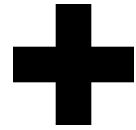




UNION CARBIDE CORPORATION
A Subsidiary of The Dow Chemical Company
MATERIAL SAFETY DATA SHEET



Product Name: UCON(TM) HEAT TRANSFER FLUID 500
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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 of 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	UCON(TM) HEAT TRANSFER FLUID 500
Chemical Name	Mixture
Chemical Family	Polyalkylene glycol
Formula	Trade secret
Synonym	None

1.2 COMPANY IDENTIFICATION

Union Carbide Corporation
A Subsidiary of The Dow Chemical Company
39 Old Ridgebury Road
Danbury, CT 06817-0001

1.3 EMERGENCY TELEPHONE NUMBER

24 hours a day: CHEMTREC 1-800-424-9300.

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.

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2. COMPOSITION INFORMATION

Component	CAS #	Amount (%W/W)
Polyalkylene glycol	Trade secret	> 95 %
N-phenyl-alpha-naphthylamine	90-30-2	< 5%

3. HAZARDS IDENTIFICATION

3.1 EMERGENCY OVERVIEW

Appearance Transparent amber

Physical State Liquid

Odor Mild sweet

Hazards of product WARNING! CAUSES EYE AND SKIN IRRITATION. HIGH-TEMPERATURE GENERATED VAPOR, AEROSOL OR MIST OF THE PRODUCT OR THERMAL DEGRADATION PRODUCTS CAN BE IRRITATING AND HARMFUL IF INHALED.

ASPIRATION MAY CAUSE LUNG DAMAGE.

3.2 POTENTIAL HEALTH EFFECTS

Effects of Single Acute Overexposure

Inhalation Exposure to a dense atmosphere of aerosolized product, designed to evaluate intentional aerosolization, produced lung injury and delayed deaths in animals.

Eye Contact May cause irritation, experienced as stinging with excess blinking and tear production. Excess redness of the conjunctiva may occur.

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Skin Contact Brief contact is not irritating. Prolonged contact may cause reddening, itchiness, a burning sensation, and possible drying and flaking of the skin.

Skin Absorption No evidence of harmful effects from available information.

Swallowing No evidence of harmful effects from available information.

Chronic, Prolonged or Repeated Overexposure

Effects of Repeated Overexposure No adverse effects anticipated from available information.

Other Effects of Overexposure Overexposure to vapor, aerosol or mist generated at high temperature may result in eye and respiratory tract irritation, dizziness, nausea and the inhalation of harmful amounts of material. See Section 11.

Medical Conditions Aggravated by Exposure

Skin contact may aggravate an existing dermatitis. Exposure to this material may decrease the oxygen-carrying capacity of the blood. Individuals with cardiovascular disease or impairment of the respiratory function may be at increased risk.

3.3 POTENTIAL ENVIRONMENTAL EFFECTS

See Section 12 for Ecological Information.

4. FIRST AID PROCEDURES

4.1 INHALATION

Remove to fresh air.

4.2 EYE CONTACT

Immediately flush eyes with water and continue washing for several minutes. Remove contact lenses, if worn. Obtain medical attention

4.3 SKIN CONTACT

Wash skin with soap and water.

4.4 SWALLOWING

If the patient is fully conscious, give two glasses of water. Do not induce vomiting. If signs or symptoms of toxicity are present, obtain medical attention.

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4.5 NOTES TO PHYSICIAN

Low toxicity by swallowing.

Any material aspirated during vomiting may cause lung injury. Therefore, emesis should not be induced mechanically or pharmacologically. If it is considered necessary to evacuate the stomach contents, this should be done by means least likely to cause aspiration (e.g., gastric lavage after endotracheal intubation).

5. FIRE FIGHTING MEASURES

5.1 FLAMMABLE PROPERTIES

Flash Point - Closed Cup: *Pensky-Martens Closed Cup ASTM D 93* 218 °C 425 °F

Flash Point - Open Cup: *Cleveland Open Cup ASTM D 92* 302 °C 575 °F

Autoignition Temperature: *Not currently available.*

Flammable Limits In Air:

Lower *Not determined.*

Upper *Not determined.*

5.2 EXTINGUISHING MEDIA

Extinguish fires with water spray or 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

During a fire, oxides of nitrogen may be produced.

