



Material Safety Data Sheet

The Dow Chemical Company

Product Name: Toluene/Xylene Mix-16342

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The Dow Chemical Company 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

Toluene/Xylene Mix-16342

COMPANY IDENTIFICATION

The Dow Chemical Company
2030 Willard H. Dow Center
Midland, MI 48674
United States

Customer Information Number:

800-258-2436

SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact:

989-636-4400

Local Emergency Contact:

989-636-4400

2. Hazards Identification

Emergency Overview

Color: Colorless to yellow

Physical State: Liquid.

Odor: Aromatic

Hazards of product:

DANGER! Extremely flammable liquid and vapor - Vapor may cause flash fire. Causes eye irritation. May cause skin irritation. May be harmful if inhaled. May cause central nervous system effects. May cause anesthetic effects. May cause respiratory tract irritation. Harmful or fatal if swallowed; can enter lungs and cause damage. Vapor explosion hazard. Vapors may travel a long distance; ignition and/or flash back may occur. Evacuate area. Keep upwind of spill. Stay out of low areas. Warn public of downwind explosion hazard. Eliminate ignition sources. Cancer hazard. Can cause cancer.

OSHA Hazard Communication Standard

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Potential Health Effects

Eye Contact: May cause moderate eye irritation. May cause moderate corneal injury. Vapor may cause eye irritation experienced as mild discomfort and redness. Vapor may cause lacrimation (tears).

Skin Contact: Prolonged contact may cause skin irritation with local redness. Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage. May cause drying and flaking of the skin.

Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.

Inhalation: Vapor concentrations are attainable which could be hazardous on single exposure. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. May cause central nervous system effects. Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed. Excessive exposure may increase sensitivity to epinephrine and increase myocardial irritability (irregular heartbeats).

Ingestion: Moderate toxicity if swallowed. Swallowing may result in gastrointestinal irritation or ulceration. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause serious injury, even death. May cause central nervous system effects.

Aspiration hazard: Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia.

Effects of Repeated Exposure: Based on information for component(s): In humans, effects have been reported on the following organs: Blood. Blood-forming organs (Bone marrow & Spleen). Central nervous system. In animals, effects have been reported on the following organs: Liver. Kidney. Blood. Lung. Bone marrow. Spleen. Immune system. Thymus. Testes. Intentional misuse by deliberately inhaling toluene may cause nervous system damage, hearing loss, liver and kidney effects and death. Xylene is reported to have caused hearing loss in laboratory animals upon exposure to high concentrations; such effects have not been reported in humans.

Cancer Information: Benzene has been shown to cause cancer in laboratory animals and humans. Ethylbenzene has been shown to cause cancer in laboratory animals. An increased incidence of lung tumors was observed in mice from an inhalation study on styrene. The relevance of this finding to humans is uncertain since data from mode of action investigations of mouse lung tumors coupled with other long-term animal studies and epidemiology studies of workers exposed to styrene do not provide a basis to conclude that styrene is carcinogenic.

Birth Defects/Developmental Effects: In laboratory animals, toluene has been toxic to the fetus at doses toxic to the mother; it has caused birth defects in mice when administered orally, but not by inhalation. The data presented are for the following material: Ethylbenzene. Has caused birth defects in laboratory animals. Has been toxic to the fetus in lab animals at doses nontoxic to the mother. Exaggerated doses of xylene given orally to pregnant mice resulted in an increase in cleft palate, a common developmental abnormality in mice. In animal inhalation studies, xylene caused toxicity to the fetus but did not cause birth defects. The data presented are for the following material Benzene. Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

Reproductive Effects: The data presented are for the following material: Benzene. In animal studies, has been shown to interfere with reproduction in males.

