Elite Advanced Materials Sdn Bhd

SAFETY DATA SHEET

According to Regulation (EC) No453/2010

SDS –TOL-0001
Version 1.5
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www.eamaterials.com

Section 1: IDENTIFICATION OF SUBSTANCE/ MIXTURE AND OF THE COMPANY

1.1 Product identifier

Product name	:	**Toluene**
Included product code	:	TOL010-2.5, TOL010-4.0, TOL012-2.5, TOL012-4.0, TOL008-25M.

1.2 Relevant identified uses of the substance or mixture

Identified uses	:	Laboratory chemicals, Manufacture of substances
Uses advised against	:	Not applicable

1.3 Details of the supplier of the safety datasheet

Company	:	Elite Advanced Materials Sdn Bhd No 1, Jalan KPK1/2, Kawasan Perindustrian Kundang, 48020 Rawang, Selangor, Malaysia
E-mail address	:	enquiry@eamaterials.com

1.4 Emergency telephone number

Emergency	:	+60 3-60343766 (Local business hours only)

Section 2: HAZARDS INDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Flammable liquids	Category 2
Skin corrosion/irritation	Category 2
Reproductive toxicity	Category 2
Specific target organ toxicity (single exposure) Target Organs - Central nervous system (CNS).	Category 3
Specific target organ toxicity – repeated exposure	Category 2
Aspiration hazard	Category 1

2.2 Label elements

Labeling in compliance to Regulation (EC) No. 1272/2008 [CLP/GHS]

Hazard pictograms

GHS02

GHS07

GHS08

Signal word

Danger

Hazard statement

H225	Highly flammable liquid and vapour
H304	May be fatal if swallowed and enter airways
H315	Causes skin irritation
H336	May cause drowsiness or dizziness
H361d	Suspected of damaging the unborn Child
H373	May cause damage to organs (Nervous System) through prolonged or repeated exposure if inhaled

Precautionary statements

P210	Keep away from heat/ sparks/open flames/hot surfaces. — No smoking
P240	Ground/bond container and receiving equipment

Response

P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P314	Get medical advice/attention if you feel unwell

Storage

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.

2.3 Other hazards

No data available.

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance

Synonyms	:	Methylbenzene, Methyl benzol, Toluol, Toluole, Phenylmethane
Formula	:	C_7H_8
Molecular Weight	:	92.14 g/mol
CAS-No.	:	108-88-3

Hazardous components according to Regulation (EC) No 1272/2008

Component	Identity	Classification Code	H-Code	Concentration (by wt)
Toluene	CAS-No.: 108-88-3	Flam. Liq. 2 Asp. Tox. 1 Skin. Irrit. 2 Repr.2 STOT SE 3 STOT SE 2	H225 H304 H315 H361d H336 H373	<=100 %

3.2 Mixture

Not applicable

Section 4: FIRST AID MEASURES

4.1 Description of First Aid measures

General information

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

If breathed in, move person into fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Remove contaminated clothing and wash the skin thoroughly with soap and water or a recognized cleaner for at least 15 minutes. Consult a doctor if skin irritation persists.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and delayed symptoms and effects

Irritant effects, respiratory paralysis, respiratory arrest, drowsiness, dizziness, unconsciousness, inebriation, nausea, vomiting, circulatory collapse, headache, convulsions, CNS disorders, death.

4.3 Indication of any immediate medical attention and special treatment

No data available.

Section 5: FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Foam, Carbon dioxide (CO2), Dry powder.

Unsuitable extinguishing media

None.

5.2 Special hazards arising from the substance or mixture

Combustible.
Pay attention to flashback.
Vapours are heavier than air and may spread along floors.
Development of hazardous combustion gases or vapours possible in the event of fire.
Form explosive mixtures with air at ambient temperatures.

5.3 Advice for fire-fighters

Special protective equipment for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Furtherinformation

Use water spray to cool unopened containers.

Section 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and material for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-

brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections

For disposal see Section 13.

Section 7: HANDLING AND STORAGE

7.1 Precaution for safe handling

Advice on safe handling
Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols. Observe label precautions.

