



UNION CARBIDE CORPORATION
MATERIAL SAFETY DATA SHEET



Product Name: CARBOWAX(TM) POLYETHYLENE
GLYCOL 8000 FLAKE
MSDS#: 00000000788

Effective Date: 09/23/1998

Page: 1 of 12

Union Carbide urges each customer or recipient of this MSDS to study it carefully to become aware of and understand the hazards associated with the product. The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology, and fire prevention, as necessary or appropriate to use and understand the data contained in this MSDS.

To promote safe handling, each customer or recipient should: 1) Notify its employees, agents, contractors and others whom it knows or believes will use this material or the information in this MSDS and any other information regarding hazards or safety; 2) Furnish this same information to each of its customers for the product; and 3) Request its customers to notify their employees, customers, and other users of the product of this information.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

1.1 IDENTIFICATION

Product Name	CARBOWAX(TM) POLYETHYLENE GLYCOL 8000 FLAKE
Chemical Name	Polyethylene Glycol
Chemical Family	Oxyalkylene Polymer
Common Name	CARBOWAX® POLYETHYLENE GLYCOL 8000 FLAKE
Formula	HO-(CH ₂ CH ₂ O) _n -H
Synonym	Polyoxyethylene 8000

1.2 COMPANY IDENTIFICATION

Union Carbide Corporation
39 Old Ridgebury Road
Danbury, CT 06817-0001

1.3 EMERGENCY TELEPHONE NUMBER

24 hours a day: 1-800-UCC-HELP (1-304-744-3487)

Number for non-emergency questions concerning MSDS (732) 563-5522

Additional information on this product may be obtained by calling the Union Carbide Corporation Customer Service Center at 1-800-568-4000.

Copyright 1998, Union Carbide.

CARBOWAX® is a registered trademark of Union Carbide.

SENTRY® is a registered trademark of Union Carbide.

MARKETED BY
HARWICK STANDARD
DISTRIBUTION CORPORATION
60 S. Seiberling Street • Akron, Ohio 44305

MATERIAL SAFETY DATA SHEET

Product Name: CARBOWAX(TM) POLYETHYLENE
GLYCOL 8000 FLAKE
MSDS#: 00000000788

Effective Date: 09/23/1998

Page: 2 of 12

2. COMPOSITION INFORMATION

Component	CAS #	Amount
Polyethylene glycol	25322-68-3	100. %

3. HAZARDS IDENTIFICATION

3.1 EMERGENCY OVERVIEW

Appearance	Transparent colorless above freezing/melting point - opaque white below freezing/melting point	
Physical State	Liquid above freezing/melting point - solid below freezing/melting point	
Odor	Mild	
Hazards of product	CAUTION!	STATIC IGNITION HAZARD CAN RESULT FROM HANDLING AND USE. DUST DISPERSED IN AIR MAY BE IGNITED AND BURN RAPIDLY.

3.2 POTENTIAL HEALTH EFFECTS

Effects of Single Acute Overexposure

Inhalation Short-term harmful health effects are not expected from vapor generated at ambient temperature.

Eye Contact No evidence of harmful effects from available information.

Skin Contact No evidence of harmful effects from available information.

Skin Absorption No evidence of harmful effects from available information.

Swallowing No evidence of harmful effects from available information.

MATERIAL SAFETY DATA SHEET

Product Name: CARBOWAX(TM) POLYETHYLENE
GLYCOL 8000 FLAKE
MSDS#: 000000000788

Effective Date: 09/23/1998

Page: 3 of 12

Chronic, Prolonged or Repeated Overexposure

Effects of Repeated Overexposure Although this material is not a skin irritant, submersion by workers of unprotected skin in highly concentrated solutions of this material for prolonged periods of time could result in skin dehydration.

Other Effects of Overexposure An isolated case of an anaphylactic reaction has been described. Overexposure to vapor generated at high temperatures may result in eye and respiratory tract irritation, dizziness, nausea and the inhalation of harmful amounts of material. This product may contribute to nuisance dust and possibly to respirable dust. Avoid breathing dust.

Medical Conditions Aggravated by Exposure

A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.

3.3 POTENTIAL ENVIRONMENTAL EFFECTS

See Section 12 for Ecological Information.

