Safety Data Sheet

According to Occupational Health and Safety (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Malaysia Regulation 2013

Triethanolamine 99%

Version 2.5 Release Date: 25.10.2017

SECTION 1: Identification of the hazardous chemical and of the supplier

Product name	:	Triethanolamine 99%
CAS-No.	:	102-71-6
Synonyms	:	Tri(2-Hydroxyethyl)Amine, TEA, TEA 99
Recommended use	:	Use in personal care and construction industry
Restrictions on use	:	No restriction of use

Manufacturer or supplier's details

Headquarters

Company	:	PETRONAS Chemicals Group Berhad
Address	:	Tower 2, PETRONAS Twin Towers, Kuala Lumpur City Centre, 50088 Kuala Lumpur Malaysia

Plant Site

Company	:	PETRONAS Chemicals Derivatives Sdn Bhd
Address	:	Administration Complex, Kerteh Industrial Area, KM 106 Jalan Kuala Terengganu - Kuantan, 24300 Kerteh, Kemaman, Terengganu, Malaysia
Emergency telephone number	:	(+609) 830 7555 999 (Bomba) National Poison Centre: +604-6570099 (Mon-Fri : 8.10 am - 5.10 pm) +6012-4309499 (Mon-Fri : 5.10 pm - 10.10 pm) & (Sat, Sun & Public holiday : 8.10 am - 5.10 pm)

SECTION 2: Hazards identification

Classification of the hazardous chemical

Not a hazardous substance or mixture.

Label elements

Not a hazardous substance or mixture.

Other hazards which do not result in classification

No information available.

SECTION 3: Composition and information of the ingredients of the hazardous chemical

Substance / Mixture : Substance

Hazardous components

No hazardous ingredients

SECTION 4: First aid measures

If inhaled : If unconscious, place in recovery position and seek medical

		advice. If symptoms persist, call a medical doctor. Move to fresh air.
In case of skin contact	:	If on skin, rinse well with water. If on clothes, remove clothes. If skin irritation persists, call a medical doctor.
In case of eye contact	:	In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Continue rinsing eyes during transport to hospital. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist. Immediately flush eye(s) with plenty of water.
If swallowed	:	Keep respiratory tract clear. Do NOT induce vomiting. If patient is fully conscious, give two glasses of water. Do NOT give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. Take victim immediately to hospital. If symptoms persist, call a medical doctor.
General advice	:	Move out of dangerous area. Show this safety data sheet to the doctor in attendance. Do not leave the victim unattended.
Most important symptoms and effects, both acute and delayed	:	No information available.
Notes to physician	:	If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media	:	Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.
Unsuitable extinguishing media	:	High volume water jet Do not use direct water stream. May spread fire.

Physicochemical hazards arising from the chemical

Specific hazards during firefighting	:	Do not allow run-off from fire fighting to enter drains or water courses. Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.
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.

Special protective equipment and precautions for fire-fighters

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. If protective equipment is not available or not used, fight fire from a protected location or safe distance. For protective equipment in post-fire or non-fire cleanup situations, refer to the relevant sections.
Specific extinguishing methods	:	Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. 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. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed off in accordance with local regulations.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures	:	Isolate area. Keep unnecessary and unprotected personnel from entering the area. Use personal protective equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection. Refer to Section 7, Handling, for additional precautionary measures.
Environmental precautions	:	Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	:	Small spills: Absorb with materials such as: Non-combustible material. Sand. Clay. Vermiculite. Zorb-all®. Collect in suitable and properly labeled containers. Large spills: Contain spilled material if possible. Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage

Handling

Advice on protection against fire and explosion	:	Normal measures for preventive fire protection.
Advice on safe handling	:	Avoid formation of aerosol. Do not breathe vapours/dust. Provide sufficient air exchange and/or exhaust in work rooms. To avoid spills during handling keep bottle on a metal tray. Do not get in eyes, on skin, on clothing. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Do not add nitrites or other nitrosating agents. Suspected cancer-causing nitrosamines could be formed. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion. Avoid contact with skin and eyes.