3. Composition Information

Component	CAS #	Amount
Naphtha (petroleum), light steam-cracked arom.	68527-23-1	100.0 %
Toluene	108-88-3	45.0 - 80.0 %
Ethylbenzene	100-41-4	7.0 - 25.0 %
Xylene	1330-20-7	3.5 - 18.0 %
Non-aromatic hydrocarbons, C6-C9	Not available	0.2 - 12.0 %
Aromatic hydrocarbons, C9-11	70693-06-0	0.0 - 10.0 %
Benzene	71-43-2	0.0 - 2.0 %
Styrene	100-42-5	0.0 - 0.5 %

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 not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

Skin Contact: Wash skin with plenty of water.

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: Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.

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), no additional symptoms and effects are anticipated.

Indication of immediate medical attention and special treatment needed

Maintain adequate ventilation and oxygenation of the patient. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. The decision of whether to induce vomiting or not should be made by a physician. Exposure may increase "myocardial irritability". Do not administer sympathomimetic drugs such as epinephrine unless absolutely necessary. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

Skin contact may aggravate preexisting dermatitis. Repeated excessive exposure may aggravate preexisting lung disease.

5. Fire Fighting Measures

Suitable extinguishing media

Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. General purpose synthetic foams (including AFFF type) or protein foams are preferred if available. Alcohol resistant foams (ATC type) may function.

Extinguishing Media to Avoid: Do not use direct water stream. Straight or direct water streams may not be effective to extinguish 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: Container may vent and/or rupture due to fire. Electrically ground and bond all equipment. Flammable mixtures of this product are readily ignited even by static discharge. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Flammable mixtures may exist within the vapor space of containers at room temperature. Flammable concentrations of vapor can accumulate at temperatures above flash point; see Section 9. Dense smoke is produced when product burns.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Water may not be effective in extinguishing fire. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Do not use direct water stream. May spread fire. Eliminate ignition sources. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Avoid accumulation of water. Product may be carried across water surface spreading fire or contacting an ignition source. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

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). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures: Evacuate area. Keep unnecessary and unprotected personnel from entering the area. Refer to Section 7, Handling, for additional precautionary measures. Keep personnel out of low areas. Keep upwind of spill. Ventilate area of leak or spill. No smoking in area. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Vapor explosion hazard. Keep out of sewers. For large spills, warn public of downwind explosion hazard. Check area with combustible gas detector before reentering area. Ground and bond all containers and handling equipment. 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. Material will float on water.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Spills should be contained by, and covered with large quantities of sand, earth or any other readily available absorbent material which is then brushed in vigorously to assist absorption. Large spills: Dike area to contain spill. Dilute with water. Collect in suitable and properly labeled containers. Ground and bond all containers and handling equipment. Pump with explosion-proof equipment. If available, use foam to smother or suppress. If substance has entered water course or sewer, inform the responsible authority. See Section 13, Disposal Considerations, for additional information.

7. Handling and Storage

Handling

General Handling: Keep away from heat, sparks and flame. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor. Do not swallow. Wash thoroughly after handling. Keep container closed. Use only with adequate ventilation. Never use air pressure for transferring product. No smoking, open flames or sources of ignition in handling and storage area. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Electrically bond and ground all containers, personnel and equipment before transfer or use of material. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Use of non-sparking or explosion-proof equipment may be necessary, depending upon the type of operation. Product on surfaces can

cause slippery conditions. Purge oxygen from storage vessels before filling. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Other Precautions: Never use air pressure for transferring product. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers.

Storage

Minimize sources of ignition, such as static build-up, heat, spark or flame. Keep container closed. Flammable mixtures may exist within the vapor space of containers at room temperature. Store in steel containers preferably located outdoors, above ground, and surrounded by dikes to contain spills or leaks. Store under cover in a dry, clean, cool, well ventilated place away from sunlight. Damaged or punctured drums should be emptied and properly disposed of. Do not use jacket-type drum heaters. Flush empty containers with water to remove residual flammable liquid and vapours. Hold bulk storage under nitrogen blanket. See Section 10 for more specific information.