Advice on protection against fire and explosion
Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.
Recommended storage temperature see product label.

7.3 Specific end use

No further relevant information available.

Section 8 : EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Component	ACGIH TLV (8 hr)	CAL/OSHA PEL (8 hr)	NIOSH REL (Up to 10 hr)
Toluene	TWA: 20 ppm	TWA: 10 ppm STEL: 150 ppm Ceiling: 500 ppm	TWA: 100 ppm STEL: 150 ppm

(OSHA)

8.2 Exposure control

Personal protection measures, such as personal protective equipment

Never eat, drink or smoke during handling the chemical. Ensure that there is adequate ventilation, especially in confined areas.

Eye/ face protection

Protective eyeglasses or chemical safety goggles is required during handling. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Discard of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Full contact*
Material: Viton (R)
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)

Splash contact*
Material: Viton (R)
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)

(Sigma, 2015)

Body protection

Complete suit protecting against chemicals, Flame retardant antistatic protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Section 9 : PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	:	Liquid
Color	:	Colorless
Odor	:	Characteristic
Ordor threshold	:	0.2-68.6 ppm
pH - value	:	No data available
Melting point / Range	:	-95 °C
Boiling point / Range	:	110.6 °C at 1013 hPa
Flash point	:	4 °C [closed cup]
Evaporation rate	:	No data available
Lower explosion limit – LEL	:	1.1 % (V)
Upper explosion limit - UEL	:	7.1 % (V)
Vapour pressure	:	29 hPa at 20°C
Vapor density (air = 1)	:	3.18
Density	:	0.87 g/cm^3 at 20 °C
Bulk density	:	No data available
Solubility(ies)	:	No data available
Water solubility	:	0.52 g/l at 20 °C
Partition coefficient: n-octanol/water	:	log Pow: 2.65
Auto-ignition temperature	:	No data available
Decomposition temperature	:	Distillable in an undecomposed state at normal pressure
Viscosity	:	0.6 mPa.s at 20°C
Explosive properties	:	Not determined

Oxidising properties : Not determined

(Merck, 2018; Ver 2.0)

9.2 Other information

Ignition temperature	:	535 °C Method: DIN 51794
Minimum ignition energy	:	0.70 mm^2/s at 20 °C
Conductivity	:	< 0.01 µs/ cm

Section 10 : STABILITY AND REACTIVITY

10.1 Reactivity

Vapours may form explosive mixture with air

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature).

10.3 Possibility of hazardous reactions

Risk of explosion with:

Fuming sulfuric acid, nitric acid, silver, perchlorates, nitrogen dioxide, nonmetallic halides, acetic acid, halogen-halogen compounds, uranium hexafluoride, organic nitro compounds

Violent reactions possible with:

Strong acids, strong oxidising agents

Sulfur with heat.

10.4 Conditions to avoid

Heat, flames and sparks.

10.5 Incompatible materials

Rubber, various plastics.

10.6 Hazardous decomposition products

Other decomposition products - No data available

Section 11 : TOXICOLOGY INFORMATION

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral	- 5580 mg/kg bw	(Rat)
LD50 Dermal	- 12124 mg/kg bw	(Rabbit)
LC50 Inhalation	- 25.7 mg/L/4h air	(Rat)

(Merck, 2018; Ver 2.0)

Skin corrosion/irritation

Rabbit
Result: Irritating

(Merck,2018; Ver 2.0)

Serious eye damage/eye irritation

Rabbit
Result: Not irritating

(Merck,2018; Ver 2.0)

Respiratory or skin sensitisation

Guinea pig
Result: Not sensitising

(ECHA)

Germ cell mutagenicity

Genotoxicity in vivo
Chromosome aberration test
Rat
Bone marrow
Result: negative

Genotoxicity in vitro
Mammalian cell gene mutation test
Mouse lymphoma test

Result: negative

(Merck,2018; Ver 2.0)

Carcinogenicity

IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Toluene)

Reproductive toxicity

Effect of fertility
Rat
Oral route: No data available
Inhalation route: 2261 mg/m3 - No adverse effect observed
Dermal: No data available

Effect on developmental toxicity
Rat
Oral route: No data available
Inhalation route: 2261 mg/m3 - No adverse effect observed
Dermal: No data available

(ECHA)

Specific target organ toxicity – single exposure

Remarks : May cause drowsiness and dizziness.
Target organs: Central nervous system

(Merck, 2018; Ver 2.0)

Specific target organ toxicity – repeated exposure

Target Organs: Central nervous system
May cause damage to organs through prolonged or repeated exposure

(Merck,2018; Ver 2.0)

Aspiration hazard

Aspiration hazard, Aspiration may cause pulmonary oedema and pneumonitis.