Storage

Conditions for safe storage	:	Keep container tightly closed in a dry and well-ventilated place. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards. Store in a dry place. Avoid freezing. Thaw and mix well before using. Store in the following material(s): Stainless steel. Do not store in: Galvanized steel. Copper. Copper alloys. Zinc.

SECTION 8: Exposure controls and personal protection

Control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Triethanolamine	102-71-6	TWA	5 mg/m3	MY PEL
		TWA	5 mg/m3	ACGIH
	Further information: Eye irritation, Skin irritation			

Individual protection measures, such as personal protective equipment

Eye/face protection	:	Eye wash fountain should be located in immediate work area. Use chemical goggles. Chemical goggles should be consistent with EN 166 or equivalent. Wear face-shield and protective suit for abnormal processing problems.
Skin protection	:	Impervious clothing. Choose body protection according to the amount and concentration of the dangerous substance at the work place. Selection of specific items such as face shield, gloves, boots, apron or full body-suit will depend on operation.
Hand protection Remarks	:	Use chemical resistant gloves classified under standard EN 374:

		Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Natural rubber ("latex"). Neoprene. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl alcohol ("PVA"). Polyvinyl chloride ("PVC" or "vinyl"). Examples of acceptable glove barrier materials include: Nitrile/butadiene rubber ("nitrile" or "NBR"). When prolonged or frequently repeated contact may occur, a glove with a protection class of 4 or higher (breakthrough time greater than 120 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 1 or higher (breakthrough time greater than 10 minutes according to EN 374) is recommended. The suitability for a specific workplace should be discussed with the producers of the protective gloves.
Respiratory protection	:	Atmospheric levels should be maintained below the exposure guideline. For most conditions, no respiratory protection should be needed; however, if material is heated or sprayed, use an approved air-purifying respirator. Use a CE approved air-purifying respirator with cartridge/filter for: Organic vapor cartridge with a particulate pre-filter, type AP2. In the case of vapour formation use a respirator with an approved filter.
Hygiene measures	:	Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating. Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines. Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

SECTION 9: Physical and chemical properties

Appearance	:	Liquid
Colour	:	Colourless
Odour	:	Ammoniacal
Odour Threshold	:	No data available
pH	:	Not applicable
Melting point/freezing point	:	21.6 °C
Boiling point/boiling range	:	335.4 °C
Flash point	:	179 °C Method: ASTM D 93, Pensky-Martens closed cup
Evaporation rate	:	No data available
Upper explosion limit	:	No data available
Lower explosion limit	:	No data available
Vapour pressure	:	< 0.01 hPa (20 °C)
Relative vapour density	:	5
Relative density	:	No data available
Density	:	No data available

Solubility(ies)		
Water solubility	:	Soluble
Partition coefficient: n-octanol/water	:	Pow: 1.00
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity, dynamic	:	404 mPa.s (30 °C)
Viscosity, kinematic	:	No data available
Molecular weight	:	149.19 g/mol

SECTION 10: Stability and reactivity

Reactivity	:	Hazardous polymerisation does not occur.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	Heat, sparks, flame and build-up of static electricity. Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems. Avoid moisture.
Incompatible materials	:	Avoid contact with: Nitrites. Strong acids. Strong oxidizers. Product may potentially react with various halogenated organic solvents, resulting in temperature and/or pressure increases. Heating above 60°C in the presence of aluminum can result in corrosion and generation of flammable hydrogen gas. Avoid unintended contact with: Halogenated hydrocarbons. Corrosive when wet.
Hazardous decomposition products	:	Fumes, smoke, carbon monoxide Decomposition products depend upon temperature, air supply and the presence of other materials.

