Material Safety Data Sheet

DOW CHEMICAL INTERNATIONAL PVT. LTD.

Product name: TRITON™ X-45 Surfactant

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DOW CHEMICAL INTERNATIONAL PVT. LTD. encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: TRITON™ X-45 Surfactant

Recommended use of the chemical and restrictions on use
Identified uses: Multi-purpose surfactant.

COMPANY IDENTIFICATION
DOW CHEMICAL INTERNATIONAL PVT. LTD.
UNIT NO. 801, 8th FLOOR, BUILDING NO. 9,
GIGAPLEX,
TTC INDUSTRIAL AREA, MIDC, AIROLI
NAVI, MUMBAI
400708 NAVI, MUMBAI
INDIA

Customer Information Number: (91) 22-6674-1500
SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 91-22-6674-1800
Local Emergency Contact: 0091-22-6674-1800

2. HAZARDS IDENTIFICATION

GHS Classification
Acute toxicity - Category 5 - Oral
Acute toxicity - Category 5 - Dermal
Skin corrosion/irritation - Category 2
Serious eye damage/eye irritation - Category 2A
Acute aquatic toxicity - Category 2

GHS label elements
Hazard pictograms

Signal word: **WARNING!**

Hazard statements
May be harmful if swallowed or in contact with skin.
Causes skin irritation.
Causes serious eye irritation.
Toxic to aquatic life.

Precautionary statements

Prevention
Wash skin thoroughly after handling.
Avoid release to the environment.
Wear protective gloves/ eye protection/ face protection.

Response
IF ON SKIN: Wash with plenty of water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Call a POISON CENTER/doctor if you feel unwell.
If skin irritation occurs: Get medical advice/ attention.
If eye irritation persists: Get medical advice/ attention.
Take off contaminated clothing and wash it before reuse.

Disposal
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
Slipping hazard.

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a substance.

Component	CASRN	Concentration
Polyethylene glycol octylphenyl ether	9036-19-5	>= 97.0 %
Poly(ethylene oxide)	25322-68-3	<= 3.0 %

4. FIRST AID MEASURES

Description of first aid measures
General advice:
First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

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

Skin contact: Wash off with plenty of water. Suitable emergency safety shower facility should be available in work area.

Eye contact: Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.

Ingestion: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
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.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Unsuitable extinguishing media: Do not use direct water stream. May spread fire.

Special hazards arising from the substance or mixture
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.

Unusual Fire and Explosion Hazards: Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Do not use direct water stream. May spread fire. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.

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

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Spilled material may cause a slipping hazard. Refer to section 7, Handling, for additional precautionary measures. Keep personnel out of low areas. 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.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Absorb with materials such as: Sand. Dirt. Do not use water for cleanup. Collect in suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.
Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.

Conditions for safe storage: No specific requirements. Additional storage and handling information on this product may be obtained by calling your sales or customer service contact.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Component	Regulation	Type of listing	Value/Notation
Poly(ethylene oxide)	US WEEL	TWA aerosol	10 mg/m3

Exposure controls
Engineering controls: Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles. Chemical goggles should be consistent with EN 166 or equivalent.

Skin protection

Hand protection: Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Butyl rubber. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). When prolonged or frequently repeated contact may occur, a glove with a protection class of 4 or higher (breakthrough time greater than 120 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 1 or higher (breakthrough time greater than 10 minutes according to EN 374) is recommended. Glove thickness alone is not a good indicator of the level of protection a glove provides against a chemical substance as this level of protection is also highly dependent on the specific composition of the material that the glove is fabricated from. The thickness of the glove must, depending on model and type of material, generally be more than 0.35 mm to offer sufficient protection for prolonged and frequent contact with the substance. As an exception to this general rule it is known that multilayer laminate gloves may offer prolonged protection at thicknesses less than 0.35 mm. Other glove materials with a thickness of less than 0.35 mm may offer sufficient protection when only brief contact is expected. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. In misty atmospheres, use an approved particulate respirator.
Use the following CE approved air-purifying respirator: Organic vapor cartridge with a particulate pre-filter, type AP2.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid.
Color	Yellow
Odor	Mild
Odor Threshold	No test data available
pH	6 *Calculated.* (5% aqueous solution)
Melting point/range	Not applicable to liquids
Freezing point	See Pour Point