5.7 HAZARDOUS COMBUSTION PRODUCTS

Combustion may produce the following products: Oxides of carbon and nitrogen. Carbon monoxide is highly toxic if inhaled. Carbon dioxide in sufficient concentrations can act as an

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asphyxiant. Acute overexposure to the products of combustion may result in irritation of the respiratory tract. Where this product is burned under conditions of relatively complete combustion, the major products are carbon dioxide and water vapor. See Section 3.2 - Other Effects of Overexposure.

6. ACCIDENTAL RELEASE MEASURES

Steps to be Taken if Material is Released or Spilled:

Small spills can be flushed with large amounts of water; larger spills should be collected for disposal.

Personal Precautions: Wear suitable protective equipment, especially eye protection. See Section 8.2 - Personal Protection.

7. HANDLING AND STORAGE

7.1 HANDLING

General Handling

Avoid contact with eyes, skin, and clothing.

Avoid breathing vapor, aerosol and mist.

Do not swallow.

Keep container closed.

Use with adequate ventilation.

Wash thoroughly after handling.

FOR INDUSTRY USE ONLY.

Ventilation

General room ventilation is satisfactory for storage and handling at room temperature. Where exposure to elevated temperatures occur or when mechanical agitation or other activity that creates airborne vapor, aerosol, or mist is employed, special, local ventilation is needed. See Section 3.2 - Other Effects of Overexposure. See Section 10.1 - Thermal Decomposition

Other Precautions

Do not add nitrites or other nitrosating agents. A nitrosamine, which may cause cancer, may be formed.

7.2 STORAGE

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Store in accordance with good industrial practices. Storage information may be obtained from product-specific Union Carbide Storage and Handling Guides, or by calling a Union Carbide Customer Service Representative.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

8.1 EXPOSURE LIMITS

None established by OSHA, ACGIH or UCC.

8.2 PERSONAL PROTECTION

Respiratory Protection: None required for Vapors when used at low temperatures. For Aerosols, a negative-pressure, half-mask respirator approved for dust and mist protection is recommended.

Ventilation: General room ventilation is satisfactory for storage and handling at room temperature. Where exposure to elevated temperatures occur or when mechanical agitation or other activity that creates airborne vapor, aerosol, or mist is employed, special, local ventilation is needed.
See Section 3.2 - Other Effects of Overexposure.
See Section 10.1 - Thermal Decomposition

Eye Protection: Safety glasses or monogoggles, as appropriate

Protective Gloves: Polyvinyl chloride coated

Other Protective Equipment: Eye Bath, Safety Shower

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8.3 ENGINEERING CONTROLS

PROCESS HAZARD: Sudden release of hot organic chemical vapor or mists from process equipment operating at elevated temperature and pressure, or sudden ingress of air into hot equipment under a vacuum, may result in ignitions without the presence of obvious ignition sources. Published "autoignition" or "ignition" temperature values cannot be treated as safe operating temperatures in chemical processes without analysis of the actual process conditions. Any use of this product in elevated-temperature processes should be thoroughly evaluated to establish and maintain safe operating conditions. Further information is available in a technical bulletin entitled "Ignition Hazards of Organic Chemical Vapor."

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9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid

Appearance: Transparent amber

pH: *Not currently available.*

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

Odor: Mild sweet

Flash Point - Closed Cup: *Pensky-Martens Closed Cup ASTM D 93* 218 °C 425 °F

Flash Point - Open Cup: *Cleveland Open Cup ASTM D 92* 302 °C 575 °F

Boiling Point (760 mmHg): Decomposes, None - nonvolatile liquid

Freezing Point: *Pour point* -48 °C -55 °F

Specific Gravity (H₂O = 1): 1.038 20 °C / 20 °C

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

Vapor Density (air = 1): > 1

Evaporation Rate (Butyl Acetate = 1): < 0.01

Melting Point: *Not applicable.*

10. STABILITY AND REACTIVITY

10.1 STABILITY/INSTABILITY Stable

Conditions to Avoid: May exothermically decompose with evolution of volatiles at temperatures in excess of 288°C (550°F).

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

Thermal Decomposition: Where this material is subjected to overheating (thermal degradation) but does not burn, the degradation products can be such things as organic acids (formic, acetic acids), aldehydes, esters, ketones, etc. These vapors or fumes can be highly irritating to the eyes, nose and throat. Special ventilation may be needed. In normal use, no respiratory protective equipment should be needed, but self-contained breathing apparatus should be available for use in emergencies.

