

SAFETY DATA SHEET

Version 1.0
Revision Date 11.11.2020

SDS Number 300000090479
Print Date 05.12.2020
EM Tag# 431A004Q / AP Mat Code 381793

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND THE COMPANY/UNDERTAKING

Identification of the substance/preparation : Mixture of Gases

Use of the Substance/Mixture : General Industrial.

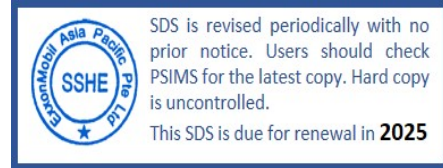
Restrictions on Use : No data available.

Manufacturer/Importer/Distributor : Air Products Singapore Industrial Gases Pte. Ltd.
2 International Business Park
The Strategy, #03-20
Singapore 609930
Toll Free No: 800 448 1755

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2. HAZARDS IDENTIFICATION

GHS classification

Flammable liquids - Category 2
Skin irritation - Category 2
Germ cell mutagenicity - Category 1B
Carcinogenicity - Category 1A
Reproductive toxicity - Category 2
Specific target organ toxicity - single exposure - Category 3
Specific target organ toxicity - repeated exposure - Category 2
Aspiration hazard - Category 1
Chronic aquatic toxicity - Category 2

GHS label elements

Hazard pictograms/symbols



Signal Word: Danger

Hazard Statements:

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H225:Highly flammable liquid and vapour.
H280:Contains gas under pressure; may explode if heated.
H304:May be fatal if swallowed and enters airways.
H315:Causes skin irritation.
H336:May cause drowsiness or dizziness.
H340:May cause genetic defects.
H350:May cause cancer.
H361fd:Suspected of damaging fertility. Suspected of damaging the unborn child.
H373:May cause damage to organs through prolonged or repeated exposure.
H411:Toxic to aquatic life with long lasting effects.

Precautionary Statements:

Prevention : P201:Obtain special instructions before use.
P210:Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking.
P260:Do not breathe dust/fume/gas/mist/vapours/spray.
P280:Wear protective gloves/protective clothing/eye protection/face protection.

Response : P301+P310 :IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P308+P313 :IF exposed or concerned: Get medical advice/attention.
P331 :Do NOT induce vomiting.
P370+P378 :In case of fire, use recommended extinguishing media for extinction.

Other hazards which do not result in classification

Reproductive hazard.
Chemical under pressure.
Flammable.
May form explosive mixtures in air.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Mixture : Mixture

Components	Chemical formula	CAS Number	Concentration (Volume)
o-xylene	C8H10	95-47-6	0.3 %
Ethylbenzene	C8H10	100-41-4	0.3 %
Benzene	C6H6	71-43-2	0.5 %
p-Xylene	C8H10	106-42-3	0.5 %
m-xylene	C8H10	108-38-3	0.7 %
n-hexane	n-C6H14	110-54-3	40 %
Toluene	C7H8	108-88-3	57.7 %

Concentration is nominal. For the exact product composition, please refer to technical specifications.

4. FIRST AID MEASURES

General advice : Remove victim to uncontaminated area.

Eye contact : Rinse immediately with plenty of water and seek medical advice.

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- Skin contact : Wash off immediately with plenty of water for at least 20 minutes.
- Ingestion : If accidentally swallowed obtain immediate medical attention.
- Inhalation : Move to fresh air. In case of shortness of breath, give oxygen.
- Notes to physician
- Treatment : If exposed or concerned: Get medical attention/advice.