SECTION 11: Toxicological information

Acute toxicity

Product:

Acute oral toxicity	:	LD50 (Rat): 6,400 mg/kg
Acute inhalation toxicity	:	Remarks: No data available
Acute dermal toxicity	:	LD50 (Rabbit): > 2,000 mg/kg

Skin corrosion/irritation

Product:

Species	:	Rabbit
Result	:	No skin irritation

Serious eye damage/eye irritation

Product:

Species	:	Rabbit
Result	:	No eye irritation

Respiratory or skin sensitisation

Product:

Exposure routes	:	Inhalation

Remarks	:	No data available
Exposure routes	:	Skin contact
Remarks	:	Did not cause sensitisation on laboratory animals.

Germ cell mutagenicity

Product:

Germ cell mutagenicity - Assessment	:	In vitro tests did not show mutagenic effects

Carcinogenicity

Product:

Carcinogenicity - Assessment	:	No data available

Reproductive toxicity

Product:

Reproductive toxicity - Assessment	:	No data available

STOT - single exposure

Product:

Remarks	:	No data available

STOT - repeated exposure

Product:

Remarks	:	No data available

Aspiration toxicity

Product:

Statement on Aspiration Tox.	:	No data available

SECTION 12: Ecological information

Ecotoxicity

Product:

Toxicity to fish	:	LC50 (Pimephales promelas (fathead minnow)): 11,800 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Ceriodaphnia dubia (Water flea)): 609.88 mg/l Exposure time: 48 h
Toxicity to algae	:	ErC50 (Desmodesmus subspicatus (green algae)): 216 mg/l Exposure time: 72 h
Toxicity to fish (Chronic toxicity)	:	Remarks: No data available
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 16 mg/l Exposure time: 21 d
Toxicity to microorganisms	:	IC50 (Activated sludge): > 1,000 mg/l Exposure time: 3 h

Persistence and degradability

Product:

Biodegradability	:	Result: Readily biodegradable

Bioaccumulative potential

Product:

Bioaccumulation	:	Bioconcentration factor (BCF): < 3.9

Mobility in soil

Product:

Mobility	:	Medium: Soil Remarks: Very high mobility.

Other adverse effects

Product:

Additional ecological information	:	No data available

SECTION 13: Disposal information

Disposal methods

Waste from residues	:	Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. For proper disposal of used material, an assessment must be completed to determine the proper and permissible waste management options permissible under applicable rules, regulations and/or laws governing your location. It may be feasible to flush a small spill of ethanolamines to a sanitary sewer, with large amounts of water. However, a large spill might be detrimental to aquatic life. If spilled material cannot be collected, it may be possible to neutralize with dilute hydrochloric acid and then, dispose of the resulting salt in accordance with national and local regulations. Can be landfilled after concentration, when in compliance with local regulations.
Contaminated packaging	:	Empty containers can only be disposed of when the remaining waste products adhering to the container walls have been removed. Hazard warning labels should be removed from the container walls. Incinerate in a furnace where permitted under national and local regulations. Dispose in accordance with all national and local environmental regulations. Empty containers should be recycled or disposed of through an approved waste management facility. Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Disposal methods identified are for the product as sold. For proper disposal of used materials, an assessment must be completed to determine the proper and permissible waste management options permissible under applicable rules regulations and/or laws governing your location.

SECTION 14: Transport information

International Regulation

UNRTDG
Not regulated as a dangerous good

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

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

Pollution category	:	Z
Ship type	:	3

SECTION 15: Regulatory information

Safety, health, and environmental regulations specific for the hazardous chemical

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013.
Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations 2000.

The components of this product are reported in the following inventories:

CH INV	:	On the inventory, or in compliance with the inventory.
TSCA	:	On TSCA Inventory.
DSL	:	All components of this product are on the Canadian DSL
AICS	:	On the inventory, or in compliance with the inventory.
NZIoC	:	On the inventory, or in compliance with the inventory.
ENCS	:	On the inventory, or in compliance with the inventory.
ISHL	:	On the inventory, or in compliance with the inventory.
KECI	:	On the inventory, or in compliance with the inventory.
PICCS	:	On the inventory, or in compliance with the inventory.
IECSC	:	On the inventory, or in compliance with the inventory.