10.2 HAZARDOUS POLYMERIZATION Will Not Occur.

10.3 INHIBITORS/STABILIZERS Not applicable.

11. TOXICOLOGICAL INFORMATION

SIGNIFICANT DATA WITH POSSIBLE RELEVANCE TO HUMANS

Acute exposure to aerosols resulted in an LC50 of 4.8 g/m³. Rats exposed repeatedly to aerosols (9 exposures of 6 hr each) at concentrations of 50 mg/m³ or higher exhibited body weight effects, hematology changes, increased kidney weight and ocular/nasal irritation. No changes in lung weight or histopathology were observed. The no-observable-adverse-effect-level (NOAEL) for lung toxicity was >500 mg/m³.

Contains one or more amines which may react with nitrites to form nitrosamines. Some nitrosamines have been shown to be carcinogenic in laboratory animals.

12. ECOLOGICAL INFORMATION

12.1 ENVIRONMENTAL FATE

BOD (% Oxygen consumption)

	Day 5	Day 10	Day 15	Day 20	Day 30
	0.000 %	8 %		15 %	

BOD (% Oxygen consumption)

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	Day 5	Day 10	Day 15	Day 20	Day 30
	0.000 %	5 %		31 %	

12.2 ECOTOXICITY

Toxicity to Micro-organisms

Bacterial/NA; 16 h; IC50

Result value: > 1000 mg/l

Toxicity to Aquatic Invertebrates

Daphnia; 48 h; LC50

Result value: 25.0 (18.6 - 33.6) mg/l

12.3 FURTHER INFORMATION

Chemical Oxygen Demand (COD) - calculated: 2.01 mg/mg

13. DISPOSAL CONSIDERATIONS

13.1 WASTE DISPOSAL METHOD

Incinerate in a furnace or otherwise dispose of in accordance with applicable Federal, State and local requirements. Dispose in accordance with all applicable Federal, State, 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

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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.

15. REGULATORY INFORMATION

15.1 FEDERAL/NATIONAL

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

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
Aniline	62-53-3	<= 0.0050%
Propylene oxide	75-56-9	<= 0.0050%
1-Naphthalamine	134-32-7	<= 0.0010%
2-Aminonaphthalene	91-59-8	<= 0.0001%
Ethylene glycol	107-21-1	<= 0.0001%
Ethylene oxide	75-21-8	<= 0.0001%

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 TITLE III (EPCRA) 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:

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None.

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

Delayed Hazard : Yes

Fire Hazard : No

Immediate Health Hazard : Yes

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.

EUROPEAN INVENTORY OF EXISTING COMMERCIAL CHEMICAL SUBSTANCES (EINECS)

The components of this product are on the EINECS inventory.

CEPA - DOMESTIC SUBSTANCES LIST (DSL)

The components of this product are on the DSL or are exempt from reporting under the New Substances Notification Regulations.

15.2 STATE/LOCAL

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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
Aniline	62-53-3	<= 0.0050%
Propylene oxide	75-56-9	<= 0.0050%
1-Naphthalamine	134-32-7	<= 0.0010%
2-Aminonaphthalene	91-59-8	<= 0.0001%
Ethylene oxide	75-21-8	<= 0.0001%

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:

Component	CAS #	Amount
Aniline	62-53-3	<= 0.0050%
Propylene oxide	75-56-9	<= 0.0050%
1-Naphthalamine	134-32-7	<= 0.0010%
2-Aminonaphthalene	91-59-8	<= 0.0001%

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 birth defects or other reproductive harm.

Component	CAS #	Amount
Ethylene oxide	75-21-8	<= 0.0001%

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

VOC: Volatiles = Substances with a vapor pressure of > 0.5 mmHg @ 104 °C (219.2 °F)
20.72 g/l VOC
20.72 g/l of material less exempted compounds

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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 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:

UCON Fluids and Lubricants (Family Brochure). Ask about the availability of specific product and end-use bulletins.

16.2 SPECIFIC HAZARD RATING SYSTEM

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

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

These ratings are part of specific hazard communications program(s) and should be disregarded where individuals are not trained in the use of these hazard rating systems. You should be familiar with the hazard communication applicable to your workplace.

16.3 RECOMMENDED USES AND RESTRICTIONS

FOR INDUSTRY USE ONLY

16.4 REVISION

Version: 3.

Revision: 10/11/2000

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

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16.5 LEGEND

A	Asphyxiant
Bacterial/NA	Non Acclimated Bacteria
F	Fire
H	Health
HMIS	Hazardous Materials Information System
N/A	Not available
NFPA	National Fire Protection Association
O	Oxidizer
P	Peroxide Former
R	Reactivity
TS	Trade Secret
VOL/VOL	Volume/Volume
W	Water Reactive
W/W	Weight/Weight

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.