SAFETY DATA SHEET

THE DOW CHEMICAL COMPANY*

Product name: Methyl Methacrylate, 10 ppm MEHQ

Issue Date: 04/07/2017
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The Covalent Chemical LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: Methyl Methacrylate, 10 ppm MEHQ

Recommended use of the chemical and restrictions on use
Identified uses: Chemical intermediate.

COMPANY IDENTIFICATION
Covalent Chemical LLC
6501 Creedmoor Rd. ste 207 Raleigh NC 27613
UNITED STATES

Customer Information Number: 919-825-1400
info@covalentchemical.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 1 800 424 9300
Local Emergency Contact: 800-424-9300

2. HAZARDS IDENTIFICATION

Hazard classification
This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.
Flammable liquids - Category 2
Skin irritation - Category 2
Skin sensitisation - Sub-category 1B
Specific target organ toxicity - single exposure - Category 3

Label elements
Hazard pictograms

Signal word: **DANGER!**

Hazards
Highly flammable liquid and vapour.
Causes skin irritation.
May cause an allergic skin reaction.
May cause respiratory irritation.

Precautionary statements

Prevention
Keep away from heat/sparks/open flames/hot surfaces. No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting/ equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves/ eye protection/ face protection.

Response
IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
If skin irritation or rash occurs: Get medical advice/ attention.
Take off contaminated clothing and wash before reuse.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage
Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: methyl methacrylate
This product is a substance.

Component	CASRN	Concentration
Methyl methacrylate	80-62-6	>= 99.8 %
Other ester adducts	Not Required	<= 0.2 %
Methoxyphenol	150-76-5	<= 15.0 PPM

4. FIRST AID MEASURES

Description of first aid measures
Inhalation: Move to fresh air. Oxygen or artificial respiration if needed. Call a physician immediately.

Skin contact: Wash off with soap and plenty of water. Wash contaminated clothing before re-use. If skin irritation persists, call a physician.

Eye contact: Rinse with plenty of water. If eye irritation persists, consult a specialist.

Ingestion: Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Consult a physician. If vomiting occurs spontaneously, keep airway clear.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water spray Dry powder Foam Alcohol-resistant foam Carbon dioxide (CO2)

Unsuitable extinguishing media: No data available

Special hazards arising from the substance or mixture
Hazardous combustion products: No data available

Unusual Fire and Explosion Hazards: Vapors can travel to a source of ignition and flash back. Heat can cause polymerization. Heated containers can explode.

Advice for firefighters
Fire Fighting Procedures: EXPLOSION HAZARD. Fight advanced fires from a protected location. Cool containers/tanks with water spray.

Special protective equipment for firefighters: Wear self-contained breathing apparatus and protective suit.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. If exposed to material during clean-up operations, see SECTION 4, First Aid Measures, for actions to follow.

Environmental precautions: CAUTION: Keep spills and cleaning runoff out of municipal sewers and open bodies of water. Do not allow material to contaminate ground water system.

Methods and materials for containment and cleaning up: Remove all sources of ignition. Contain spills immediately with inert materials (e.g., sand, earth). Transfer liquids and solid diking material to separate suitable containers for recovery or disposal. Contaminated monomer may be unstable. Add inhibitor to prevent polymerization. Absorbent can act as a contaminant (removes inhibitor) in liquid monomer. Avoid freestanding monomer with absorbent or add inhibitor to stabilize. Dispose of promptly.

7. HANDLING AND STORAGE

Precautions for safe handling: May cause sensitisation of susceptible persons by skin contact. For personal protection see section 8. Ground all metal containers during storage and handling.

Conditions for safe storage: Minor deviations (7C/13F) above the recommended temperature (see below) are acceptable for short periods of time (one week) for material in transit. Store in cool place. Keep away from direct sunlight. Material can burn; limit indoor storage to approved areas equipped with automatic sprinklers. Ground all metal containers during storage and handling. This product contains inhibitor to stabilize it during shipment and storage. The effectiveness of the inhibitor is dependent on the presence of dissolved oxygen. In order to maintain sufficient dissolved oxygen in the liquid to avoid polymerization, the monomer must always be stored with a vapor space oxygen concentration of 5% to 21%(air). Store material in containers made of the following: Stainless steel Carbon steel glass Aluminium Keep container tightly closed.

