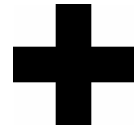




THE DOW CHEMICAL COMPANY MATERIAL SAFETY DATA SHEET



Product Name: CARBOWAX(TM) SENTRY(TM)
POLYETHYLENE GLYCOL 400 NF, FCC GRADE;
MACROGOL 400 Ph. Eur.
MSDS#: 468

Effective Date: 05/20/2002

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Dow (hereinafter, and for purposes of this MSDS only, refers to The Dow Chemical Company and to Dow Chemical Canada Inc.) encourages and expects you to read and understand the entire MSDS, as there is important information throughout the document. Dow expects you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

1.1 IDENTIFICATION

Product Name CARBOWAX(TM) SENTRY(TM) POLYETHYLENE GLYCOL 400
NF, FCC GRADE; MACROGOL 400 Ph. Eur.

1.2 COMPANY IDENTIFICATION

The Dow Chemical Company
Midland, MI 48674

1.3 EMERGENCY TELEPHONE NUMBER

24-HOUR EMERGENCY TELEPHONE NUMBER: (989)636-4400.
Customer Information Number: 1-800-258-2436.

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2. COMPOSITION INFORMATION

Component	CAS #	Amount (%W/W)
Polyethylene glycol	25322-68-3	> 99 %

3. HAZARDS IDENTIFICATION

3.1 EMERGENCY OVERVIEW

Appearance Colorless

Physical State Liquid

Odor Mild

Hazards of product NO SIGNIFICANT IMMEDIATE HAZARDS FOR EMERGENCY RESPONSE ARE KNOWN.

3.2 POTENTIAL HEALTH EFFECTS

Effects of Single Acute Overexposure

Inhalation At room temperature, exposure to vapor is minimal due to low volatility; single exposure is not likely to be hazardous.

Eye Contact May cause slight temporary eye irritation. Corneal injury is unlikely.

Skin Contact Prolonged contact is essentially nonirritating to skin. Material may be handled at elevated temperatures; contact with the heated material may cause thermal burns.

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Skin Absorption Prolonged skin contact is unlikely to result in absorption of harmful amounts.

Swallowing Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

Chronic, Prolonged or Repeated Overexposure

Other Effects of Overexposure No information currently available.

See Section 11 for toxicological information and additional information about potential health effects.

3.3 POTENTIAL ENVIRONMENTAL EFFECTS

See Section 12 for Ecological Information.

4. FIRST AID PROCEDURES

4.1 INHALATION

Move person to fresh air; if effects occur, consult a physician.

4.2 EYE CONTACT

Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

4.3 SKIN CONTACT

Wash skin with plenty of water.

4.4 SWALLOWING

No emergency medical treatment necessary.

4.5 NOTES TO PHYSICIAN

If burn is present, treat as any thermal burn, after decontamination.

No specific antidote.

Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

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5. FIRE FIGHTING MEASURES

5.1 FLAMMABLE PROPERTIES - REFER TO SECTION 9, PHYSICAL AND CHEMICAL PROPERTIES

5.2 EXTINGUISHING MEDIA

Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Do not use direct water stream. May spread fire. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

5.3 FIRE FIGHTING PROCEDURES

Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from a protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.

5.4 SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

5.5 UNUSUAL FIRE AND EXPLOSION HAZARDS

Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

5.6 HAZARDOUS COMBUSTION PRODUCTS

During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide.

6. ACCIDENTAL RELEASE MEASURES

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Steps to be Taken if Material is Released or Spilled:

Contain spilled material if possible. Small spills: Dilute with large quantities of water. Large spills: Collect in suitable and properly labeled containers. See Section 13, Disposal Considerations for additional information.

Personal Precautions: Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental Precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

7. HANDLING AND STORAGE

7.1 HANDLING

General Handling

See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Ventilation

Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

Other Precautions

Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.

7.2 STORAGE

Use product promptly after opening. Store in the following material(s): stainless steel. polypropylene. polyethylene lined container. Teflon. glass-lined container. Plasite 3066 lined container. Plasite 3070 lined container. 316 stainless steel.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

8.1 EXPOSURE LIMITS

Component	Exposure Limits	Skin Form
Polyethylene glycol	10 mg/m3 TWA8 AIHA WEEL	Aerosol

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In the Exposure Limits Chart above, if there is no specific qualifier (i.e., Aerosol) listed in the Form Column for a particular limit, the listed limit includes all airborne forms of the substance that can be inhaled.

A "Yes" in the Skin Column indicates a potential significant contribution to overall exposure by the cutaneous (skin) route, including mucous membranes and the eyes, either by contact with vapors or by direct skin contact with the substance. A "Blank" in the Skin Column indicates that exposure by the cutaneous (skin) route is not a potential significant contributor to overall exposure.

