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Material Safety Data Sheet
Acrylic Monomer – Heat polymerized

1. IDENTIFICATION OF PRODUCT

1.1. Chemical Name: Methyl Methacrylate.
1.2. Generic Name: (Stabilized) Methyl Methacrylate.
1.3. Synonyms: MMA; Acrylic Liquid; Monomer.

2. INFORMATION ABOUT COMPOSITION ELEMENTS

2.1 Hazardous Elements: Methyl Methacrylate (CAS 80-62-6)
2.2 Non-hazardous Elements: Not applicable.

3. HEALTH HAZARD DATA

3.1. Harmful characteristics of material: Highly flammable.
3.2. Appearance (in emergencies): Colorless liquid; irritant and pungent odor.
3.3. Potential Health Hazards: Possible sensitizing effects after skin contact. Long-term skin contact can cause dermatitis. High concentrations of this product in the atmosphere can produce irritation of the respiratory tract.

4. FIRST AID MEASURES

4.1. Emergency procedures and first aid after:
- Inhalation: Take the patient to a ventilated area.
- Eye Contact: Wash immediately the patient's eyes with plenty of water while keeping patient's eyelids completely open. See the ophthalmologist.
- Skin Contact: Wash immediately the skin with plenty of water. Take offcontaminated clothing. If any symptom (such as irritation or blisters), see the doctor.
- Swallowing: Drink plenty of water. See the doctor.

4.2. Antidote: Not applicable.
4.3. Information for doctors: Not applicable.

5. FIRE FIGHTING MEASURES

5.1. Flammability of Product: This product is highly flammable. It produces vapors heavier than air and makes exploding mixtures in room temperature. In case of fire, it can produce dangerous toxic gases. If closed containers filled with this product are heated, they may explode.
5.2. Extinction of Fire: Use fire extinguishers such as CO2, foam and/or powder.
5.3. Instructions for fire extinguishing: Use special protective equipment. In long stays in the contaminated area, use an autonomous breathing equipment and adequate protective clothing.

6. ACCIDENTAL RELEASE MEASURES

6.1. Techniques, procedures and materials in case of:

- Small spill: Absorb spilled product using sand, earth or another absorbent material deemed adequate. Do not absorb with sawdust or combustible materials. Put all the absorbed material in an adequate container for its later disposal.
- Large spill: Avoid the spilled product to penetrate drainage channels. Absorb spilled product using sand, earth or another absorbent material deemed adequate. Do not absorb with sawdust or combustible materials. Put all the absorbed material in an adequate container for its later disposal. Uncontrolled throwing of waste of this product into waterways must be communicated to competent authorities.

6.2. Further considerations: This product must be used only in ventilated areas. Avoid accumulation of electrostatic charges. Avoid penetration of this product in surface or underground waterways.

7. HANDLING AND STORAGE OF PRODUCT

7.1. Handling: Please follow recommendations for fire fighting given above. This product must be kept away from fire sources.

7.2. Storage: Storage this product in a cool, dry, and well ventilated area. Keep this product away from flammes or spark sources. Do not smoke. Keep this product away from heat and direct sunlight. It must be stored far from oxidizing agents, acids, bases or polymer initiators. Do not storage for long periods. Check frequently the product's translucency. Keep constant the inhibitor's concentration. For low stabilization monomers (Less than 2 ppm of Topanol A), the storage temperature must be lower than 15ºC. Monomer's vapors are not inhibited and can form polymers in presence of fans or fire extinguishers and, in such case; they can originate the blockage of fans.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

8.1. How to control exposure to this product: Use adequate breathing equipment, safety glasses, and gloves.

8.2. Individual protective equipment:

- Breathing equipment Use adequate protective equipment. To prevent exposure to concentration values beyond the limits of occupational exposure, use an adequate face mask with a type a filter. In presence of high concentration of vapors, use an autonomous breathing equipment.
- Eye Protection: For complete protection, use safety glasses and a total-protection face screen.

- Gloves: Use adequate gloves. Adequate gloves are those that combine al least the following features: physical resistance, required sensibility, and permeability degree of material.
Laminated PVA/Polyethylene or PVA-covered gloves have a high permeability degree. Butyl or Nitrile rubber gloves provide a certain protection, but they must be replaced immediately if there has been exposure. Chirurgical latex gloves provide scarce protection against this product. Gloves must be replaced regularly and specially in case of excessive exposure.