Storage stability
Storage Period: 6 Month
Storage temperature: <= 38 °C (<= 100 °F)
Other data: Use monomer within the recommended storage period from date of manufacture to avoid loss of stability or risk of polymerization.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Methyl methacrylate	ACGIH	TWA	50 ppm
	ACGIH	TWA	Skin Sensitizer
	ACGIH	STEL	100 ppm
	ACGIH	STEL	Skin Sensitizer
	OSHA Z-1	TWA	410 mg/m3 100 ppm

Methoxyphenol	ACGIH	TWA	5 mg/m3

Exposure controls
Engineering controls: Use explosion-proof local exhaust ventilation with a minimum capture velocity of 100 ft/min (0.5 m/sec) at the point of vapor evolution. Refer to the current edition of Industrial Ventilation: A Manual of Recommended Practice published by the American Conference of Governmental Industrial Hygienists for information on the design, installation, use, and maintenance of exhaust systems.

Protective measures: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

Individual protection measures

Eye/face protection: Chemical resistant goggles must be worn. Eye protection worn must be compatible with respiratory protection system employed.

Skin protection

Hand protection: Chemical-resistant gloves should be worn whenever this material is handled. The glove(s) listed below may provide protection against permeation. (Gloves of other chemically resistant materials may not provide adequate protection): butyl-rubber Rinse and remove gloves immediately after use. Wash hands with soap and water. Gloves should be removed and replaced immediately if there is any indication of degradation or chemical breakthrough. NOTE: Material is a possible skin sensitizer. Reference: Methacrylate Producers Association, Inc., "Chemical-Protective Gloves for Methacrylic Acid and its Esters", September 1998.

Other protection: Use chemically resistant apron or other impervious clothing to avoid prolonged or repeated skin contact.

Respiratory protection: A respiratory protection program meeting OSHA 1910.134 and ANSI Z88.2 requirements or equivalent must be followed whenever workplace conditions warrant a respirator's use. None required if airborne concentrations are maintained below the exposure limit listed in Exposure Limit Information. Up to 10 times the exposure limit: Wear a properly fitted NIOSH approved (or equivalent) half-mask, air-purifying respirator. Up to 50 times the exposure limit: Wear a properly fitted NIOSH approved (or equivalent) full-facepiece, air-purifying respirator, OR full-facepiece, airline respirator in the pressure demand mode. Above 50 times the exposure limit or Unknown: Wear a properly fitted NIOSH approved (or equivalent) self-contained breathing apparatus in the pressure demand mode, OR full-facepiece, airline respirator in the pressure demand mode with emergency escape provision. Air-purifying respirators should be equipped with NIOSH approved (or equivalent) organic vapor cartridges and N95 filters. If oil mist is present, use R95 or P95 filters. NOTE: Contact Rohm and Haas Company for air monitoring method.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	liquid
Color	clear colorless
Odor	ester-like
Odor Threshold	No data available
pH	No data available
Melting point/range	-48 °C (-54 °F)
Freezing point	No data available
Boiling point (760 mmHg)	100.36 °C (212.65 °F)

Flash point	10 °C (50 °F) at 1,013.25 hPa *Abel Closed Cup* DIN 51755
Evaporation Rate (Butyl Acetate = 1)	>1.00
Flammability (solid, gas)	Flammable
Lower explosion limit	2.10 % vol
Upper explosion limit	12.50 % vol
Vapor Pressure	No data available
Relative Vapor Density (air = 1)	3.5000 at 20 °C (68 °F)
Relative Density (water = 1)	0.9400 at 20 °C (68 °F)
Water solubility	15.3 g/L at 20 °C (68 °F) *Literature* Moderately soluble
Partition coefficient: n-octanol/water	log Pow: 1.38 *Calculated.*
Auto-ignition temperature	400.00 °C (752.00 °F) at 1,013.25 hPa *Literature*
Decomposition temperature	No data available
Dynamic Viscosity	0.530 mPa.s at 20 °C (68 °F) *Literature*
Kinematic Viscosity	No data available
Explosive properties	Not explosive
Oxidizing properties	The substance or mixture is not classified as oxidizing.
Liquid Density	0.94 g/cm3 at 20.00 °C (68.00 °F)
Molecular weight	No data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No data available

