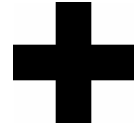




THE DOW CHEMICAL COMPANY MATERIAL SAFETY DATA SHEET



Product Name: TRITON(TM) X-200K SURFACTANT
MSDS#: 2248

Effective Date: 10/04/2004
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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 TRITON(TM) X-200K SURFACTANT

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)
Water	7732-18-5	72 %
Sodium alkylarylpolyether sulfonate	2917-94-4	28 %

3. HAZARDS IDENTIFICATION

3.1 EMERGENCY OVERVIEW

Appearance Opaque white

Physical State Liquid

Odor Mild

Hazards of product CAUSES SEVERE EYE BURNS.
ASPIRATION MAY CAUSE LUNG DAMAGE.

3.2 POTENTIAL HEALTH EFFECTS

Effects of Single Acute Overexposure

Inhalation Mist may cause irritation of the respiratory tract, experienced as nasal discomfort and discharge, with chest pain and coughing.

Eye Contact May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

Skin Contact May cause minor irritation with itching and possible slight local redness.

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Skin Absorption No evidence of harmful effects from available information. Similar materials have been shown to cause lung effects following contact with the skin of rabbits.

Swallowing May cause abdominal discomfort, nausea, vomiting and diarrhea. Aspiration into the lungs may occur during ingestion or vomiting, resulting in lung injury.

Chronic, Prolonged or Repeated Overexposure

Effects of Repeated Overexposure For the minor component(s): Did not cause birth defects in laboratory animals. Has been toxic to the fetus in lab animals at doses nontoxic to the mother.

Other Effects of Overexposure None currently known.

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.

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

Remove to fresh air.

4.2 EYE CONTACT

Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist.

4.3 SKIN CONTACT

Wash skin with plenty of water.

4.4 SWALLOWING

If patient is fully conscious, give two glasses of water. DO NOT INDUCE VOMITING. Obtain medical attention.

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4.5 NOTES TO PHYSICIAN

There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.

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 - REFER TO SECTION 9, PHYSICAL AND CHEMICAL PROPERTIES

5.2 EXTINGUISHING MEDIA

Non-flammable (aqueous solution): After water evaporates, remaining material will burn. Apply alcohol-type or all-purpose-type foam by manufacturers' recommended techniques for large fires. Use water spray, carbon dioxide or dry chemical media for small fires.

5.3 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.

5.4 SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Use self-contained breathing apparatus and protective clothing.

5.5 UNUSUAL FIRE AND EXPLOSION HAZARDS

During a fire, sulfur oxides may be produced.

Avoid accumulation of water. Product may be carried across water surface spreading fire or contacting an ignition source.

5.6 HAZARDOUS COMBUSTION PRODUCTS

Burning can produce the following products: Carbon monoxide and/or carbon dioxide. Oxides of sulfur. 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:

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Contain spills immediately with inert materials (e.g., sand, earth). Transfer liquids and solid diking material to suitable containers for recovery or disposal. To avoid gelling and foaming problems, do not use water to flush away spills.

Personal Precautions: Wear eye and skin protection. Floor may be slippery; use care to avoid falling. See Section 8.2 - Personal Protection.

Environmental Precautions: Avoid discharge to natural waters.

7. HANDLING AND STORAGE

7.1 HANDLING

General Handling

Do not get in eyes.
Avoid breathing vapor.
Do not swallow.
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.

Ventilation

General (mechanical) room ventilation is expected to be satisfactory.

Other Precautions

Surfactants can cause foaming problems in biological wastewater treatment plants and other high shear operations.

7.2 STORAGE

No specific requirements.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

8.1 EXPOSURE LIMITS

None established by OSHA, ACGIH or Dow.

8.2 PERSONAL PROTECTION

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Respiratory Protection: Where misting may occur, wear a MSHA/NIOSH approved half-mask air purifying respirator. Air purifying respirators should be equipped with organic vapor cartridges.

Ventilation: General (mechanical) room ventilation is expected to be satisfactory.

Eye Protection: Chemical splash goggles.

Protective Gloves: Neoprene.
Butyl

Other Protective Equipment: Eye Bath, Safety Shower
Full protective clothing

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid

Appearance: Opaque white

Odor: Mild

Flash Point - Closed Cup: *Pensky-Martens Closed Cup ASTM D 93 None.*

Flammable Limits In Air:

Lower *Not Determined, Aqueous System*
Upper *Not Determined, Aqueous System*

Autoignition Temperature: *Not currently available.*

Vapor Pressure: 16.36 mmHg 20 °C

Boiling Point (760 mmHg): 101 °C 215 °F

Vapor Density (air = 1): 0.85

Specific Gravity (H₂O = 1): 1.074

Freezing Point: -6 °C 21 °F

Melting Point: *Not applicable.*

Solubility in Water (by weight): 100 %

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pH: *Not applicable.*

Evaporation Rate (Butyl Acetate = 1): 0.90

Percent Volatiles: 72.01 Wt%

10. STABILITY AND REACTIVITY

10.1 STABILITY/INSTABILITY Stable.

Incompatible Materials: Contact with strong oxidizing and/or reducing agents may result in rapid energy release. Avoid strong bases at high temperatures, strong acids, and materials reactive with hydroxyl compounds. Contact with water-reactive compounds should be avoided.