8.2 PERSONAL PROTECTION

- Respiratory Protection:** Atmospheric levels should be maintained below the exposure guideline.
When airborne exposure guidelines and/or comfort levels may be exceeded, use an approved air-purifying respirator.
- Ventilation:** Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.
- Eye Protection:** Use safety glasses.
- Other Protective Equipment:** No precautions other than clean body-covering clothing should be needed.
Use gloves with insulation for thermal protection, when needed.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid

Appearance: Colorless

Odor: Mild

Flash Point - Closed Cup: 227 °C 440 °F *Pensky-Martens Closed Cup ASTM D 93*

Flammable Limits In Air:

Lower *Not determined. Non-volatile material.*

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Upper *Not determined. Non-volatile material.*

Autoignition Temperature: *No test data available.*

Vapor Pressure: < 0.01 mmHg 20 °C

Boiling Point (760 mmHg): > 200 °C > 392 °F Decomposes

Vapor Density (air = 1): > 10

Specific Gravity (H2O = 1): 1.1 20 °C / 20 °C

Freezing Point: 4 - 8 °C 39 - 46 °F

Melting Point: *Not applicable.*

Solubility in Water (by weight): 100 % 20 °C

pH: *No test data available.*

Molecular Weight: 380 - 420 g/mol

Percent Volatiles: 0.3 Wt%

10. STABILITY AND REACTIVITY

10.1 STABILITY/INSTABILITY Thermally stable at typical use temperatures.

Conditions to Avoid: Product can oxidize at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible Materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

Thermal Decomposition: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Carbon dioxide. Alcohols. Ethers. Hydrocarbons. Ketones. Polymer fragments.

10.2 HAZARDOUS POLYMERIZATION Will not occur.

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11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Peroral

Rat; LD50 = > 30000 mg/kg

Percutaneous

Rabbit; LD50 = > 20000 mg/kg

Inhalation

Vapor Study, 8 hr exposure, at room temperature Rat; LC50 = > 13 ppm; The concentration specified represents the highest concentration achievable under the test conditions.

SENSITIZATION (ANIMAL AND HUMAN STUDIES)

Did not cause allergic skin reactions when tested in humans.

DEVELOPMENTAL TOXICITY

For similar material(s), Did not cause birth defects in laboratory animals.

CHRONIC TOXICITY AND CARCINOGENICITY

Did not cause cancer in laboratory animals.

GENETIC TOXICOLOGY

In Vitro

In vitro mutagenicity studies were negative.

In Vivo

For similar material(s), Animal mutagenicity studies were negative.

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SIGNIFICANT DATA WITH POSSIBLE RELEVANCE TO HUMANS

Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

12. ECOLOGICAL INFORMATION

12.1 ENVIRONMENTAL FATE

Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%).

BOD (% Oxygen consumption)

	Day 5	Day 10	Day 15	Day 20	Day 28/30
	5 - 17 %	34.5 - 38 %		40.2 - 70 %	

12.2 ECOTOXICITY

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50 >100 mg/L in most sensitive species tested).

Toxicity to Aquatic Invertebrates

water flea Daphnia magna; LC50

Result value: 53000 mg/l

Toxicity to Fish

fathead minnow (Pimephales promelas); LC50

Result value: 87000 mg/l

12.3 FURTHER INFORMATION

No bioconcentration is expected because of the relatively high water solubility.

Chemical Oxygen Demand (COD) - calculated:: 1.81 mg/mg

Theoretical Oxygen Demand (THOD) - calculated:: 1.74 mg/mg

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13. DISPOSAL CONSIDERATIONS

13.1 DISPOSAL

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. DOW HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION 2 (Composition/ Information On Ingredients). FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: recycler. reclaimer. incinerator or other thermal destruction device. As a service to its customers, Dow can provide names of information resources to help identify waste management companies and other facilities which recycle, reprocess or manage chemicals or plastics, and that manage used drums. Telephone Dow's Customer Information Group at 1-800-258-2436 or 1-989-832-1556 (U.S.), or 1-800-331-6451 (Canada) for further details .

14. TRANSPORT INFORMATION

14.1 U.S. D.O.T.

NON-BULK

Proper Shipping Name : NOT REGULATED

BULK

Proper Shipping Name : NOT REGULATED

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. 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.

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15. REGULATORY INFORMATION

15.1 FEDERAL/NATIONAL

OSHA HAZARD COMMUNICATION STANDARD

This product is not a "Hazardous Chemical" as defined by 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) SECTION 313

To the best of our knowledge this product does not contain chemicals at levels which require reporting under this statute.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 TITLE III (EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW ACT) SECTION 302

To the best of our knowledge this product does not contain chemicals at levels which require reporting under this statute.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 TITLE III (EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW ACT) SECTIONS 311 AND 312

Delayed (Chronic) Health Hazard : No
Fire Hazard : No
Immediate (Acute) Health Hazard : No
Reactive Hazard : No
Sudden Release of Pressure Hazard : No

TOXIC SUBSTANCES CONTROL ACT (TSCA)

All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements.

