



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



Product Name: UCON(TM) REFRIGÉRATION LUBRICANT 6290      Effective Date: 07/25/2000

MSDS#: 1381

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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) REFRIGERATION LUBRICANT 6290
Chemical Name	Not applicable (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**

<b>Component</b>	<b>CAS #</b>	<b>Amount (%WW)</b>
Polyalkylene glycol	Trade secret	< 80%
Trade Secret Polyalkylene Glycol		< 30%
Additives	Not available	< 5%

## **3. HAZARDS IDENTIFICATION**

### **3.1 EMERGENCY OVERVIEW**

**Appearance**      Transparent yellow

**Physical State**      Liquid

**Odor**      Mild

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

ASPIRATION MAY CAUSE LUNG DAMAGE. REPEATED INHALATION OF AEROSOL BY RATS PRODUCED LUNG DAMAGE.

### **3.2 POTENTIAL HEALTH EFFECTS**

#### Effects of Single Acute Overexposure

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

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

**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** Repeated inhalation of respirable aerosols may cause lung damage, which could impair lung function and the ability to obtain sufficient oxygen supply to the body.

**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.

## 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**

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.

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## 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.

## 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* 204.4 °C 400 °F

Flash Point - Open Cup: *Cleveland Open Cup ASTM D 92* 260 °C 500 °F

Autoignition Temperature: *Not currently available.*

#### Flammable Limits In Air:

Lower	<i>Not determined.</i>
Upper	<i>Not determined.</i>

### 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.

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## **5.6 UNUSUAL FIRE AND EXPLOSION HAZARDS**

During a fire, oxides of nitrogen and oxides of phosphorus may be produced.  
See Section 8.3 - Engineering Controls

## **5.7 HAZARDOUS COMBUSTION PRODUCTS**

Combustion may produce the following products: Oxides of carbon, nitrogen, and phosphorus. See Section 3.2 - Other Effects of Overexposure. Carbon monoxide is highly toxic if inhaled; carbon dioxide in sufficient concentrations can act as an asphyxiant. Acute overexposure to the products of combustion may result in irritation of the respiratory tract.

## **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.

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#### **Ventilation**

General (mechanical) room ventilation is expected to be satisfactory if handled at low temperatures or in covered equipment. Local ventilation is needed in the presence of airborne mists.

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## **Other Precautions**

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

## **7.2 STORAGE**

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**

<b>Respiratory Protection:</b>	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.
<b>Ventilation:</b>	General (mechanical) room ventilation is expected to be satisfactory if handled at low temperatures or in covered equipment. Local ventilation is needed in the presence of airborne mists.
<b>Eye Protection:</b>	Monogoggles
<b>Protective Gloves:</b>	Polyvinyl chloride coated
<b>Other Protective Equipment:</b>	Eye Bath, Safety Shower

### **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.

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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."

### 9. PHYSICAL AND CHEMICAL PROPERTIES

**Physical State:** Liquid

**Appearance:** Transparent yellow

**pH:** *Not currently available.*

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

**Odor:** Mild

**Flash Point - Closed Cup:** *Pensky-Martens Closed Cup ASTM D 93*    204.4 °C    400 °F

**Flash Point - Open Cup:** *Cleveland Open Cup ASTM D 92*    260 °C    500 °F

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

**Freezing Point:** *Pour point*    -46 °C    -51 °F

**Specific Gravity (H<sub>2</sub>O = 1):**    1.035    20 °C / 20 °C

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

**Vapor Density (air = 1):**      9

**Evaporation Rate (Butyl Acetate = 1):**    < 0.01

**Melting Point:** *Not applicable.*

### 10. STABILITY AND REACTIVITY

**10.1 STABILITY/INSTABILITY**    Stable

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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.

**10.2 HAZARDOUS POLYMERIZATION** Will Not Occur.

**10.3 INHIBITORS/STABILIZERS** Not applicable.

## **11. TOXICOLOGICAL INFORMATION**

The following information is applicable to one or both major components of this material.

### **ACUTE TOXICITY**

#### **Peroral**

Rat; male; LD50 = 5.7 (3.9 - 8.3) ml/kg; slope not available

**Time to Death:** death within 1 day

**Major Signs:** hindlimb weakness, excessive salivation (frothy appearance), convulsions, narcosis

**Gross Pathology - Decedents:** congestion of lungs and adrenals, mottling of livers, paleness of kidneys (sections congested) in decedents

**Gross Pathology - Survivors:** Nothing remarkable.

#### **Percutaneous**

Rabbit; male; LD50 = 17.8 (8.1 - 39) ml/kg; slope not available; 24 hr occluded contact.