10.2 HAZARDOUS POLYMERIZATION Will not occur.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Peroral

|| Rat; male = 5.66 g/kg

|| Mortality: 0/3

|| Time to Death: 1 day

|| Major Signs: sluggishness, lacrimation, diarrhea, piloerection, small amount of blood in the urine.

|| Gross Pathology - Decedents: numerous organs discolored

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Gross Pathology - Survivors: discolored kidneys

Peroral

Rat; female; LD50 = 6.70 (5.72 - 7.85) g/kg; slope = 13.1

Time to Death: 1 day

Major Signs: sluggishness, lacrimation, diarrhea, piloerection, small amount of blood in the urine.

Gross Pathology - Decedents: numerous organs discolored

Gross Pathology - Survivors: discolored kidneys

Percutaneous

Rabbit; male = 16 g/kg; 24 hr occluded contact.

Mortality: 2/3

Time to Death: 3 to 5 days

Major Signs: sluggishness, audible and/or labored breathing and weight loss.

Irritation: erythema, edema, ecchymoses, fissuring, desquamation, necrosis, alopecia, and scabs.

Gross Pathology - Decedents: discolored lungs, livers, kidneys

Gross Pathology - Survivors: discolored kidneys, lungs

Percutaneous

Rabbit; female; LD50 = 14.3 (7.41 - 27.4) g/kg; slope = 4.96; 24 hr occluded contact.

Time to Death: 3 to 5 days

Major Signs: sluggishness, audible and/or labored breathing and weight loss.

Irritation: erythema, edema, ecchymoses, fissuring, desquamation, necrosis, alopecia, and scabs.

Gross Pathology - Decedents: discolored lungs, livers, kidneys

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Gross Pathology - Survivors: discolored kidneys, lungs

IRRITATION

Skin.: Rabbit; 4 h occluded; 0.5 ml

Results: minor transient erythema; healed by 3 days.

Eye: Rabbit; 0.1 ml

Results: minor to moderate corneal injury (opacity), vascularization, iritis, moderate to severe conjunctival irritation; healed by 21 days.

Eye: Rabbit; 0.01 ml

Results: transient iritis and minor to moderate conjunctival irritation; healed by 7 days.

DEVELOPMENTAL TOXICITY

For the minor component(s):, Did not cause birth defects in laboratory animals., Has been toxic to the fetus in lab animals at doses nontoxic to the mother.

12. ECOLOGICAL INFORMATION

12.1 ENVIRONMENTAL FATE

BOD (% Oxygen consumption)

	Day 5	Day 10	Day 15	Day 20	Day 28/30
	5 %	5 %		29 %	

12.2 ECOTOXICITY

Toxicity to Micro-organisms

Bacterial Inhibition; IC50

Result value: > 5000 mg/L

Toxicity to Aquatic Invertebrates

Cladoceran; 48 h; LC50

Result value: 157 mg/L

Toxicity to Fish

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Fathead Minnow; 96 h; LC50

Result value: 54 mg/L

12.3 FURTHER INFORMATION

Theoretical Oxygen Demand (THOD) - calculated: 0.51 mg/mg

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: Incinerator or other thermal destruction device. Waste water treatment system. 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

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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 (CERCLA) SECTION 103

This product contains the following substances which are subject to CERCLA Section 103 reporting requirements and which are listed in 40 CFR 302.4.

Component	CAS #	Amount
Glycol Ethers	Not available	<= 28.0000%
1,4-Dioxane	123-91-1	<= 0.0300%

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

This product contains the following substances which are subject to SARA Section 302 reporting requirements and which are listed in 40 CFR 302.4.

None.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 TITLE III (EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT OF 1986) SECTION 313

This product contains the following substances which are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act 1986 and which are listed in 40 CFR Part 372.

Component	CAS #	Amount
Glycol Ethers	Not available	<= 28.0000%

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

Delayed (Chronic) Health Hazard : Yes
Fire Hazard : No
Immediate (Acute) 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 under 40 CFR 720.30.

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)

The following product components are cited in the Pennsylvania Hazardous Substances List, the Pennsylvania Special Hazardous Substance List, and/or the Pennsylvania Environmental Hazardous Substance list, and are present at levels which require reporting.

Component	CAS #	Amount
Glycol Ethers	Not available	<= 28.0000%
1,4-Dioxane	123-91-1	<= 0.0300%

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

This product contains trace amounts of 1,4-DIOXANE known to the State of California to cause cancer.

Component	CAS #	Amount
1,4-Dioxane	123-91-1	<= 0.0300%

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

VOC: Vapor pressure 16.36 mmHg @ 20° C
0.35 g/l VOC
1.54 g/l Less exempted compounds

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: Additional product safety 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 - 2 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

16.4 REVISION

Version: 3.0

Revision: 10/04/2004

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

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.