

Toluene**ALM/SDS/240**

2.1 : Flammable gases

Danger**SECTION 1. Identification of the hazardous chemical and of the supplier****1.1. Product identifier**

Trade name : Toluene

1.2. Other means of identification

SDS Nr : ALM/SDS/240

1.3. Recommended use of the chemical and restrictions on useRelevant identified uses : Industrial and professional. Perform risk assessment prior to use.
Test gas/Calibration gas. Laboratory use. Contact supplier for more information on uses.**1.4. Details of Principal Supplier**Company identification : AIR LIQUIDE MALAYSIA SDN. BHD.
Lot P.T. 2317, No 21, Jalan PTB 1,
Tangga Batu Industrial Estate,
76400 Melaka MALAYSIA**1.5. Emergency phone number**

Emergency phone number : 06-3513512

SECTION 2. Hazard identification**2.1. Classification of the substance or mixture and any nation or regional information****Hazard Class and Category Code Regulation EC 1272/2008 (CLP)**

- Health hazards : Skin irritation - Category 2 - Warning - (CLP : Skin Irrit. 2) - H315
Reproductive toxicity - Unborn Child - Category 2 - Warning - (CLP : Repr. 2) - H361d
Specific Target Organ Toxicity - Single exposure - Respiratory tract irritation - Category 3 -
Warning - (CLP : STOT SE 3) - H335
Specific Target Organ Toxicity - Single exposure - Narcotic effects - Category 3 - Warning - (
CLP : STOT SE 3) - H336
Specific Target Organ Toxicity - Repeated exposure - Category 2 - Warning - (CLP : STOT
RE 2) - H373
- Physical hazards : Flammable gases - Category 1 - Danger - (CLP : Flam. Gas 1) - H220
Gases under pressure - Liquefied gas - Warning - (CLP : Press. Gas) - H280

Classification EC 67/548 or EC 1999/45: F+; R12
Repr. Cat. 3; R63
Xn; 48/20
R67
Xi; R38**2.2. Label elements**

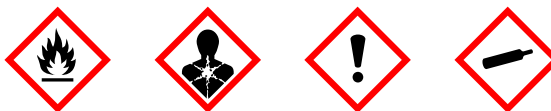
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SECTION 2. Hazard identification (continued)

Labelling Regulation EC 1272/2008 (CLP)

• Hazard pictograms



• Hazard pictograms code

: GHS02 - GHS08 - GHS07 - GHS04

• Signal word

: Danger

• Hazard statements

: H220 - Extremely flammable gas.
 H280 - Contains gas under pressure; may explode if heated.
 H361U - Suspected of damaging the unborn child.
 H315 - Causes skin irritation.
 H335 - May cause respiratory irritation.
 H336 - May cause drowsiness or dizziness.
 H373 - May cause damage to organs through prolonged or repeated exposure.

• Precautionary statements

2.3. Other hazards

: None.

SECTION 3. Composition and Information of the ingredients of the hazardous chemical

3.1. Substance / 3.2. Mixture

Mixture.

Substance name	Contents	CAS No EC No Index No Registration No	Classification(DSD)	Classification(CLP)
Toluene	: 100 %	108-88-3 203-625-9 601-021-00-3 ----		Flam. Liq. 2 (H225) Asp. Tox 1 (H304) Repr. 2 (H361U) Skin Irrit. 2 (H315) STOT SE 3 (H335) STOT RE 2 (H373) STOT RE 3 (H336)

Contains no other components or impurities which will influence the classification of the product.

* 1: Listed in Annex IV / V REACH, exempted from registration.

* 2: Registration deadline not expired.

* 3: Registration not required: Substance manufactured or imported < 1t/y.

Full text of R-phrases see section 16. Full text of H-statements see section 16.

SECTION 4. First-aid measures

4.1. Description of first aid measures

- Inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
- Skin contact : Remove contaminated clothing. Drench affected area with water for at least 15 minutes.
- Eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes.
- Ingestion : Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects, both acute and delayed

: In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation.
 May cause irritation to skin.
 Irritation to the respiratory tract.
 In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of co-ordination.
 Refer to section 11.

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SECTION 4. First-aid measures (continued)

4.3. Indication of immediate medical attention and special treatment needed

- : Obtain medical assistance.
- Treat with corticosteroid spray as soon as possible after inhalation.