8. Exposure Controls / Personal Protection

Exposure Limits

Component	List	Type	Value
Benzene	ACGIH	TWA	0.5 ppm SKIN, BEI
	ACGIH	STEL	2.5 ppm SKIN, BEI
	OSHA/Z2	TWA	10 ppm
	OSHA/Z2	Ceiling	25 ppm
	OSHA/Z2	MAX. CONC	50 ppm 10 minutes
	OSHA	STEL	5 ppm
Toluene	ACGIH	TWA	20 ppm BEI
	OSHA/Z2	TWA	200 ppm
	OSHA/Z2	Ceiling	300 ppm
	OSHA/Z2	MAX. CONC	500 ppm 10 minutes
Ethylbenzene	ACGIH	TWA	20 ppm BEI
	OSHA Table Z-1	PEL	435 mg/m ³ 100 ppm
Xylene	ACGIH	TWA	100 ppm BEI
	ACGIH	STEL	150 ppm BEI
	OSHA Table Z-1	PEL	435 mg/m ³ 100 ppm
Styrene	ACGIH	TWA	20 ppm BEI
	ACGIH	STEL	40 ppm BEI
	OSHA/Z2	TWA	100 ppm
	OSHA/Z2	Ceiling	200 ppm
	OSHA/Z2	MAX. CONC	600 ppm 5 minutes in any 3 hours

A BEI notation following the exposure guideline refers to a guidance value for assessing biological monitoring results as an indicator of the uptake of a substance from all routes of exposures.

A "skin" notation following the inhalation exposure guideline refers to the potential for dermal absorption of the material including mucous membranes and the eyes either by contact with vapors or by direct skin contact.

It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposures should be considered.

Personal Protection

Eye/Face Protection: Use chemical goggles. If exposure causes eye discomfort, use a full-face respirator.

Skin Protection: When prolonged or frequently repeated contact could occur, use protective clothing chemically resistant to this material. Selection of specific items such as faceshield, boots, apron, or full-body suit will depend on the task.

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Butyl rubber. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Viton. Polyvinyl chloride ("PVC" or "vinyl"). Styrene/butadiene rubber. Polyvinyl alcohol ("PVA"). Examples of acceptable glove barrier materials include: Neoprene. Chlorinated polyethylene. Natural rubber ("latex"). Nitrile/butadiene rubber ("nitrile" or "NBR"). 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.

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, use an approved respirator. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus. In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply. The following should be effective types of air-purifying respirators: Organic vapor cartridge.

Ingestion: Avoid ingestion of even very small amounts; do not consume or store food or tobacco in the work area; wash hands and face before smoking or eating.

Engineering Controls

Ventilation: 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.

9. Physical and Chemical Properties

Appearance	
Physical State	Liquid.
Color	Colorless to yellow
Odor	Aromatic
Odor Threshold	No test data available
pH	Not applicable
Melting Point	-95 - 13 °C (-139 - 55 °F) <i>Literature</i>
Freezing Point	-95 - 13 °C (-139 - 55 °F) <i>Literature</i>
Boiling Point (760 mmHg)	26 - 63 °C (79 - 145 °F) <i>ASTM D850</i> .
Flash Point - Closed Cup	-11 - 4 °C (12 - 39 °F) <i>Literature</i> Estimated.
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	Not applicable to liquids
Flammable Limits In Air	Lower: 1.0 %(V) <i>Literature</i> (estimated from component data) Upper: 7.1 %(V) <i>Literature</i> (estimated from component data)
Vapor Pressure	0.5 - 2.3 psi @ 100 °F <i>ASTM D5191</i>
Vapor Density (air = 1)	1.0 <i>Literature</i>
Specific Gravity (H2O = 1)	0.862 - 0.895 <i>ASTM D4052</i>
Solubility in water (by weight)	0.06 % @ 30 °C <i>Literature</i> (toluene)
Autoignition Temperature	No test data available
Decomposition Temperature	No test data available
Dynamic Viscosity	No test data available
Kinematic Viscosity	No test data available
Explosive properties	no data available

Oxidizing properties	no data available
Liquid Density	0.862 - 0.895 g/cm ³ <i>ASTM D4052</i>
Molecular Weight	No test data available

10. Stability and Reactivity

Reactivity

No dangerous reaction known under conditions of normal use.

