SAFETY DATA SHEET

THE DOW CHEMICAL COMPANY*

Product name: MONOMER QM-57T

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THE DOW CHEMICAL COMPANY* 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: MONOMER QM-57T

Recommended use of the chemical and restrictions on use
Identified uses: This product is used in coatings, textiles, binders and adhesives.

COMPANY IDENTIFICATION
THE DOW CHEMICAL COMPANY*
Agent for Rohm and Haas Chemicals LLC
400 ARCOLA ROAD
COLLEGEVILLE PA 19426-2914
UNITED STATES

Customer Information Number: 215-592-3000
SDSQuestion@dow.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.
Acute toxicity - Category 4 - Inhalation
Skin irritation - Category 2

Label elements
Hazard pictograms

Signal word: **WARNING!**

Hazards
Causes skin irritation.
Harmful if inhaled.

Precautionary statements

Prevention
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves.

Response
IF ON SKIN: Wash with plenty of soap and water.
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 occurs: Get medical advice/ attention.
Take off contaminated clothing and wash before reuse.

Other hazards
no data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: 2-[[2,3,3a,4,7,7a(or 3a,4,5,6,7,7a)-hexahydro-4,7-methano-1H-indenyl]oxy]ethyl methacrylate
This product is a substance.

Component	CASRN	Concentration
Dicyclopentenyloxyethyl methacrylate	68586-19-6	>= 95.0 %
Other ester adducts	Not Required	<= 5.0 %
Phenothiazine	92-84-2	<= 380.0 PPM
Hydroquinone	123-31-9	<= 30.0 PPM

4. FIRST AID MEASURES

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

Skin contact: Remove contaminated clothing. Wash off with soap and plenty of water. Wash contaminated clothing before re-use. Consult 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.

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 should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water spray Dry powder 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: 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: Keep spectators away. 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: For personal protection see section 8.

Conditions for safe storage: Keep from freezing - product stability may be affected. Avoid temperature extremes during storage; ambient temperature preferred. Store in cool place. Keep away from direct sunlight. 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). Use monomer within 1 year to avoid loss of stability or risk of polymerization. Keep container tightly closed.

Storage stability
Storage temperature: < 46 °C (< 115 °F)

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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

Component	Regulation	Type of listing	Value/Notation
Dicyclopentenyloxyethyl methacrylate	Rohm and Haas	TWA	6 mg/m3
Phenothiazine	Rohm and Haas	TWA	5 mg/m3
	Rohm and Haas	TWA	SKIN, DSEN
	Rohm and Haas	STEL	10 mg/m3
	Rohm and Haas	STEL	SKIN, DSEN
	ACGIH	TWA	5 mg/m3
	ACGIH	TWA	Absorbed via skin
Hydroquinone	Rohm and Haas	TWA	0.5 mg/m3
	Rohm and Haas	TWA	Skin Sensitizer
	ACGIH	TWA	1 mg/m3
	OSHA Z-1	TWA	2 mg/m3
	ACGIH	TWA	Skin Sensitizer

Exposure controls
Engineering controls: Use 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: Use chemical splash goggles (ANSI Z87.1 or approved equivalent). 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): Neoprene gloves 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.

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 clear
Color	yellow
Odor	Acrylic odor
Odor Threshold	no data available
pH	no data available
Melting point/range	-50.00 °C (-58.00 °F)
Freezing point	no data available
Boiling point (760 mmHg)	115.00 °C (239.00 °F) @ 0.1 mm Hg
Flash point	**closed cup** > 93.00 °C (> 199.40 °F) *PENSKY MARTENS CLOSED CUP*
Evaporation Rate (Butyl Acetate = 1)	<1.00
Flammability (solid, gas)	Not Applicable
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapor Pressure	0.1333333 mmHg
Relative Vapor Density (air = 1)	>1.0000
Relative Density (water = 1)	1.0700
Water solubility	practically insoluble
Partition coefficient: n-octanol/water	no data available
Auto-ignition temperature	no data available
Decomposition temperature	no data available

Dynamic Viscosity	20.000 mPa.s maximum
Kinematic Viscosity	no data available
Explosive properties	no data available
Oxidizing properties	no data available
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. See Hazardous Polymerization for conditions to avoid.
Excessive aging, heat, contamination with polymerization catalysts, oxygen-free atmosphere, inhibitor depletion or ultraviolet light (sunlight) may cause polymerization. This material is not expected to undergo hazardous polymerization; energy will not be released rapidly.
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 on this product or its components appear in this section when such data is available.

Acute toxicity

Acute oral toxicity
LD50, Rat, > 5,000 mg/kg

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

Acute inhalation toxicity
LC50, Rat, 4 Hour, dust/mist, > 2.79 mg/l

Skin corrosion/irritation
Moderate irritation.

Serious eye damage/eye irritation
slight irritation

Sensitization
Product test data not available.

Specific Target Organ Systemic Toxicity (Single Exposure)
Product test data not available.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
Product test data not available.

Carcinogenicity
Product test data not available.

Teratogenicity
This monomer is NOT teratogenic by inhalation even at maternally toxic doses as high as 3.06 mg/l. At the highest exposure level tested (3.06 mg/l), only minimal, reversible effects on fetal growth were shown, likely secondary to maternal toxicity.