SECTION 5. Fire-fighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Water spray or fog.
- Unsuitable extinguishing media : Carbon dioxide.
Do not use water jet to extinguish.

5.2. Special hazards arising from the chemical

- Specific hazards : Exposure to fire may cause containers to rupture/explode.
- Hazardous combustion products : None.

5.3. Special protective equipment and precautions for fire-fighters

- Specific methods : Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.
If possible, stop flow of product.
Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.
Use water spray or fog to knock down fire fumes if possible.
- Special protective equipment for fire fighters : Wear gas tight chemically protective clothing in combination with self contained breathing apparatus.
EN 943-2: Protective clothing against liquid and gaseous chemicals, aerosols and solid particles. Gas-tight chemical protective suits for emergency teams.
In confined space use self-contained breathing apparatus.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.

SECTION 6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- : Evacuate area.
Monitor concentration of released product.
Ensure adequate air ventilation.
Try to stop release.
Eliminate ignition sources.
Consider the risk of potentially explosive atmospheres.
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.
Use chemically protective clothing.

6.2. Environmental precautions

- : Reduce vapour with fog or fine water spray.
Try to stop release.

6.3. Methods and material for containment and cleaning

- : Ventilate area.
Hose down area with water.
Wash contaminated equipment or sites of leaks with copious quantities of water.

6.4. Reference to other sections

- : See also sections 8 and 13.

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SECTION 7. Handling and storage

7.1. Precautions for safe handling

Safe use of the product

: Avoid exposure, obtain special instructions before use.
Take precautionary measures against static discharge.
Purge air from system before introducing gas.
Keep away from ignition sources (including static discharges).
Do not smoke while handling product.
Assess the risk of potentially explosive atmospheres and the need for explosion-proof equipment.
Consider the use of only non-sparking tools.
Protect eyes, face and skin from liquid splashes.
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
Only experienced and properly instructed persons should handle gases under pressure.
The substance must be handled in accordance with good industrial hygiene and safety procedures.
Ensure the complete gas system was (or is regularly) checked for leaks before use.
Consider pressure relief device(s) in gas installations.

Safe handling of the gas receptacle

: Refer to supplier's container handling instructions.
Do not allow backfeed into the container.
Protect cylinders from physical damage; do not drag, roll, slide or drop.
When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders.
Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use.
If user experiences any difficulty operating cylinder valve discontinue use and contact supplier.
Never attempt to repair or modify container valves or safety relief devices.
Damaged valves should be reported immediately to the supplier.
Keep container valve outlets clean and free from contaminants particularly oil and water.
Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
Close container valve after each use and when empty, even if still connected to equipment.
Never attempt to transfer gases from one cylinder/container to another.
Never use direct flame or electrical heating devices to raise the pressure of a container.
Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.
Containers should be stored in the vertical position and properly secured to prevent toppling.

7.2. Conditions for safe storage, including any incompatibilities

: Segregate from oxidant gases and other oxidants in store.
All electrical equipment in the storage areas should be compatible with the risk of a potentially explosive atmosphere.
Keep container below 50°C in a well ventilated place.
Observe all regulations and local requirements regarding storage of containers.
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.
Stored containers should be periodically checked for general condition and leakage.
Container valve guards or caps should be in place.
Store containers in location free from fire risk and away from sources of heat and ignition.
Keep away from combustible materials.

7.3. Specific end use(s)

: None.

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SECTION 8. Exposure controls and personal protection

8.1. Control parameters

- Permissible exposure limit** : Data is not available.
- Biological limit values** : Data is not available.
- DMEL: Derived minimum effect level (Workers)** : No data available.

8.2. Appropriate engineering controls

- Appropriate engineering controls** : Avoid oxygen rich (>23,5%) atmospheres.
 Gas detectors should be used when oxidising gases may be released.
 Systems under pressure should be regularly checked for leakages.
 Consider work permit system e.g. for maintenance activities.
 Provide adequate general and local exhaust ventilation.

8.3. Individual protection measures

- **Eye/face protection** : Wear safety glasses with side shields.
 Wear goggles and a face shield when transfilling or breaking transfer connections.
 Standard EN 166 - Personal eye-protection.

- **Skin protection**
 - **Hand protection** : Consult glove manufacturer's product information on material suitability and material thickness.
 Standard EN 374 - Protective gloves against chemicals.
 Wear chemically resistant protective gloves.
 The breakthrough time of the selected gloves must be greater than the intended use period.
 Wear working gloves when handling gas containers.
 Standard EN 388 - Protective gloves against mechanical risk.