4. FIRST AID PROCEDURES

4.1 INHALATION

No emergency care anticipated.

4.2 EYE CONTACT

Flush eyes thoroughly with water for several minutes. Remove contact lenses, if worn.

4.3 SKIN CONTACT

Wash skin with soap and water.

4.4 SWALLOWING

No emergency care anticipated.

4.5 NOTES TO PHYSICIAN

Toxicology studies have shown this material to be of a very low acute toxicity and nonirritating. An isolated case of an anaphylactic reaction to CARBOWAX® SENTRY® PEG 8000, however, has been described. In the event of a

MATERIAL SAFETY DATA SHEET

Product Name: CARBOWAX(TM) POLYETHYLENE
GLYCOL 8000 FLAKE
MSDS#: 00000000788

Effective Date: 09/23/1998

Page: 4 of 12

toxic reaction treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE FIGHTING MEASURES

5.1 FLAMMABLE PROPERTIES

Flash Point - Closed Cup: *Pensky-Martens Closed Cup ASTM D 93* 229 °C 445 °F

Flash Point - Open Cup: *Cleveland Open Cup ASTM D 92* 271 °C 520 °F

Autoignition Temperature: *Not currently available.*

Flammable Limits In Air:

Lower *Not determined.*

Upper *Not determined.*

5.2 EXTINGUISHING MEDIA

Apply alcohol-type or all-purpose-type foam by manufacturer's recommended techniques for large fires. Use carbon dioxide or dry chemical media for small fires.

5.3 EXTINGUISHING MEDIA TO AVOID

No information currently available.

5.4 SPECIAL FIRE FIGHTING PROCEDURES

Do not direct a solid stream of water or foam into hot, burning pools; this may cause frothing and increase fire intensity.

5.5 SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Use self-contained breathing apparatus and protective clothing.

5.6 UNUSUAL FIRE AND EXPLOSION HAZARDS

Avoid dispersion of dust in air to reduce potential for dust ignition/explosions.

Static ignition hazard can result from handling and use. Electrically bond and ground all containers, personnel and equipment before transfer or use of material. Use proper bonding and grounding during product transfer as described in National Fire Protection Association Document NFPA 77.

MATERIAL SAFETY DATA SHEET

Product Name: CARBOWAX(TM) POLYETHYLENE
GLYCOL 8000 FLAKE
MSDS#: 00000000788

Effective Date: 09/23/1998

Page: 5 of 12

5.7 HAZARDOUS COMBUSTION PRODUCTS

Burning can produce the following products: Carbon monoxide and/or carbon dioxide. Carbon monoxide is highly toxic if inhaled; carbon dioxide in sufficient concentrations can act as an asphyxiant.

6. ACCIDENTAL RELEASE MEASURES

Steps to be taken if Material is Released or Spilled:

Collect and dispose. Avoid dispersion of dust. Observe government regulations.

Personal Precautions: Wear suitable protective equipment.

7. HANDLING AND STORAGE

7.1 HANDLING

General Handling

Electrically bond and ground all containers, personnel and equipment before transfer or use of material.

Avoid heat, sparks and flame under dust conditions.

Do not handle or empty in presence of flammable vapor.

Keep container closed.

Use with adequate ventilation.

Wash thoroughly after handling.

FOR INDUSTRY USE ONLY.

Ventilation

General (mechanical) room ventilation is expected to be satisfactory. If personnel exposure exceeds exposure limits, apply local exhaust ventilation at points of dust generation.

Other Precautions

This product may contain trace amounts of ethylene oxide (CAS No. 75-21-8), a condition which creates the potential for accumulation of ethylene oxide in the head space of shipping and storage containers and in enclosed areas where the product is being handled or used. Ethylene oxide is listed by OSHA as probably carcinogenic to humans, IARC as carcinogenic to humans, and NTP as reasonably anticipated to be carcinogenic. OSHA considers that, at excessive levels, ethylene oxide may present reproductive, mutagenic, genotoxic, neurologic and sensitization hazards. If this product is handled with adequate ventilation, the presence of these trace amounts is not expected to result in any short or long term hazard. This product may not be exempt from OSHA's ethylene oxide standard, 29CFR1910.1047. Users should comply with all applicable provisions. Personnel should be monitored to determine levels of exposure to ethylene oxide. If necessary, protective measures should be taken. The OSHA permissible exposure limit for ethylene oxide is 1 ppm TWA8, the action level is 0.5 ppm TWA8, the ACGIH TLV is 1 ppm TWA8 and OSHA has established an excursion limit of 5 ppm (15 minute average). Temperature not to exceed 50 degrees Fahrenheit of flashpoint in presence of oxygen or in open systems.