Reproductive toxicity
Product test data not available.

Mutagenicity
Ames mutagenicity:

Negative

In vivo chromosome aberration assay (mouse bone marrow cells):

Negative

Mouse Lymphoma Point Mutation:

Negative

Cell Transformation in 10T 1/2 Cells:

Negative

Aspiration Hazard
Product test data not available.

COMPONENTS INFLUENCING TOXICOLOGY:

Dicyclopentenyloxyethyl methacrylate

Sensitization
For skin sensitization:
No relevant data found.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
no data available

Specific Target Organ Systemic Toxicity (Repeated Exposure)
No relevant information found.

Carcinogenicity
No relevant information found.

Reproductive toxicity
No relevant information found.

Aspiration Hazard
Based on available information, aspiration hazard could not be determined.

Phenothiazine

Sensitization
Has caused allergic skin reactions in humans.
Allergic skin reactions may result from simultaneous exposure to the material and sunlight.
Has caused allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No data available.

Specific Target Organ Systemic Toxicity (Single Exposure)
The substance or mixture is not classified as specific target organ toxicant, single exposure.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
In animals, effects have been reported on the following organs:
Blood.
Bone marrow.
Kidney.
Liver.
Spleen.
In humans, effects have been reported on the following organs:
Eye.

Carcinogenicity
Did not cause cancer in laboratory animals.

Reproductive toxicity
No relevant data found.

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

Hydroquinone

Sensitization
Has caused allergic skin reactions in humans.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
In animals, effects have been reported on the following organs:
Blood.
Central nervous system.
Kidney.
Liver.
Long-term exposure to dusts or vapors of hydroquinone has been associated with lasting effects on the cornea and lens of the eye along with spots of unusual pigmentation.

Carcinogenicity
Has caused cancer in laboratory animals.

Reproductive toxicity
In animal studies, did not interfere with reproduction.

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

Carcinogenicity

Component	**List**	**Classification**
Hydroquinone	ACGIH	A3: Confirmed animal carcinogen with unknown relevance to humans.

12. ECOLOGICAL INFORMATION

Ecotoxicological information on this product or its components appear in this section when such data is available.

Toxicity

Acute toxicity to fish
LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 11.4 mg/l, OECD Test Guideline 203

LC50, Lepomis macrochirus (Bluegill sunfish), 96 Hour, 9.0 mg/l, OECD Test Guideline 203

Persistence and degradability

Dicyclopentenyloxyethyl methacrylate
Biodegradability: No relevant information found.

Other ester adducts
Biodegradability: No relevant data found.

Phenothiazine
Biodegradability: Material is not readily biodegradable according to OECD/EEC guidelines.
10-day Window: Not applicable

Biodegradation: 0 %
Exposure time: 28 d
Method: OECD Test Guideline 301C or Equivalent

Theoretical Oxygen Demand: 2.73 mg/mg
2.73 mg/mg
2.73 mg/mg

Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 0.059 d
Method: Estimated.
Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 0.059 d
Method: Estimated.
Photodegradation
Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Atmospheric half-life: 0.059 d
Method: Estimated.

Hydroquinone

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Not applicable
Biodegradation: 70 %
Exposure time: 14 d
Method: OECD Test Guideline 301C or Equivalent

Bioaccumulative potential

Dicyclopentenyloxyethyl methacrylate

Bioaccumulation: No data available. No data available.

Other ester adducts

Bioaccumulation: No relevant data found.

Phenothiazine

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 4.15 Measured
Bioconcentration factor (BCF): 127 - 660 Cyprinus carpio (Carp) 28 d Method Not Specified.

Hydroquinone

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 0.59 Measured
Bioconcentration factor (BCF): 40 Leuciscus idus (Golden orfe) Method Not Specified.

Mobility in soil

Dicyclopentenyloxyethyl methacrylate

No data available.

Other ester adducts

No relevant data found.

Phenothiazine

Potential for mobility in soil is medium (Koc between 150 and 500).
Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.
Partition coefficient(Koc): 3410 Estimated.

Hydroquinone

Potential for mobility in soil is medium (Koc between 150 and 500).
Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.
Partition coefficient(Koc): 430 Estimated.

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 MSDS and label warnings even after container is emptied. 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

Not regulated for transport

Classification for SEA transport (IMO-IMDG):

Not regulated for transport

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):

Not regulated for transport

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

OSHA Hazard Communication Standard
This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

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

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
This product does not contain a chemical which is listed in Section 313 at or above de minimis concentrations.

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.

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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.Rohm and Haas Company's acrylic and methacrylic monomers are not designed or manufactured for these uses. Rohm and Haas Company does not recommend the use of acrylic or methacrylic monomers in medical applications or artificial fingernail extension or replacement applications. Rohm and Haas Company has neither sought, nor received, approval from the FDA or any other agency for these applications. Rohm and Haas 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	1	1

Revision
Identification Number: 101101601 / 1001 / Issue Date: 04/06/2015 / Version: 2.0
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

Absorbed via skin	Absorbed via skin
ACGIH	USA. ACGIH Threshold Limit Values (TLV)
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
Rohm and Haas	Rohm and Haas OEL's
SKIN, DSEN	Absorbed via Skin, Skin Sensitizer
STEL	Short term exposure limit
TWA	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.

THE DOW CHEMICAL COMPANY* 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.