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. Avoid static discharge.

Incompatible Materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

Hazardous decomposition products

Decomposition products depend upon temperature, air supply and the presence of other materials.

11. Toxicological Information

Acute Toxicity

Ingestion

Single dose oral LD50 has not been determined.

Dermal

The dermal LD50 has not been determined.

Inhalation

As product: The LC50 has not been determined.

Eye damage/eye irritation

May cause moderate eye irritation. May cause moderate corneal injury. Vapor may cause eye irritation experienced as mild discomfort and redness. Vapor may cause lacrimation (tears).

Skin corrosion/irritation

Prolonged contact may cause skin irritation with local redness. Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage. May cause drying and flaking of the skin.

Sensitization

Skin

For the component(s) tested: Did not cause allergic skin reactions when tested in humans.

Respiratory

No relevant data found.

Repeated Dose Toxicity

Based on information for component(s): In humans, effects have been reported on the following organs: Blood. Blood-forming organs (Bone marrow & Spleen). Central nervous system. In animals, effects have been reported on the following organs: Liver. Kidney. Blood. Lung. Bone marrow. Spleen. Immune system. Thymus. Testes. Intentional misuse by deliberately inhaling toluene may cause nervous system damage, hearing loss, liver and kidney effects and death. Xylene is reported to have caused hearing loss in laboratory animals upon exposure to high concentrations; such effects have not been reported in humans.

Chronic Toxicity and Carcinogenicity

Benzene has been shown to cause cancer in laboratory animals and humans. Ethylbenzene has been shown to cause cancer in laboratory animals. An increased incidence of lung tumors was observed in

mice from an inhalation study on styrene. The relevance of this finding to humans is uncertain since data from mode of action investigations of mouse lung tumors coupled with other long-term animal studies and epidemiology studies of workers exposed to styrene do not provide a basis to conclude that styrene is carcinogenic.

Carcinogenicity Classifications:

Component	List	Classification
Ethylbenzene	ACGIH	Confirmed animal carcinogen with unknown relevance to humans.; Group A3
Benzene	IARC	Possibly carcinogenic to humans.; 2B
	ACGIH	Confirmed human carcinogen.; Group A1
	NTP	Known carcinogen.
	OSHA	Cancer hazard.
Styrene	IARC	Carcinogenic to humans.; 1
	IARC	Possibly carcinogenic to humans.; 2B
	NTP	Reasonably anticipated to be a human carcinogen.

Developmental Toxicity

In laboratory animals, toluene has been toxic to the fetus at doses toxic to the mother; it has caused birth defects in mice when administered orally, but not by inhalation. The data presented are for the following material: Ethylbenzene. Has caused birth defects in laboratory animals. Has been toxic to the fetus in lab animals at doses nontoxic to the mother. Exaggerated doses of xylene given orally to pregnant mice resulted in an increase in cleft palate, a common developmental abnormality in mice. In animal inhalation studies, xylene caused toxicity to the fetus but did not cause birth defects. The data presented are for the following material Benzene. Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

Reproductive Toxicity

The data presented are for the following material: Benzene. In animal studies, has been shown to interfere with reproduction in males.

Genetic Toxicology

Contains component(s) which were negative in some in vitro genetic toxicity studies and positive in others. Contains component(s) which were negative in some animal genetic toxicity studies and positive in others.

12. Ecological Information

Toxicity

Data for Component: **Naphtha (petroleum), light steam-cracked arom.**

Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity

LC50, *Cyprinodon variegatus* (sheepshead minnow), static test, 96 h: 82 mg/l

LC50, *Oncorhynchus mykiss* (rainbow trout), static test, 24 h: 58 mg/l

Aquatic Invertebrate Acute Toxicity

EC50, *Daphnia magna* (Water flea), 24 h, immobilization: 170 - 226 mg/l

Aquatic Plant Toxicity

EC50, *Pseudokirchneriella subcapitata* (green algae), Growth rate inhibition, 72 h: 19 - 56 mg/l