 - **Other** : 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.
 Wear safety shoes while handling containers.
 Standard EN ISO 20345 - Personal protective equipment - Safety footwear.
 Keep suitable chemically resistant protective clothing readily available for emergency use.
 Standard EN943-1 - Full protective suits against liquid, solid and gaseous chemicals.

- **Respiratory protection** : Gas filters may be used if all surrounding conditions e.g. type and concentration of the contaminant(s) and duration of use are known.
 Use gas filters and full face mask, where exposure limits may be exceeded for a short-term period, e.g. connecting or disconnecting containers.
 Consult respiratory device supplier's product information for the selection of the appropriate device.
 Gas filters do not protect against oxygen deficiency.
 Standard EN 14387 - Gas filter(s), combined filter(s) and full face mask - EN 136.
 Keep self contained breathing apparatus readily available for emergency use.
 Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
 Self contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation systems.

- **Thermal hazards** : Wear cold insulating gloves when transfilling or breaking transfer connections.
 Standard EN 511 - Cold insulating gloves.

- Individual protection measures** : A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk.
 The following recommendations should be considered:
 PPE compliant to the recommended EN/ISO standards should be selected.
 Protect eyes, face and skin from liquid splashes.

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SECTION 9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	
Physical state at 20°C / 101.3kPa	: Gas.
Colour	: Colourless.
Odour	: Odourless. No odour warning properties.
Odour threshold	: Odour threshold is subjective and inadequate to warn for overexposure.
pH value	: Not applicable for gas-mixtures.
Molar mass [g/mol]	: Not applicable for gas-mixtures.
Melting point [°C]	: Not applicable for gas-mixtures.
Boiling point [°C]	: Not applicable for gas-mixtures.
Flash point [°C]	: Not applicable for gas-mixtures.
Evaporation rate (ether=1)	: Not applicable for gas-mixtures.
Flammability range [vol% in air]	: Flammability range not available.
Vapour pressure [20°C]	: Not applicable.
Relative density, gas (air=1)	: Heavier than air.
Solubility in water [mg/l]	: No reliable data available.
Partition coefficient n-octanol/water [log Kow]	: Not applicable for gas-mixtures.
Decomposition Temperature [°C]	: Data is not available.
Viscosity at 20°C [mPa.s]	: Not applicable.
Explosive Properties	: Not applicable.
Oxidising Properties	: None.

9.2. Other information

Other data	: Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.
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SECTION 10. Stability and reactivity

10.1. Reactivity

: No reactivity hazard other than the effects described in sub-sections below.

10.2. Chemical stability

: Stable under normal conditions.

10.3. Possibility of hazardous reactions

: May react violently with oxidants.
Can form explosive mixture with air.

10.4. Conditions to avoid

: Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

10.5. Incompatible materials

: None.

10.6. Hazardous decomposition products

: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

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SECTION 11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity	: No known toxicological effects from this product.
Rat inhalation LC50 [ppm/4h]	: No data available.
Skin corrosion/irritation	: Irritation to skin.
Serious eye damage/irritation	: No known effects from this product.
Respiratory or skin sensitisation	: No known effects from this product.
Carcinogenicity	: No known effects from this product.
Germ cell mutagenicity	: No known effects from this product.
Toxic for reproduction : Fertility	: No known effects from this product.
Toxic for reproduction : unborn child	: No known effects from this product.
STOT-single exposure	: Irritation to the respiratory tract. In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of co-ordination.
STOT-repeated exposure	: May cause damage to organs through prolonged or repeated exposure.
Aspiration hazard	: Not applicable for gases and gas-mixtures.

11.2. Information on possible routes of exposure

Information on possible routes of exposure	: Data is not available.
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11.3. Early onset symptoms related to exposure

Early onset symptoms related to exposure	: Data is not available.
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11.4. Delayed and immediate effects from exposure

Delayed and immediate effects from exposure	: Data is not available.
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11.5. Numerical measures of toxicity

Numerical measures of toxicity	: Data is not available.
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SECTION 12. Ecological information

12.1. Ecotoxicity

	: Classification criteria are not met.
EC50 48h - Daphnia magna [mg/l]	: No data available.
EC50 72h Algae [mg/l]	: No data available.
LC50-96 h - fish [mg/l]	: No data available.

12.2. Persistence and degradability

: No data available.