MATERIAL SAFETY DATA SHEET

Product Name: CARBOWAX(TM) POLYETHYLENE
GLYCOL 8000 FLAKE
MSDS#: 00000000788

Effective Date: 09/23/1998

Page: 6 of 12

7.2 STORAGE

STORAGE AND HANDLING INSTRUCTIONS: Use product promptly after opening. Avoid prolonged exposure to heat and air.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

8.1 EXPOSURE LIMITS

Component	Exposure Limits	Skin	IH State
Nuisance Dust	10 mg/m ³ TWA8 ACGIH 3 mg/m ³ TWA8 ACGIH 5 mg/m ³ TWA8 OSHA 15 mg/m ³ TWA8 OSHA		Inhalable Particulate Respirable fraction Respirable fraction Total dust

Particulates Not Otherwise Classified (PNOC) (Nuisance Particulates)

8.2 PERSONAL PROTECTION

Respiratory Protection: Dust respirator, if dusting conditions exist.

Ventilation: General (mechanical) room ventilation is expected to be satisfactory. If personnel exposure exceeds exposure limits, apply local exhaust ventilation at points of dust generation.

Eye Protection: Safety glasses or monogoggles

Protective Gloves: PVC-coated

Other Protective Equipment: Eye Bath, Safety Shower

8.3 ENGINEERING CONTROLS

No information currently available.

MATERIAL SAFETY DATA SHEET

Product Name: CARBOWAX(TM) POLYETHYLENE
GLYCOL 8000 FLAKE
MSDS#: 00000000788

Effective Date: 09/23/1998

Page: 7 of 12

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid above freezing/melting point - solid below freezing/melting point

Appearance: Transparent colorless above freezing/melting point - opaque white below freezing/melting point

pH: *Not currently available.*

Solubility in Water (by weight): 20 °C 63 %

Odor: Mild

Flash Point - Closed Cup: *Pensky-Martens Closed Cup ASTM D 93* 229 °C 445 °F

Flash Point - Open Cup: *Cleveland Open Cup ASTM D 92* 271 °C 520 °F

Percent Volatiles: 0.15 Wt%

Molecular Weight: 7000 - 9000 g/mol

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

Freezing Point: *Freezing/Melting Point* 60 - 63 °C 140 - 145 °F

Specific Gravity (H₂O = 1): 1.111 65 °C / 65 °C

Vapor Pressure at 20°C: < 0.001 kPa < 0.01 mmHg

Vapor Density (air = 1): > 10

Evaporation Rate (Butyl Acetate = 1): < 0.01

Melting Point: *Not determined.*

10. STABILITY AND REACTIVITY

10.1 STABILITY/INSTABILITY Stable

MATERIAL SAFETY DATA SHEET

Product Name: CARBOWAX(TM) POLYETHYLENE
GLYCOL 8000 FLAKE
MSDS#: 00000000788

Effective Date: 09/23/1998

Page: 8 of 12

Incompatible Materials: Normally unreactive; however, avoid strong bases at high temperatures, strong acids, strong oxidizing agents and materials reactive with hydroxyl compounds.

Thermal Decomposition: Thermal decomposition may produce aldehydes. Acute overexposure to aldehydes may result in irritation of the eyes, skin and respiratory tract. In addition, some aldehydes are skin sensitizers and/or probable carcinogens.

10.2 HAZARDOUS POLYMERIZATION Will Not Occur.

10.3 INHIBITORS/STABILIZERS Not applicable.

11. TOXICOLOGICAL INFORMATION

None known from currently available information.

12. ECOLOGICAL INFORMATION

12.1 ENVIRONMENTAL FATE

Partial information may be available, call Union Carbide.

12.2 ECOTOXICITY

Partial information may be available, call Union Carbide.