Boiling point (760 mmHg)	> 200 °C *Calculated.*
Flash point	**closed cup** 218.3 °C *ASTM D 93*
Evaporation Rate (Butyl Acetate = 1)	<0.01 *Calculated.*
Flammability (solid, gas)	Not applicable to liquids
Lower explosion limit	No test data available
Upper explosion limit	No test data available
Vapor Pressure	< 0.01 mmHg at 20 °C *Calculated.*
Relative Vapor Density (air = 1)	>10 *Calculated.*
Relative Density (water = 1)	1.031 at 20 °C / 20 °C *Calculated.*
Water solubility	forms a dispersion
Partition coefficient: n-octanol/water	log Pow: 4.9 *Estimated.*
Auto-ignition temperature	No test data available
Decomposition temperature	No test data available
Kinematic Viscosity	281 cSt at 25 °C *Calculated.*
Explosive properties	No data available
Oxidizing properties	No data available
Molecular weight	426 g/mol *Calculated.* Average
Percent volatility	No data available
Pour point	< -6 °C *Calculated.*

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No data available

Chemical stability: Thermally stable at typical use temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Exposure to elevated temperatures can cause product to decompose.

Incompatible materials: Avoid contact with: Strong acids. Strong oxidizers.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Aldehydes. Alcohols. Ethers.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity
Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

Typical for this family of materials.
LD50, Rat, > 4,000 mg/kg

Acute dermal toxicity
Prolonged skin contact is unlikely to result in absorption of harmful amounts.

Typical for this family of materials.
LD50, Rabbit, > 3,000 mg/kg

Acute inhalation toxicity
Prolonged exposure is not expected to cause adverse effects. Mist may cause irritation of upper respiratory tract (nose and throat). Vapor may cause irritation of the upper respiratory tract (nose and throat).
The LC50 has not been determined.

Skin corrosion/irritation
Brief contact may cause moderate skin irritation with local redness.

Serious eye damage/eye irritation
May cause moderate eye irritation.
May cause moderate corneal injury.
Effects may be slow to heal.

Sensitization
For this family of materials:
Did not cause allergic skin reactions when tested in humans.
Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)
For this family of materials:
Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

Carcinogenicity
No relevant data found.

Teratogenicity
No relevant data found.

Reproductive toxicity

No relevant data found.

Mutagenicity
For this family of materials: In vitro genetic toxicity studies were negative.

Aspiration Hazard
Based on physical properties, not likely to be an aspiration hazard.

COMPONENTS INFLUENCING TOXICOLOGY:

Polyethylene glycol octylphenyl ether

Acute inhalation toxicity
The LC50 has not been determined.

Poly(ethylene oxide)

Acute inhalation toxicity
Typical for this family of materials. LC50, Rat, 6 Hour, dust/mist, > 2.5 mg/l No deaths occurred at this concentration.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Ecotoxicity

Acute toxicity to fish
For this family of materials:
Material is toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in the most sensitive species).

For this family of materials:
LC50, Pimephales promelas (fathead minnow), 96 Hour, 1.4 - 1.8 mg/l

Acute toxicity to aquatic invertebrates
For this family of materials:
EC50, Daphnia magna (Water flea), 48 Hour, > 1.0 - 8.4 mg/l

Toxicity to bacteria
For this family of materials:
IC50, Bacteria, 16 Hour, 500 - 3,600 mg/l

Persistence and degradability
Biodegradability: For this family of materials: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Not applicable
Biodegradation: > 60 %
Exposure time: 28 d
Method: OECD Test Guideline 301B or Equivalent

Bioaccumulative potential

Partition coefficient: n-octanol/water(log Pow): 4.9 Estimated.
Bioconcentration factor (BCF): 417 Estimated.

Mobility in Soil

No specific, relevant data available for assessment.

Results of PBT and vPvB assessment

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Other adverse effects

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

13. DISPOSAL CONSIDERATIONS

Disposal methods: This product, when being disposed of in its unused and uncontaminated state should be treated as a hazardous waste according to EC Directive 2008/98/EC. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. For used, contaminated and residual materials additional evaluations may be required. Do not dump into any sewers, on the ground, or into any body of water.

This product when disposed of in its unused and uncontaminated state should be treated as a hazardous waste.

14. TRANSPORT INFORMATION

Classification for ROAD and Rail transport:

Not regulated for transport

Classification for SEA transport (IMO-IMDG):

Not regulated for transport

Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Not regulated for transport

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. 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

This product has been classified in accordance with the criteria of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), rev. 6.

16. OTHER INFORMATION

Product Literature
Additional information on this and other products may be obtained by visiting our web page. Additional information on this product may be obtained by calling your sales or customer service contact. Ask for a product brochure.

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

Legend

TWA	8-hr TWA
US WEEL	USA. Workplace Environmental Exposure Levels (WEEL)

Full text of other abbreviations
tions; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration asso

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