12.3. Bioaccumulative potential

: No data available.

12.4. Mobility in soil

: No data available.

12.5. Results of PBT and vPvB assessment

: No data available.

12.6. Other adverse effects

	: May cause pH changes in aqueous ecological systems.
Effect on ozone layer	: None.
Effect on the global warming	: No known ecological damage caused by this product.

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SECTION 12. Ecological information (continued)

SECTION 13. Disposal information

13.1 Waste treatment methods

: Avoid discharge to atmosphere.
Do not discharge into any place where its accumulation could be dangerous.
Ensure that the emission levels from local regulations or operating permits are not exceeded.

Refer to the EIGA code of practice Doc.30 "Disposal of Gases", downloadable at <http://www.eiga.org> for more guidance on suitable disposal methods.
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.
Contact supplier if guidance is required.

List of hazardous wastes : 16 05 04: Gases in pressure containers (including halons) containing dangerous substances.

Additional information

: None.

SECTION 14. Transportation information

UN number : 3161

Labelling ADR, IMDG, IATA



: 2.1 : Flammable gases

Land transport (ADR/RID)

H.I. nr : 23

UN proper shipping name : LIQUEFIED GAS, FLAMMABLE, N.O.S. (Toluene)

Transport hazard class(es) : 2

Classification code : 2 F

Packing Instruction(s) : P200

Tunnel Restriction : B/D Tank carriage: Passage forbidden through tunnels of category B, C, D and E; Other carriage: Passage forbidden through tunnels of category D and E

Environmental hazards : None.

Sea transport (IMDG)

Proper shipping name : LIQUEFIED GAS, FLAMMABLE, N.O.S. (Toluene)

Class : 2.1

Emergency Schedule (EmS) - Fire : F-D

Emergency Schedule (EmS) - Spillage : S-U

Packing instruction : P200

IMDG-Marine pollutant : No

Air transport (ICAO-TI / IATA-DGR)

Proper shipping name (IATA) : LIQUEFIED GAS, FLAMMABLE, N.O.S. (Toluene)

Class : 2.1

Cargo Aircraft only : Allowed.

Packing instruction - Cargo Aircraft only : 200

Special precautions for user

: 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

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SECTION 14. Transportation information (continued)

- event of an accident or an emergency.
 Before transporting product containers:
- Ensure there is adequate ventilation.
 - Ensure that containers are firmly secured.
 - Ensure cylinder valve is closed and not leaking.
 - Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
 - Ensure valve protection device (where provided) is correctly fitted.

SECTION 15. Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU legislation

Seveso directive 96/82/EC : Covered.

National legislation

National legislation : Ensure all national/local regulations are observed.

15.2. Chemical safety assessment

: A CSA does not need to be carried out for this product.

SECTION 16. Other information

- Indication of changes** : Revised safety data sheet in accordance with commission OSHR 2013 (CLASS)
- Training advice** : Ensure operators understand the flammability hazard.
 Users of breathing apparatus must be trained.
 Receptacle under pressure.
- List of full text of R-phrases in section 3.** : R11 : Highly flammable.
 R38 : Irritating to skin.
 R48/20 : Harmful : danger of serious damage to health by prolonged exposure through inhalation.
 R63 : Possible risk of harm to the unborn child.
 R65 : Harmful : may cause lung damage if swallowed.
 R67 : Vapours may cause drowsiness and dizziness.
- List of full text of H-statements in section 3.** : H225 - Highly flammable liquid and vapour.
 H304 - May be fatal if swallowed and enters airways.
 H315 - Causes skin irritation.
 H335 - May cause respiratory irritation.
 H336 - May cause drowsiness or dizziness.
 H361U - Suspected of damaging the unborn child.
 H373 - May cause damage to organs through prolonged or repeated exposure.
- Key literature references and sources for data used to compile the SDS** : Classification in accordance with calculation methods of regulation (EC) 1272/2008 CLP / (EC) 1999/45 DPD.
 This Safety Data Sheet has been established in accordance with the applicable European Directives and applies to all countries that have translated the Directives in their national law.
- Date of revision of the SDS** : Please refer to Header.
- DISCLAIMER OF LIABILITY** : Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.
 Details given in this document are believed to be correct at the time of going to press. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.
- Key or legend to the abbreviations and acronyms used in the SDS** : STOT - specific target organ toxicity
- Date of preparation of the SDS** : Please refer to Header

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