5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Shutting off the source of the gas is the preferred method of control.
Foam.
Dry chemical.
Be aware of the risk of formation of static electricity with the use of CO2 extinguishers and do not use them in places where a flammable atmosphere may be present.
- Extinguishing media which must not be used for safety reasons. : Do not use water jet to extinguish.
- Specific hazards : Flammable liquid and gas under pressure. Move away from container and cool with water from a protected position. Keep adjacent cylinders cool by spraying with large amounts of water until fire burns itself out. Upon exposure to intense heat or flame, cylinder will vent rapidly and or rupture violently. Combustion by-products may be toxic. Ignitable by static electricity.
- Special protective equipment for fire-fighters : In confined space use self-contained breathing apparatus. Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters. Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask. Standard EN 469 - Protective clothing for firefighters. Standard - EN 659: Protective gloves for firefighters.

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions : Evacuate personnel to safe areas. Remove all sources of ignition. Never enter a confined space or other area where the flammable gas concentration is greater the 10% of its lower flammable limit. Ventilate the area. Do not walk on or roll equipment over spills. Protect eyes, face and skin from liquid splashes.
- Environmental precautions : Should not be released into the environment. Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Avoid subsoil penetration. Do not flush into surface water or sanitary sewer system.
- Methods for cleaning up : Ventilate the area. Approach suspected leak areas with caution. Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations.
- Additional advice : Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Absorb excess liquid spillage on inorganic adsorbent material such as fine sand, brick dust etc. Place spent adsorbent in sealed packages and contact specialist waste disposal contractor.

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7. HANDLING AND STORAGE

Handling

Chemical under pressure. Before using the product, determine its identity by reading the label. Know and understand the properties and hazards of the product before use. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents. Before connecting the container for use, ensure that back feed from the system into the container is prevented. Ensure the complete gas system has been checked for leaks before use. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier. Replace outlet caps or plugs and container caps as soon as container is disconnected from equipment. Do not subject containers to abnormal mechanical shock. Never attempt to lift a cylinder by its valve protection cap or guard. Do not smoke while handling product or cylinders. Always use backflow protective device in piping. Purge air from system before introducing gas. When returning cylinder install valve outlet cap or plug leak tight. Never use direct flame or electrical heating devices to raise the pressure of a container. Containers should not be subjected to temperatures above 50°C (122°F). Ensure equipment is adequately earthed.

Storage

Containers should be stored in a purpose build compound which should be well ventilated, preferably in the open air. Observe all regulations and local requirements regarding storage of containers. Stored containers should be periodically checked for general condition and leakage. Protect containers stored in the open against rusting and extremes of weather. Containers should not be stored in conditions likely to encourage corrosion. Containers should be stored in the vertical position and properly secured to prevent toppling. The container valves should be tightly closed and where appropriate valve outlets should be capped or plugged. Container valve guards or caps should be in place. Keep containers tightly closed in a cool, well-ventilated place. Store containers in location free from fire risk and away from sources of heat and ignition. Full and empty cylinders should be segregated. Do not allow storage temperature to exceed 50°C (122°F). Smoking should be prohibited within storage areas or while handling product or containers. Display "No Smoking or Open Flames" signs in the storage areas. Return empty containers in a timely manner. Keep away from heat.

Technical measures/Precautions

Containers should be segregated in the storage area according to the various categories (e.g. flammable, toxic, etc.) and in accordance with local regulations. Keep away from combustible material. All electrical equipment in the storage areas should be compatible with flammable materials stored. Containers containing flammable gases should be stored away from other combustible materials. Where necessary containers containing oxygen and oxidants should be separated from flammable gases by a fire resistant partition.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures

Provide natural or explosion-proof ventilation that is adequate to ensure flammable gas does not reach its lower explosive limit.

Personal protective equipment

Respiratory protection : Use Air Purifying Respirator with organic vapor cartridges when exposure is likely. High concentrations that can cause rapid suffocation are within the flammable range and should not be entered. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

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- Hand protection : Wear work gloves when handling gas containers.
Standard EN 388 - Protective gloves against mechanical risk.
- Eye protection : Safety glasses recommended when handling cylinders.
Standard EN 166 - Personal eye-protection.
- Skin and body protection : Consider the use of flame resistant anti-static safety clothing.
Standard EN ISO 14116 - Limited flame spread materials.
Standard EN ISO 1149-5 - Protective clothing: Electrostatic properties.
Safety shoes are recommended when handling cylinders.
Standard EN ISO 20345 - Personal protective equipment - Safety footwear.
- Special instructions for protection and hygiene : Ensure adequate ventilation, especially in confined areas.