8.3. Exposure parameters:
PEL (OSHA): 100 ppm, 410 mg/mm³, 8 Hr, TWA
TLV ACGIH: 100 ppm, 410 mg/mm³, 8 Hr, TWA

9. PHYSICAL AND CHEMICAL PROPERTIES OF THIS PRODUCT
- Physical Appearance or State: Liquid.
- Color: Clear, Colorless.
- Odor: Strong characteristic odor.
- Odor Threshold (ppm): 0.5 – 1.0.
- pH: Not applicable.
- Density: 0.945 g/ml at 20ºC (68 ºF).
- Solubility in water: 1.6g /100g at 20ºC (68 ºF).
- Solubility in solvents: Mixable with most organic solvents.
- Boling Point: 100.5ºC (213 ºF).
- Melting Point: -48ºC (-54.4 ºF).
- Flammability Point (closed cup): 10ºC (50 ºF).
- Lower Flammability Threshold (% v/v): 2.1.
- Upper Flammability Threshold (% v/v): 12.5.
- Self-ignition Temperature: 421ºC (790 ºF).
- Exploding Features: Not applicable.
- Vapor Pressure (Pascal): 3600 at 20ºC (68 ºF).
- Minimum Ignition Energy (mJ) 0.89 – 0.97 at 23ºC (73.4 ºF).
- Vapor Density (Air=1): 3.5.
- Molecular Formula: C5H8O2.

10. STABILITY AND REACTIVITY OF THIS PRODUCT
10.1. Chemical Stability: This product is stable until its self-ignition temperature.
10.2. Conditions to Avoid: Prolonged heating or a catalyst can initiate polymerization of this product.
10.3. Incompatibility with other materials: Peroxide and Azo polymer initiators, strong acids, alkalis, and oxidizing agents; also: bases, acids, and flammable solvents.

10.4. Dangerous Breaking down Products: Vapors heavier than air that tend to accumulate themselves form flammable mixtures.
10.5 Dangerous Polymerization: Exothermic reactions (that produce heat).

11. TOXICOLOGICAL INFORMATION
11.1. Acute Toxicity:
- Inhalation: This product irritates the respiratory tract. High concentrations of this product in the atmosphere can irritate the respiratory tract and produce dizziness, headache, and anesthetic effects.
- Skin Contact: Possible sensitivity after skin contact. Irritation of skin. Repeated and/or long-term skin contact can cause dermatitis.
- Eye Contact: High concentrations of this product can irritate the eyes.
- If swallowed: This product has low oral toxicity, but if swallowed, it can irritate the gastrointestinal tract.

11.2. Chronic Toxicity: Long-term exposure repeated exposure to high concentrations of this product can cause adverse effects on heart, lungs, liver, and kidneys. According to different studies, there is no reason to think that Methyl Methacrylate represents a carcinogenic or mutagenic risk for people. Long-term exposures of pregnant mothers do not produce either toxic effects on embryos or foetus or teratogenic effects.

12. ECOLOGICAL INFORMATION:
12.1. Distribution and Environmental Impact: This product is highly volatile. Its solubility in water is scarce. It has a low bioaccumulation potential. It is foreseeable for this product to have a high mobility under the surface of the ground.
12.2. Persistence and Degradation: This product is easily biodegradable.
Its Chemical Demand of Oxygen (CDO) is 88% (28 days).
12.3. Inherent biodegradation: Elimination of dissolve organic carbon in more than 95% lasts 28 days.
12.4. Toxicity: Low toxicity for fish. CL50 (fish) typically: > 100 mg/L.
12.5. Innocuous for aquatic invertebrates: CE50 (Daphnia Magna) (48 hours) 69 mg/L. Low toxicity for algae. CE50 (Selenastrum Capricornutum) (96 hours) 170 mg/L.
12.6. Effects on Effluent Treatment: This product is practically eliminated during biological treatment processes.

13. DISPOSAL CONSIDERATIONS
Do not throw waste material of this product into waterways. Waste disposal of this product must be in accordance with regulations into effect in each country.

WARNING: ¡Laws, regulations and local restrictions can change or be reinterpreted from one country to another and also, they can be different from the ones being into

effect in Colombia. This is why considerations about waste disposal of product and its packing may differ from the ones appearing in this document!

14. TRANSPORT INFORMATION

14.1. Dangerous material: Methyl Methacrylate
14.2. Type of Risk: Flammable
14.3. UN Number: 124714.4
14.4. IATA Classification: 3

15. INFORMATION ABOUT REGULATIONS INTO EFFECT

15.1. In Colombia: Transportation of this product must be made according to provisions of Decree 1609 of 2002 concerning road transportation of chemical and dangerous substances.
15.2. International Regulations: This product must be labeled according to directives of the EEC/Regulations on dangerous substances.

16. IMPORTANT ADDITIONAL INFORMATION

In case of emergency, please call our Industrial -and- Physical Safety Area, phone nº (574) 550 00 00.

Information appearing in this Safety Data Sheet is based on our current knowledge of this product. Our firm is not responsible for inappropriate usage of this product.