12.3 FURTHER INFORMATION

MATERIAL SAFETY DATA SHEET

Product Name: CARBOWAX(TM) POLYETHYLENE
GLYCOL 8000 FLAKE
MSDS#: 00000000788

Effective Date: 09/23/1998

Page: 9 of 12

None.

13. DISPOSAL CONSIDERATIONS

13.1 WASTE DISPOSAL METHOD

Potential for a dust explosion exists if attempt is made to incinerate organic powders. If incineration is desired, dissolve in a suitable solvent and incinerate as a solution. Incinerate in a furnace where permitted under Federal, State, and local regulations. Dispose in accordance with all applicable Federal, State, Provincial, and local environmental regulations. Empty containers should be recycled or disposed of through an approved waste management facility.

13.2 DISPOSAL CONSIDERATIONS

See Section 13.1

Disposal methods identified are for the product as sold. For proper disposal of used material, an assessment must be completed to determine the proper and permissible waste management options permissible under applicable rules, regulations and/or laws governing your location.

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 your UCC 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

MATERIAL SAFETY DATA SHEET

Product Name: CARBOWAX(TM) POLYETHYLENE
GLYCOL 8000 FLAKE
MSDS#: 00000000788

Effective Date: 09/23/1998

Page: 10 of 12

15.1 FEDERAL/NATIONAL

CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980 SECTION 103)

The following components of this product are specifically listed as hazardous substances in 40 CFR 302.4 (unlisted hazardous substances are not identified) and are present at levels which could require reporting:

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

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA) TITLE III SECTIONS 302 AND 304

The following components of this product are listed as extremely hazardous substances in 40 CFR Part 355 and are present at levels which could require reporting and emergency planning:

None.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA) TITLE III SECTION 313

The following components of this product are listed as toxic chemicals in 40 CFR 372.65 and are present at levels which could require reporting and customer notification under Section 313 and 40 CFR Part 372:

This product does not contain toxic chemicals at levels which require reporting under the statute.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA) TITLE III SECTIONS 311 AND 312

Delayed Hazard : No
Fire Hazard : No
Immediate 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.

15.2 STATE/LOCAL

MATERIAL SAFETY DATA SHEET

**Product Name: CARBOWAX(TM) POLYETHYLENE
GLYCOL 8000 FLAKE
MSDS#: 00000000788**

Effective Date: 09/23/1998

Page: 11 of 12

PENNSYLVANIA (WORKER AND COMMUNITY RIGHT-TO-KNOW ACT)

This product is subject to the Worker and Community Right-to-Know Act. The following components of this product are at levels which could require identification in the MSDS:

None.

MASSACHUSETTS (HAZARDOUS SUBSTANCES DISCLOSURE BY EMPLOYERS)

The following components of this product appear on the Massachusetts Substance List and are present at levels which could require identification in the MSDS:

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

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

This product contains the following chemical(s) known to the State of California to cause cancer and/or birth defects or other reproductive harm.

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

This product contains the following 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%

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

1 g/l VOC

1 g/l 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.

MATERIAL SAFETY DATA SHEET

Product Name: CARBOWAX(TM) POLYETHYLENE
GLYCOL 8000 FLAKE
MSDS#: 00000000788

Effective Date: 09/23/1998

Page: 12 of 12

16. OTHER INFORMATION

16.1 AVAILABLE LITERATURE AND BROCHURES

ADDITIONAL INFORMATION: Additional product safety information on this product may be obtained by calling your Union Carbide Corporation Sales or Customer Service contact. Ask for the brochure: CARBOWAX Polyethylene Glycols (Family Brochure) Ask about the availability of specific product and end-use bulletins.

16.2 SPECIFIC HAZARD RATING SYSTEM

Additional information on this product may be obtained by calling the Union Carbide Corporation Customer Service Center at 1-800-568-4000.

16.3 RECOMMENDED USES AND RESTRICTIONS

FOR INDUSTRY USE ONLY

16.4 REVISION

Version: 1.

Revision: 09/23/1998

Most recent revision(s) are highlighted throughout this document.

The opinions expressed herein are those of qualified experts within Union Carbide. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of the use of the product are not under the control of Union Carbide, it is the user's obligation to determine conditions of safe use of the product.