Exposure limit(s)

o-xylene	Time Weighted Average (TWA) EH40 WEL	50 ppm	220 mg/m ³
o-xylene	Short Term Exposure Limit (STEL) EH40 WEL	100 ppm	441 mg/m ³
o-xylene	Time Weighted Average (TWA) EU SCOELS	50 ppm	221 mg/m ³
o-xylene	Short Term Exposure Limit (STEL) EU SCOELS	100 ppm	442 mg/m ³
Ethylbenzene	Time Weighted Average (TWA) EH40 WEL	100 ppm	441 mg/m ³
Ethylbenzene	Short Term Exposure Limit (STEL) EH40 WEL	125 ppm	552 mg/m ³
Ethylbenzene	Time Weighted Average (TWA) EU SCOELS	100 ppm	442 mg/m ³
Ethylbenzene	Short Term Exposure Limit (STEL) EU SCOELS	200 ppm	884 mg/m ³
Benzene	Time Weighted Average (TWA) EH40 WEL	1 ppm	3.25 mg/m ³
Benzene	Time Weighted Average (TWA) EU SCOELS	1.0 ppm	3.25 mg/m ³
p-Xylene	Time Weighted Average (TWA) EH40 WEL	50 ppm	220 mg/m ³
p-Xylene	Short Term Exposure Limit (STEL) EH40 WEL	100 ppm	441 mg/m ³
p-Xylene	Time Weighted Average (TWA) EU SCOELS	50 ppm	221 mg/m ³
p-Xylene	Short Term Exposure Limit (STEL) EU SCOELS	100 ppm	442 mg/m ³
m-xylene	Time Weighted Average (TWA) EH40 WEL	50 ppm	220 mg/m ³
m-xylene	Short Term Exposure Limit (STEL) EH40 WEL	100 ppm	441 mg/m ³
m-xylene	Time Weighted Average (TWA) EU SCOELS	50 ppm	221 mg/m ³
m-xylene	Short Term Exposure Limit (STEL) EU SCOELS	100 ppm	442 mg/m ³
n-hexane	Time Weighted Average (TWA) EH40 WEL	20 ppm	72 mg/m ³
n-hexane	Time Weighted Average (TWA) EU SCOELS	20 ppm	72 mg/m ³
Toluene	Time Weighted Average (TWA) EH40 WEL	50 ppm	191 mg/m ³
Toluene	Short Term Exposure Limit (STEL) EH40 WEL	100 ppm	384 mg/m ³
Toluene	Time Weighted Average (TWA) EU SCOELS	50 ppm	192 mg/m ³
Toluene	Short Term Exposure Limit (STEL) EU SCOELS	100 ppm	384 mg/m ³

9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : Chemical under pressure. Colorless.
- Odor : Not determined.
- Odor : Mixture contains one or more component(s) which have the following odor:
Aromatic. Sweet.
- Odor threshold : No data available.

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pH	: No data available.
Melting point/range	: No data available.
Boiling point/range	: No data available.
Flash point	: No data available.
Evaporation rate	: No data available.
Flammability (solid, gas)	: Not applicable.
Upper/lower explosion/flammability limit	: Not applicable.
Vapor pressure	: Not determined.
Water solubility	: No data available.
Relative vapor density	: Not applicable.
Relative density	: 3.1057 (air = 1) Heavier than air.
Partition coefficient: n-octanol/water [log Kow]	: No data available.
Auto-ignition temperature	: No data available.
Decomposition temperature	: No data available.
Viscosity	: No data available.
Molecular Weight	: 89.94 g/mol

10. STABILITY AND REACTIVITY

Chemical Stability	: Stable under normal conditions.
Conditions to avoid	: Heat, flames and sparks. May form explosive mixtures with air and oxidizing agents.
Reactivity/Incompatible Materials	: Oxygen. Oxidizing agents.
Hazardous decomposition products	: Incomplete combustion may form carbon monoxide.