Data for Component: **Toluene**

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity

LC50, *Oncorhynchus mykiss* (rainbow trout), semi-static test, 96 h: 5.8 mg/l

LC50, fish, flow-through test, 96 h: 5.5 mg/l

Aquatic Invertebrate Acute Toxicity

EC50, *Daphnia magna* (Water flea), static test, 24 h, immobilization: 7 mg/l

LC50, water flea *Ceriodaphnia dubia*, semi-static test, 48 h, mortality: 3.78 mg/l

Aquatic Plant Toxicity

EbC50, Pseudokirchneriella subcapitata (green algae), biomass growth inhibition, 72 h: 12.5 mg/l

Toxicity to Micro-organisms

IC50; Bacteria, 16 h: 29 mg/l

Fish Chronic Toxicity Value (ChV)

Fish, flow-through test, 40 d, growth, NOEC:1.4 mg/l

Aquatic Invertebrates Chronic Toxicity Value

Daphnia magna (Water flea), 21 d, number of offspring, NOEC: 2 mg/l

Toxicity to Soil Dwelling Organisms

LC50, Eisenia fetida (earthworms): 150 - 280 mg/kg

Data for Component: Ethylbenzene

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity

LC50, Oncorhynchus mykiss (rainbow trout), semi-static test, 96 h: 4.2 mg/l

Aquatic Invertebrate Acute Toxicity

EC50, Daphnia magna (Water flea), static, 1 d, immobilization: 2.2 mg/l

Aquatic Plant Toxicity

EC50, Pseudokirchneriella subcapitata (green algae), Growth inhibition (cell density reduction), 72 h: 3.6 - 4.6 mg/l

Toxicity to Micro-organisms

EC50; Bacteria, 16 h: > 12 mg/l

Toxicity to Soil Dwelling Organisms

LC50, Eisenia fetida (earthworms), 2 d: 0.047 mg/cm²

Data for Component: Xylene

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity

LC50, Oncorhynchus mykiss (rainbow trout), 96 h: 9.2 mg/l

Aquatic Invertebrate Acute Toxicity

LC50, Daphnia magna (Water flea), 48 h, lethality: 14.3 mg/l

Aquatic Plant Toxicity

EbC50, Pseudokirchneriella subcapitata (green algae), biomass growth inhibition, 72 h: 3.2 - 4.9 mg/l

Data for Component: Aromatic hydrocarbons, C9-11

No relevant data found.

Data for Component: Benzene

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity

LC50, Oncorhynchus mykiss (rainbow trout), semi-static test, 96 h: 5.9 mg/l

Aquatic Invertebrate Acute Toxicity

EC50, Daphnia magna (Water flea), static test, 24 h, immobilization: 18 mg/l

Aquatic Plant Toxicity

EC50, Pseudokirchneriella subcapitata (green algae), biomass growth inhibition, 72 h: 29 mg/l

Fish Chronic Toxicity Value (ChV)

fathead minnow (Pimephales promelas), flow-through test, 32 d, lethality, LOEC:1.6 mg/l

Aquatic Invertebrates Chronic Toxicity Value

Ceriodaphnia Dubia (water flea), semi-static test, 7 d, NOEC: 2.968 mg/l

Data for Component: Styrene

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity

LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 h: 4.1 mg/l

Aquatic Invertebrate Acute Toxicity

LC50, Daphnia magna (Water flea), static test, 48 h, survival: 23 mg/l

EC50, *Daphnia magna* (Water flea), flow-through test, 48 h, immobilization: 4.7 mg/l

Aquatic Plant Toxicity

ErC50, *Pseudokirchneriella subcapitata* (green algae), static test, Growth rate inhibition, 72 h: 4.9 mg/l

Toxicity to Soil Dwelling Organisms

LC50, *Eisenia fetida* (earthworms), 14 d: 120 mg/kg

Persistence and Degradability**Data for Component: Naphtha (petroleum), light steam-cracked arom.**

No relevant data found.