Chemical stability: No data available

Possibility of hazardous reactions: Inhibitor is added to this product to prevent polymerization. However, this material can undergo hazardous polymerization.
Excessive aging, heat, contamination with polymerization catalysts, oxygen-free atmosphere, inhibitor depletion or ultraviolet light (sunlight) may cause polymerization. An uncontrolled polymerization may produce a rapid release of energy with the potential for an explosion of unvented closed containers. This material is considered stable under specified conditions of storage, shipment and/or use. See SECTION 7, Handling And Storage, for specified conditions.

Conditions to avoid: No data available

Incompatible materials: Avoid contact with the following: Acids Bases Oxidizing agents Reducing agents UV light free radical initiators organic peroxides

Hazardous decomposition products: There are no known hazardous decomposition products for this material.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity
LD50, Rat, 7,900 mg/kg

Acute dermal toxicity
LD50, Rabbit, > 5,000 mg/kg

Acute inhalation toxicity
LC50, Rat, 4 Hour, vapour, 29.8 mg/l

Skin corrosion/irritation
irritating

Serious eye damage/eye irritation
slight irritation

Sensitization
Has caused allergic skin reactions in humans.
Has demonstrated the potential for contact allergy in mice.

Specific Target Organ Systemic Toxicity (Single Exposure)
May cause respiratory irritation.
Route of Exposure: Inhalation
Target Organs: Respiratory Tract

Specific Target Organ Systemic Toxicity (Repeated Exposure)
In humans, effects have been reported on the following organs:
Respiratory tract.
In animals, effects have been reported on the following organs:
kidney
Liver
Gastrointestinal tract
nervous system
lung

Carcinogenicity
Animal testing did not show any carcinogenic effects.

Teratogenicity
MMA did not cause birth defects, malformations, or fetal toxicity in pregnant rats inhaling concentrations up to 2028 ppm. Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

In a retrospective study of the effects of exposure to ethyl acrylate and methyl methacrylate on workers hired in one plant between 1933 and 1945, a higher-than-expected incidence of colorectal cancer mortality was observed. However, there was no association of risk in similarly exposed populations from other locations or in subsequent evaluations of the same location.

Reproductive toxicity
Animal testing did not show any effects on fertility. No toxicity to reproduction

Mutagenicity
In vitro studies showed both positive and negative effects In vivo tests did not show mutagenic effects

Aspiration Hazard
Product test data not available. Refer to component data.

COMPONENTS INFLUENCING TOXICOLOGY:

Methyl methacrylate

Aspiration Hazard
May be harmful if swallowed and enters airways.

Methoxyphenol

Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

General Information
Harmful to aquatic organisms.

Toxicity

Acute toxicity to fish
LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, > 79 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna, 48 Hour, 69 mg/l, Method Not Specified.

Acute toxicity to algae/aquatic plants
EC50, Pseudokirchneriella subcapitata (green algae), static test, 72 Hour, > 110 mg/l, OECD Test Guideline 201

Chronic aquatic toxicity
Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), 21 d, 37 mg/l

Persistence and degradability
Biodegradability: Readily biodegradable
Biodegradation: 94 %
Exposure time: 14 d
Method: OECD Test Guideline 301D or Equivalent

Physico-chemical removability
Rapidly hydrolyzed under alkaline conditions.

Bioaccumulative potential

Partition coefficient: n-octanol/water(log Pow): 1.38 at 20 °C Calculated.