11. TOXICOLOGICAL INFORMATION

Likely routes of exposure

Effects on Eye : May cause eye irritation.

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- Effects on Skin : May cause skin irritation.
- Inhalation Effects : In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of co-ordination.
- Ingestion Effects : Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Aspiration hazard if swallowed - can enter lungs and cause damage. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.
- Symptoms : No data available.

Acute toxicity

Acute Oral Toxicity : No data is available on the product itself.

Acute Oral Toxicity - Components

Ethylbenzene	LD50 : 3,500 mg/kg	Species : Rat.
n-hexane	LD50 : 25,000 mg/kg	Species : Rat.
Toluene	LD50 : 636 mg/kg	Species : Rat.

Inhalation : No data is available on the product itself.

Inhalation - Components

o-xylene	LC50 (4 h) : 27.1 mg/l	Species : Rat.
Ethylbenzene	LC50 (1 h) : 1.8160 mg/l	Species : Rat.
Benzene	LC50 (4 h) : 43.7 mg/l	Species : Rat.
p-Xylene	LC50 (4 h) : 27.1 mg/l	Species : Rat.
m-xylene	LC50 (4 h) : 27.1 mg/l	Species : Rat.
n-hexane	LC50 (4 h) : 169.2 mg/l	Species : Rat.
Toluene	LC50 (4 h) : > 20 mg/l	Species : Rat.

Acute Dermal Toxicity : No data is available on the product itself.

Acute Dermal Toxicity - Components

n-hexane	LD50 : 3,000 mg/kg	Species : Rabbit.
Toluene	LD50 : 12,200 mg/kg	Species : Rabbit.

Serious eye damage/eye irritation : No data available.

Sensitization. : No data available.

Chronic toxicity or effects from long term exposures

Carcinogenicity : No data available.

Reproductive toxicity : No data is available on the product itself.

Germ cell mutagenicity : No data is available on the product itself.

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- Specific target organ systemic toxicity (single exposure) : Central nervous system., Eyes., Kidney., Liver., Respiratory system., Skin., Reproductive hazard., Bladder
- Specific target organ systemic toxicity (repeated exposure) : Exposure to toluene has been shown to cause adverse effects in the liver, central nervous system, kidney, bladder and reproductive system.
- Aspiration hazard : May be fatal if swallowed and enters airways.

Other Health Hazard

- | | | |
|--------------|----------|--|
| Benzene | IARC | : 1 - Carcinogenic to humans. |
| | ACGIH | : Group A1 - Confirmed human carcinogen. |
| | NTP CARC | : Known To Be Human Carcinogen. |
| Ethylbenzene | IARC | : 2B - Possibly carcinogenic to humans. |
| | ACGIH | : Group A3 - Confirmed animal carcinogen with unknown relevance to humans. |

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

- Aquatic toxicity : No data is available on the product itself.
- | | | |
|---|-------------------------|---|
| Toxicity to fish - Components
n-hexane | LC50 (96 h) : 2.5 mg/l | Species : Fathead minnow (Pimephales promelas). |
| Toluene | EC50 (96 h) : 5.5 mg/l | Species : Fish. |
| Toxicity to daphnia - Components
Toluene | EC50 (48 h) : 11.5 mg/l | Species : Daphnia magna. |
- Toxicity to other organisms : No data available.