Data for Component: Toluene

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
100 %	14 d	OECD 301C Test	Not applicable

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
5.23E-12 cm ³ /s	2 d	Estimated.

Theoretical Oxygen Demand: 3.13 mg/mg

Data for Component: Ethylbenzene

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
100 %	6 d	OECD 301E Test	pass

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
7.1E-12 cm ³ /s	55 h	Estimated.

Biological oxygen demand (BOD):

BOD 5	BOD 10	BOD 20	BOD 28
31.5 %	38.5 %	45.4 %	

Chemical Oxygen Demand: 2.62 mg/mg

Theoretical Oxygen Demand: 3.17 mg/mg

Data for Component: Xylene

Material is expected to be readily biodegradable.

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
6.5E-12 cm ³ /s	19.7 h	Estimated.

Biological oxygen demand (BOD):

BOD 5	BOD 10	BOD 20	BOD 28
37.000 %	58.000 %	72.000 %	

Theoretical Oxygen Demand: 3.17 mg/mg

Data for Component: Aromatic hydrocarbons, C9-11

No relevant data found.

Data for Component: Benzene

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
100 %	14 d	OECD 301C Test	Not applicable

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
1.95E-12 cm ³ /s	5.5 d	Estimated.

Biological oxygen demand (BOD):

BOD 5	BOD 10	BOD 20	BOD 28
46 %	49 %	80 %	

Theoretical Oxygen Demand: 3.08 mg/mg

Data for Component: **Styrene**

Material is ultimately biodegradable (reaches > 70% biodegradation in OECD test(s) for inherent biodegradability). Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%). Material is expected to be readily biodegradable.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
87 %	28 d	OECD 301F Test	pass

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
5.3E-11 cm ³ /s	3.5 h	Estimated.

Biological oxygen demand (BOD):

BOD 5	BOD 10	BOD 20	BOD 28
34 %	47 %	54 %	

Chemical Oxygen Demand: 2.89 mg/mg

Theoretical Oxygen Demand: 3.08 mg/mg

Bioaccumulative potential

Data for Component: **Naphtha (petroleum), light steam-cracked arom.**

Bioaccumulation: No relevant data found.

Data for Component: **Toluene**

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient, n-octanol/water (log Pow): 2.73 Measured

Bioconcentration Factor (BCF): 13.2 - 90; Fish; Measured

Data for Component: **Ethylbenzene**

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient, n-octanol/water (log Pow): 3.15 Measured

Bioconcentration Factor (BCF): 15; Fish; Measured

Data for Component: **Xylene**

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient, n-octanol/water (log Pow): 3.12 Measured

Bioconcentration Factor (BCF): 15 - 21; Fish; Measured

Data for Component: **Aromatic hydrocarbons, C9-11**

Bioaccumulation: No relevant data found.

Data for Component: **Benzene**

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient, n-octanol/water (log Pow): 2.13 Measured

Bioconcentration Factor (BCF): 4.3; Fish; Measured

Data for Component: **Styrene**

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient, n-octanol/water (log Pow): 2.95 Measured

Bioconcentration Factor (BCF): 13.5; Fish; Measured

Mobility in soil

Data for Component: **Naphtha (petroleum), light steam-cracked arom.**

Mobility in soil: No relevant data found.

Data for Component: **Toluene**

Mobility in soil: Potential for mobility in soil is very high (Koc between 0 and 50).

Partition coefficient, soil organic carbon/water (Koc): 37 - 178 Estimated.

Henry's Law Constant (H): 6.46E-03 atm*m³/mole; 25 °C Estimated.

Data for Component: **Ethylbenzene**

Mobility in soil: Potential for mobility in soil is low (Koc between 500 and 2000).

Partition coefficient, soil organic carbon/water (Koc): 518 Estimated.

Henry's Law Constant (H): 8.44E-03 atm*m³/mole; 25 °C Measured

Data for Component: Xylene

Mobility in soil: Potential for mobility in soil is medium (Koc between 150 and 500).

Partition coefficient, soil organic carbon/water (Koc): 443 Estimated.