Mobility in soil

Methyl methacrylate

Potential for mobility in soil is high (Koc between 50 and 150).
Partition coefficient (Koc): 87 Estimated.

Other ester adducts

No relevant data found.

Methoxyphenol

Potential for mobility in soil is high (Koc between 50 and 150).
Partition coefficient (Koc): 55.7 Measured

13. DISPOSAL CONSIDERATIONS

Disposal methods: After the addition of excess inhibitor, incinerate liquid and contaminated diking material in accordance with local, state, and federal regulations.

Contaminated packaging: Dispose of as unused product. CONTAINERS MAY BE HAZARDOUS WHEN EMPTY. Since emptied containers retain product residue follow all (M)SDS and label warnings even after container is emptied. Do not burn, or use a cutting torch on, the empty drum. Pursue safe, legal methods for recycle of empty containers. Improper disposal or re-use of this container may be dangerous and illegal. Refer to applicable local, state and federal regulations.

14. TRANSPORT INFORMATION

DOT

Proper shipping name	Methyl methacrylate monomer, stabilized
UN number	UN 1247
Class	3
Packing group	II
Reportable Quantity	Methyl methacrylate

Classification for SEA transport (IMO-IMDG):

Proper shipping name	METHYL METHACRYLATE MONOMER, STABILIZED
UN number	UN 1247
Class	3
Packing group	II
Marine pollutant	No
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Methyl methacrylate monomer, stabilized
UN number	UN 1247
Class	3
Packing group	II

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
Acute Health Hazard
Chronic Health Hazard
Fire Hazard
Reactivity Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
This product contains a chemical which is listed in Section 313 at or above de minimis concentrations. The following listed chemicals are present: (Quantity present is found elsewhere on this MSDS.)

Components	**CASRN**
Methyl methacrylate	80-62-6

Pennsylvania
Any material listed as "Not Hazardous" in the CAS REG NO. column of SECTION 2, Composition/Information On Ingredients, of this MSDS is a trade secret under the provisions of the Pennsylvania Worker and Community Right-to-Know Act.

United States TSCA Inventory (TSCA)
All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

16. OTHER INFORMATION

Other information
MONOMER END USES
Acrylic and methacrylic monomers are industrial chemicals and intended for industrial use only. They are not intended for direct consumer, medical, cosmetic, or personal uses. Exposure to high levels of acrylic or methacrylic monomer vapors may cause respiratory tract irritation, skin sensitization, or other effects.

DO NOT USE IN APPLICATIONS INVOLVING IMPLANTATION IN THE HUMAN BODY OR PROLONGED CONTACT WITH INTERNAL BODY FLUIDS OR TISSUES. DO NOT USE FOR IN-SITU POLYMERIZATIONS ON, OR ADHESION TO, ANY HUMAN BODY PART. Covalent Chemical's acrylic and methacrylic monomers are not designed or manufactured for these uses. Covalent Chemical Company does not recommend the use of acrylic or methacrylic monomers in medical applications or artificial fingernail extension or replacement applications. Covalent Chemical Company has neither sought, nor received, approval from the FDA or any other agency for these applications. Covalent Chemical Company has not performed technical or clinical testing on the suitability of acrylic or methacrylic monomers in uses involving prolonged contact with human tissues or in artificial fingernail extension or replacement applications. Use of unpolymerized, liquid acrylic or methacrylic monomers in artificial fingernail extension or replacement applications may result in loosening, shedding, fungal infection of nails.
ACRYLIC AND METHACRYLIC POLYMERS ARE USED SAFELY IN A WIDE VARIETY OF APPLICATIONS, INCLUDING PERSONAL CARE AND HYGIENE PRODUCTS.
If you have any questions concerning the safe use of acrylic and methacrylic monomers, please call the manufacturer.

Hazard Rating System
HMIS

Health	Flammability	Physical Hazard
2*	3	2

* = Chronic Effects (See Hazards Identification)

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Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

ACGIH	USA. American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLV)
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
STEL	Short-term exposure limit
TWA	8-hour, time-weighted average

Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

Covalent Chemical LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer- specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other

than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.