**Time to Death:** Death at 4-6 days

**Major Signs:** none before death

**Irritation:** erythema, necrosis



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**Gross Pathology - Decedents:** congestion and hemorrhaging of lungs, mottling of livers and kidneys in decedents

**Gross Pathology - Survivors:** Nothing remarkable.

### **Inhalation**

Saturated Vapor/Mist Studies, dynamic generation of vapor, at 170°C, 1 h Rat; female

**Mortality:** 4/6

**Time to Death:** death within 1 day

**Major Signs:** diarrhea, prostration

**Gross Pathology - Decedents:** bright red lungs, livers with capillary dilatation

**Gross Pathology - Survivors:** Nothing remarkable.

### **Inhalation**

Saturated Vapor/Mist Studies, dynamic generation of vapor, at 170°C, 0.5 h Rat; female

**Mortality:** 0/6

**Time to Death:** death within 1 day

**Major Signs:** diarrhea, prostration

**Gross Pathology - Decedents:** bright red lungs, livers with capillary dilatation

**Gross Pathology - Survivors:** Nothing remarkable.

### **IRRITATION**

**Skin:** Rabbit; unoccluded contact; 0.01 ml

**Results:** minor capillary dilatation at 24 hr

**Skin:** Rabbit; 4-hour occluded contact; 0.5 ml

**Results:** minor erythema to 48 hr

**Eye:** Rabbit; 0.1 ml

**Results:** minor conjunctivitis to 24 hr

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## **REPEATED EXPOSURE**

One component of UCON Refrigeration Lubricant 6290 was added to the diet of rats for 90 days. Body weight gains were depressed over a dose range of 0.90 to 5.85 g/kg/day. Relative liver weights were somewhat higher than control values for this dose range. No significant findings were found at 0.044 to 0.19 g/kg/day. Repeated cutaneous doses of this component, 30 inunctions of 1.0 ml/kg/day on the clipped belly of rabbits, resulted in significant weight depression but no remarkable histopathology. No significant effects were observed from 0.25 ml/kg/day. Another component was also administered cutaneously (30 doses by inunction) to rabbits. At a dose of 0.7 g/kg/day, pathologic findings included cloudy swelling of the kidney tubules and generalized cloudy swelling of the liver. The lower dose, 0.25 g/kg/day, also produced light cloudy swelling of the liver, which was interpreted to be reversible. In a two-week aerosol inhalation study with rats, 500 to 2500 mg/m<sup>3</sup> of the main component of UCON Refrigeration Lubricant 6290 produced concentrated-related clinical signs, as well as effects on body weight, organ weight, hematology, serum chemistry, urinalysis, gross pathology, and histopathology (numerous lung lesions). All animals died from the highest concentration. Similar, though less pronounced, findings were obtained in a repeat study at concentrations of 100 mg/m<sup>3</sup> or greater. Some effects were found to be reversible and the no-observable-effect level was determined to be 5 mg/m<sup>3</sup>.

## **SIGNIFICANT DATA WITH POSSIBLE RELEVANCE TO HUMANS**

Repeated inhalation of respirable aerosols of this material produced injury in the lungs of rats. A component has demonstrated mutagenic activity in a bacterial test system. Contains one or more amines which may react with nitrites to form nitrosamines. Some nitrosamines have been shown to be carcinogenic in laboratory animals.

## **ADDITIONAL STUDIES**

Direct endotracheal instillation of the main component at 0.2 ml/kg or higher into the lungs of rats caused death (often very rapid). Following a dose of 0.1 ml/kg, several pulmonary lesions were observed, including hemorrhage, emphysema, interstitial pneumonitis, perivascular infiltrates, and medial hyperplasia of pulmonary arteries.

## **12. ECOLOGICAL INFORMATION**

### **12.1 ENVIRONMENTAL FATE**

The following information is based on analogy with a material similar to the major components of this material.

#### **BOD (% Oxygen consumption)**

	<b>Day 5</b>	<b>Day 10</b>	<b>Day 15</b>	<b>Day 20</b>	<b>Day 30</b>
	6 %	13 %		24 %	

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## 12.2 ECOTOXICITY

The following information is based on analogy with a material similar to the major components of this material.

### **Toxicity to Micro-organisms**

Bacterial Inhibition; 16 h; IC50

**Result value:** > 10000 mg/l

### **Toxicity to Fish**

Fathead Minnow; 96 h; LC50

**Result value:** > 10000 mg/l

## 12.3 FURTHER INFORMATION

Chemical Oxygen Demand (COD) - measured: 1.90 mg/mg

## 13. DISPOSAL CONSIDERATIONS

### 13.1 WASTE DISPOSAL METHOD

Incinerate in a furnace or otherwise dispose of in accordance with appropriate Federal, State, and local regulations. 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:

None.

#### 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:

None.

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

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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.

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## 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.

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## **15.2 STATE/LOCAL**

### 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.

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### 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:  
None.

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

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This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

## 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)  
2 g/l VOC  
2 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.*

## **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.*

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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: 3.

Revision: 07/25/2000

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

## 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
WW	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.*