(Merck,2018; Ver 2.0)

11.2 Additional Information

Systemic effects:
After absorption:
Headache, Vomiting, Nausea, Dizziness, CNS disorders, inebriation, Convulsions, Circulatory collapse, respiratory paralysis, respiratory arrest, Unconsciousness, death

(Merck,2018; Ver 2.0)

Section 12 : ECOLOGY INFORMATION

12.1 Ecotoxicity

Toxicity to fish	LC50 – Pimephales promelas (fathead minnow) – 2.5 mg/L - 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 – Daphnia magna (Water flea) – 6 mg/l – 48 h
Toxicity to algae	IC50 – Pseudokirchneriellla subcapitata (green algae) - 12 mg/L – 72 h
Toxicity to bacteria	EC50 – Photobacterium phosphoreum – 20 mg/l – 30 min

(Merck, 2018; Ver 2.0)

12.2 Persistence and degradability

Biodegradability	69-81 % - 5d – Aerobic – Readily biodegradable
Theoretical oxygen demand (ThOD)	3130 mg/g

(Merck, 2018; Ver 2.0)

12.3 Bioaccumulative potential

Partition coefficient: n-Octanol/water

Log Pow: 2.65

(Merck, 2018; Ver 2.0)

12.4 Mobility in soil

Distribution among environmental compartments
Adsorption/Soil
log Koc: 2.15

(Merck,2018; Ver 2.0)

12.5 Other adverse effects

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

12.6 Other adverse effects

Henry constant
683 Pa*m3/mol
Distribution preferentially in air.
Discharge into the environment must be avoided.

(Merck,2018; Ver 2.0).

Section 13 : DISPOSAL CONSIDERATIONS

13.1 Waste treatment method

Product

Waste material must be disposed according to national and local regulations. Keep the chemicals in its specific waste container according to the waste classification.

According to Quality Environment Regulation (Scheduled Waste) 2005, waste need to be sent to designated premise for recycle, treatment or disposal. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging

Dispose of as unused product and do not re-use empty containers. Follow label warnings even after container is emptied since it retains product residue.

Section 14 : TRANSPORT INFORMATION

14.1 UN number

ADR/RID: 1294	IMDG: 1294	IATA-DGR: 1294

14.2 UN proper shipping name

ADR/RID:	TOLUENE
IMDG:	TOLUENE
IATA-DGR:	TOLUENE

14.3 Transport hazard class(es)

ADR/RID: 3	IMDG: 3	IATA-DGR: 3

14.4 Packaging group

ADR/RID: II	IMDG: II	IATA-DGR: II

14.5 Environmental hazards

ADR/RID: no	IMDG Marine pollutant: no	IATA-DGR: no

14.6 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

No data available

14.7 Special precautions for user

No data available

Section 15 : REGULATORY INFORMATION

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

No data available

Section 16 : OTHER INFORMATION

This information is based on present level of our knowledge, however, this shall not

constitute a guarantee product features and shall not establish a legally valid contractual relationship.

Abbreviations:

ADR : European agreement concerning the international carriage of dangerous goods by road.

IMDG : International Maritime Dangerous Goods.

IATA : International Air Transport Association

ICAO : International Civil Aviation Organization

RID : Regulations concerning the International Carriage of Dangerous goods by rail.

Notice to reader

The information contained in this Safety Data Sheet is based on the present state of knowledge and current national legislation. It provides guidance on health, safety and environmental aspects of the products and should not be construed as any guarantee of technical performance or suitability for particular application.

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