Persistence and degradability

- Biodegradability : No data is available on the product itself.
- Mobility : Because of its high volatility, the product is unlikely to cause ground pollution.
- Bioaccumulation : Refer to Section 9 "Partition Coefficient (n-octanol/water)".
- | | |
|--|---|
| Bioaccumulation - Components
n-hexane | Bioconcentration in aquatic organisms is low. |
| n-hexane | Moderate bioaccumulation potential. |
| Toluene | Low bioaccumulation potential. |

13. DISPOSAL CONSIDERATIONS

- Waste from residues / unused products : Contact supplier if guidance is required. Return unused product in original cylinder to supplier. Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor. Refer to the EIGA code of practice Doc. 30

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"Disposal of Gases", downloadable at <http://www.eiga.org> for more guidance on suitable disposal methods. List of hazardous waste codes: 16 05 04*: gases in pressure containers (including halons) containing hazardous substances.

Contaminated packaging : Return cylinder to supplier.

14. TRANSPORT INFORMATION

ADR

UN/ID No. : UN3501
Proper shipping name : CHEMICAL UNDER PRESSURE, FLAMMABLE, N.O.S., (Toluene, Hexane)
Class or Division : 2
Tunnel Code : (B/D)
Label(s) : 2.1
ADR/RID Hazard ID no. : 23
Marine Pollutant : Yes

** NOTE: This product contains a substance that: 1) is regulated as a Marine Pollutant, or 2) meets the definition of toxic to the aquatic environment.

IATA

UN/ID No. : UN3501
Proper shipping name : Chemical under pressure, flammable, n.o.s., (Toluene, Hexane)
Class or Division : 2.1
Label(s) : 2.1
RQ Substance : Yes
Marine Pollutant : Yes

* NOTE: This product contains a USDOT Hazardous Substance and will meet the Reportable Quantity definition when shipped to, from, or within the United States, in the amount specified in 49CFR 172.101 Appendix A.

** NOTE: This product contains a substance that: 1) is regulated as a Marine Pollutant, or 2) meets the definition of toxic to the aquatic environment.

IMDG

UN/ID No. : UN3501
Proper shipping name : CHEMICAL UNDER PRESSURE, FLAMMABLE, N.O.S., (Toluene, Hexane)
Class or Division : 2.1
Label(s) : 2.1
RQ Substance : Yes
Marine Pollutant : Yes
Segregation Group : None

* NOTE: This product contains a USDOT Hazardous Substance and will meet the Reportable Quantity definition when shipped to, from, or within the United States, in the amount specified in 49CFR 172.101 Appendix A.

** NOTE: This product contains a substance that: 1) is regulated as a Marine Pollutant, or 2) meets the definition of toxic to the aquatic environment.

RID

UN/ID No. : UN3501
Proper shipping name : CHEMICAL UNDER PRESSURE, FLAMMABLE, N.O.S., (Toluene, Hexane)
Class or Division : 2
Label(s) : 2.1

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Marine Pollutant : Yes

** NOTE: This product contains a substance that: 1) is regulated as a Marine Pollutant, or 2) meets the definition of toxic to the aquatic environment.

Further Information

Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. The transportation information is not intended to convey all specific regulatory data relating to this material. For complete transportation information, contact customer service.

15. REGULATORY INFORMATION

Workplace Safety and Health Act & Workplace Safety and Health (General Provisions) Regulations

Workplace Health and Safety Act , SS586 Labeling.

Flammable Materials Regulation Licensable Chemicals (Singapore Civil Defense Force).

Restricted to professional users.

Country	Regulatory list	Notification
USA	TSCA	Included on Inventory.
EU	EINECS	Included on Inventory.
Canada	DSL	Included on Inventory.
Australia	AICS	Included on Inventory.
Japan	ENCS	Included on Inventory.
South Korea	ECL	Included on Inventory.
China	SEPA	Included on Inventory.
Philippines	PICCS	Included on Inventory.

16. OTHER INFORMATION

Ensure all national/local regulations are observed.

Prepared by : Air Products and Chemicals, Inc. Global EH&S Department

For additional information, please visit our Product Stewardship web site at
<http://www.airproducts.com/productstewardship/>