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EUROPEAN INVENTORY OF EXISTING COMMERCIAL CHEMICAL SUBSTANCES (EINECS)

The components of this product are on the EINECS inventory or are exempt from EINECS inventory requirements.

CEPA - DOMESTIC SUBSTANCES LIST (DSL)

All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

15.2 STATE/LOCAL

PENNSYLVANIA (WORKER AND COMMUNITY RIGHT TO KNOW ACT): PENNSYLVANIA HAZARDOUS SUBSTANCES LIST AND/OR PENNSYLVANIA ENVIRONMENTAL HAZARDOUS SUBSTANCE LIST:

To the best of our knowledge this product does not contain chemicals at levels which require reporting under this statute.

PENNSYLVANIA (WORKER AND COMMUNITY RIGHT TO KNOW ACT): PENNSYLVANIA SPECIAL HAZARDOUS SUBSTANCES LIST:

To the best of our knowledge this product does not contain chemicals at levels which require reporting under this statute.

CALIFORNIA PROPOSITION 65 (SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986)

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

Component	CAS #	Amount
Acetaldehyde	75-07-0	<= 0.0006%
1,4-Dioxane	123-91-1	<= 0.0005%
Formaldehyde	50-00-0	<= 0.0004%
Ethylene oxide	75-21-8	<= 0.0005%

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CALIFORNIA PROPOSITION 65 (SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986)

WARNING: This product contains a chemical(s) known to the State of California to cause birth defects or other reproductive harm.

Component	CAS #	Amount
Ethylene oxide	75-21-8	<= 0.0005%

CALIFORNIA SCAQMD RULE 443.1 (SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 443.1, LABELING OF MATERIALS CONTAINING ORGANIC SOLVENTS)

VOC: Vapor pressure <0.01 mmHg at 20°C
2 g/l
2 g/l of material less water and less exempted solvents.

This section provides selected regulatory information on this product including its components. This is not intended to include all regulations. It is the responsibility of the user to know and comply with all applicable rules, regulations and laws relating to the product being used.

16. OTHER INFORMATION

16.1 ADDITIONAL INFORMATION

Additional information on this product may be obtained by calling Dow's Customer Information Group at 1-800-258-2436 (U.S.) or 1-800-331-6451 (Canada).

16.2 HAZARD RATING SYSTEM

NFPA ratings for this product are: H - 0 F - 1 R - 0

These ratings are part of a specific hazard communication program and should be disregarded where individuals are not trained in the use of this hazard rating system. You should be familiar with the hazard communication programs applicable to your workplace.

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16.3 RECOMMENDED USES AND RESTRICTIONS

FOR INDUSTRY USE ONLY

A partial list of examples include pharmaceutical products, personal care products, automotive products, household products, packaging products, petroleum chemicals, plastics, inks, coatings, adhesives, chemical intermediates, rubber processing, lubricants, metalworking fluids, mold release agents, ceramics, and wood treating.

This product has clearances under FDA Food Additive Regulations. It is the responsibility of the user of this product as a Direct or Indirect Food Additive to read and understand all applicable FDA regulations in Title 21 of the Code of Federal regulations as well as any other applicable regulations.

CAUTION! For food, feed, drug or cosmetic applications, use CARBOWAX(TM) SENTRY(TM) brands, N.F., F.C.C. Grade. Only SENTRY brand products are tested to meet N.F. and F.C.C. standards for these applications.

Dow recommends that you use this product in a manner consistent with the listed use. If your intended use is not consistent with Dow's stated use, please contact Dow's Customer Information Group at 1-800-258-2436 (U.S.) or 1-800-331-6451 (Canada) for more information.

16.4 REVISION

Version: 6.0

Revision: 05/20/2002

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

16.5 LEGEND

Bacterial/NA	Non Acclimated Bacteria
F	Fire
H	Health
IHG	Industrial Hygiene Guideline
N/A	Not available
NFPA	National Fire Protection Association
O	Oxidizer
R	Reactivity
TS	Trade secret
VOL/VOL	Volume/Volume
W	Water Reactive
W/W	Weight/Weight

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NOTICE: Dow urges each customer or recipient of this MSDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this MSDS 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 its 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 Dow, 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 MSDSs, Dow is not and cannot be responsible for MSDSs obtained from any source other than Dow. If you have obtained a Dow MSDS from a non-Dow source or if you are not sure that a Dow MSDS is current, please contact Dow for the most current version.