Henry's Law Constant (H): 7.45E-03 atm*m3/mole; 25 °C Estimated.

Data for Component: Aromatic hydrocarbons, C9-11

Mobility in soil: No data available.

Data for Component: Benzene

Mobility in soil: Potential for mobility in soil is high (Koc between 50 and 150).

Partition coefficient, soil organic carbon/water (Koc): 83 Estimated.

Henry's Law Constant (H): 5.43E-03 atm*m3/mole; 25 °C Estimated.

Data for Component: Styrene

Mobility in soil: Potential for mobility in soil is low (Koc between 500 and 2000).

Partition coefficient, soil organic carbon/water (Koc): 520 - 920 Estimated.

Henry's Law Constant (H): 2.75E-03 atm*m3/mole Measured

13. Disposal Considerations

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. AS YOUR SUPPLIER, WE HAVE 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: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Recycler. Reclaimer. Incinerator or other thermal destruction device.

14. Transport Information

DOT Non-Bulk

Proper Shipping Name: HYDROCARBONS, LIQUID, N.O.S.

Hazard Class: 3 **ID Number:** UN3295 **Packing Group:** PG II

DOT Bulk

Proper Shipping Name: HYDROCARBONS, LIQUID, N.O.S.

Hazard Class: 3 **ID Number:** UN3295 **Packing Group:** PG II

IMDG

Proper Shipping Name: HYDROCARBONS, LIQUID, N.O.S.

Hazard Class: 3 **ID Number:** UN3295 **Packing Group:** PG II

EMS Number: F-E,S-D

Marine pollutant.: No

ICAO/IATA

Proper Shipping Name: HYDROCARBONS, LIQUID, N.O.S.

Hazard Class: 3 **ID Number:** UN3295 **Packing Group:** PG II

Cargo Packing Instruction: 364

Passenger Packing Instruction: 353

Additional Information

Reportable quantity: 714 lb – XYLENE, 1,240 lb – TOLUENE

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

OSHA Hazard Communication Standard

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	Yes
Fire Hazard	Yes
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Hazardous Products Act Information: Hazardous Ingredients

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 of 1986 and which are listed in 40 CFR 372.

Component	CAS #	Amount
Toluene	108-88-3	50.0 - 80.0 %
Ethylbenzene	100-41-4	7.0 - 25.0 %
Xylene	1330-20-7	3.5 - 14.0 %
Benzene	71-43-2	0.0 - 6.0 %
Styrene	100-42-5	0.0 - 0.5 %

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:

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

Component	CAS #	Amount
Toluene	108-88-3	50.0 - 80.0 %
Ethylbenzene	100-41-4	7.0 - 25.0 %
Xylene	1330-20-7	3.5 - 14.0 %
Benzene	71-43-2	0.0 - 6.0 %

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:

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

Component	CAS #	Amount
Benzene	71-43-2	0.0 - 6.0 %

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

Component	CAS #	Amount
Ethylbenzene	100-41-4	7.0 - 25.0 %
Benzene	71-43-2	0.0 - 6.0 %

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)

WARNING: This product contains a chemical(s) known to the State of California to cause birth defects or other reproductive harm.

Component	CAS #	Amount
Toluene	108-88-3	50.0 - 80.0 %
Benzene	71-43-2	0.0 - 6.0 %

US. Toxic Substances Control Act

All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

16. Other Information

Recommended Uses and Restrictions**Identified uses**

Fuel additive. Chemical intermediate.

Revision

Identification Number: 50536 / 1001 / Issue Date 09/03/2012 / Version: 6.0

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

Legend

N/A	Not available
WW	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc.
DOW IHG	Dow Industrial Hygiene Guideline
WEEL	Workplace Environmental Exposure Level
HAZ_DES	Hazard Designation
Action Level	A value set by OSHA that is lower than the PEL which will trigger the need for activities such as exposure monitoring and medical surveillance if exceeded.

The Dow Chemical Company urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS 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 his 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 the manufacturer, 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 (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.