORATION Sunny Ma
Creation Date	2018/1/5
Notes	This product is of industrial quality and unless otherwise specified or agreed intended exclusively for industrial use. Any other intended applications should be discussed with the manufacturer.