SECTION 16: Other information

SDS preparation date	:	25.09.2014
Revision Date	:	25.10.2017
Sources of key data used to compile the Safety Data Sheet	:	ECHA - European Chemicals Agency

Full text of other abbreviations

(Q)SAR	-	(Quantitative) Structure Activity Relationship
ACGIH	-	American Conference of Governmental Industrial Hygienists
AICS	-	Australian Inventory of Chemical Substances
ANTT	-	National Agency for Transport by Land of Brazil
ASTM	-	American Society for the Testing of Materials
bw	-	Body weight
CCHC	-	Chemicals Classification and Hazard Communication
CMR	-	Carcinogen, Mutagen or Reproductive Toxicant

CPR	-	Controlled Products Regulations
DIN	-	Standard of the German Institute for Standardisation
DSL	-	Domestic Substances List (Canada)
ECx	-	Concentration associated with x% response
ELx	-	Loading rate associated with x% response
EmS	-	Emergency Schedule
ENCS	-	Existing and New Chemical Substances (Japan)
ErCx	-	Concentration associated with x% growth rate response
ERG	-	Emergency Response Guide
GHS	-	Globally Harmonized System
GLP	-	Good Laboratory Practice
IARC	-	International Agency for Research on Cancer
IATA	-	International Air Transport Association
IBC	-	International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
IC50	-	Half maximal inhibitory concentration
ICAO	-	International Civil Aviation Organization
ICOP	-	Industry Code of Practice on Chemicals Classification and Hazard Communication
IECSC	-	Inventory of Existing Chemical Substances in China
IMDG	-	International Maritime Dangerous Goods
IMO	-	International Maritime Organization
ISHL	-	Industrial Safety and Health Law (Japan)
ISO	-	International Organisation for Standardization
KECI	-	Korea Existing Chemicals Inventory
LC50	-	Lethal Concentration to 50 % of a test population
LD50	-	Lethal Dose to 50% of a test population (Median Lethal Dose)
MARPOL	-	International Convention for the Prevention of Pollution from Ships
MY PEL	-	Malaysian Permissible Exposure Limit
n.o.s.	-	Not Otherwise Specified
Nch	-	Chilean Norm
NITE	-	National Institute of Technology and Evaluation
NO(A)EC	-	No Observed (Adverse) Effect Concentration
NO(A)EL	-	No Observed (Adverse) Effect Level
NOELR	-	No Observable Effect Loading Rate
NOM	-	Official Mexican Norm
NTP	-	National Toxicology Program
NZIoC	-	New Zealand Inventory of Chemicals
OCSPP	-	Office of Chemical Safety and Pollution Prevention
OECD	-	Organization for Economic Co-operation and Development
PBT	-	Persistent, Bioaccumulative and Toxic
PICCS	-	Philippines Inventory of Chemicals and Chemical Substances
REACH	-	Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals
SADT	-	Self-Accelerating Decomposition Temperature
SDS	-	Safety Data Sheet
STEL	-	Short Term Exposure Limit
TCSI	-	Taiwan Chemical Substance Inventory
TDG	-	Transportation of Dangerous Goods
TSCA	-	Toxic Substances Control Act (United States)
TWA	-	Time Weighted Average
UN	-	United Nations
UNRTDG	-	United Nations Recommendations on the Transport of Dangerous Goods
UVCB	-	Unknown or Variable Composition, Complex Reaction Products and Biological Materials
vPvB	-	Very Persistent and Very Bioaccumulative

WHMIS - Workplace Hazardous Materials Information System

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Product Stewardship Advisory:

PETRONAS aims to increase awareness of all the hazards associated with the storage, handling and use of its products. Thoroughly reviewing the accompanying Safety Data Sheets and disseminating the information to all dependent and interested parties is an essential part of any 'Responsible Care' programme.

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