Safety Data Sheet

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

Butyl Carbitol ™

Version 1.0 Release Date: 01.03.2018

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

Product identifier

Product name	:	Butyl Carbitol ™
Chemical name	:	2-(2-butoxyethoxy)ethanol
CAS-No.	:	112-34-5

Recommended use of the chemical and restrictions on use

Recommended use	:	Coupling agent and solvent in household and industrial cleaners and for manufacturing industrial products
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

Serious eye damage/eye irritation	:	Category 2

Label elements

Hazard pictograms :

Signal word	:	Warning
Hazard statements	:	H319 Causes serious eye irritation.
Precautionary statements	:	**Prevention:** P264 Wash skin thoroughly after handling. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical advice/ attention.

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
Chemical nature : Butyl glycol ether

Hazardous components

Chemical name	CAS-No.	Concentration (%)
Butyl Carbitol (Diethylene Glycol Monobutyl Ether)	112-34-5	>= 99 -<= 100

SECTION 4: First aid measures

If inhaled : Move to fresh air.
If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a medical doctor.

In case of skin contact : Wash skin with plenty of water.

In case of eye contact : Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes.
Keep eye wide open while rinsing.
Protect unharmed eye.
If eye irritation persists, consult a specialist.
Obtain prompt consultation, preferably from an ophthalmologist.

If swallowed : If swallowed, seek medical attention.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Keep respiratory tract clear.
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 : Can trigger moderate irritation, cornea injuries which is not reversible within 3 weeks.

Notes to physician : 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.

Physicochemical hazards arising from the chemical

Specific hazards during firefighting	:	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. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide.

Special protective equipment and precautions for fire-fighters

Special protective equipment for firefighters	:	Wear positive-pressure self-contained breathing apparatus (SBCA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.
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. Consider the use of unmanned hose holders or monitor nozzles. 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. Do not use direct water stream. May spread fire. 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. Standard procedure for chemical fires.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures	:	Isolate area. Refer to Section 7, Handling, for additional precautionary measures. Keep unnecessary and unprotected personnel from entering the area. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.
Environmental precautions	:	Prevent further leakage or spillage if safe to do so. Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

		If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	:	Keep in suitable, closed containers for disposal. 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. Pump into suitable and properly labeled containers. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).

SECTION 7: Handling and storage

Handling

Precautions for safe handling

Advice on protection against fire and explosion	:	Normal measures for preventive fire protection.
Advice on safe handling	:	Avoid contact with eyes. Wash thoroughly after handling. Keep container closed. Use only with adequate ventilation. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion. Do not breathe vapours/dust. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Dispose of rinse water in accordance with local and national regulations. Do not get in eyes, on skin, on clothing.

Storage

Conditions for safe storage, including any incompatibilities

Conditions for safe storage	:	Store in the following material(s): Carbon steel. Stainless steel. Phenolic lined steel drums. Do not store in: Aluminum. Copper. Galvanized iron. Galvanized steel. 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.

SECTION 8: Exposure controls and personal protection

Control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Butyl Carbitol (Diethylene Glycol Monobutyl Ether)	112-34-5	TWA (Inhalable fraction and vapor)	10 ppm	ACGIH
	Further information: Liver effects, Kidney effects, Hematologic effects			

Individual protection measures, such as personal protective equipment

Eye/face protection	:	Tightly fitting safety goggles. Wear face-shield and protective suit for abnormal processing problems. Use chemical goggles. Chemical goggles should be consistent with EN 166 or equivalent. Eye wash fountain should be located in immediate work area.
Skin protection	:	Impervious clothing. Choose body protection according to the amount and concentration of the dangerous substance at the work place. Wear clean, body-covering clothing.
Hand protection Remarks	:	Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. 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	:	Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required, use an approved self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. For emergency and other conditions where the exposure guideline may be exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Use the following CE approved air-purifying respirator: Organic vapor cartridge, type A (boiling point >65 ºC).
Hygiene measures	:	Wash hands before breaks and at the end of workday. Wash hands before smoking or eating. Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines. When using do not eat or drink. When using do not smoke.

SECTION 9: Physical and chemical properties

Appearance	:	Liquid
Colour	:	Colourless
Odour	:	Mild
Odour Threshold	:	No data available

pH	:	Not applicable
Melting point/freezing point	:	-68 °C
Boiling point/boiling range	:	231 °C
Flash point	:	100 °C Method: ASTM D 93, Pensky-Martens closed cup
Evaporation rate	:	0.01
Flammability (liquids)	:	No data available
Self-ignition	:	228 °C
Upper explosion limit / Upper flammability limit	:	5.9 %(V)
Lower explosion limit / Lower flammability limit	:	0.77 %(V)
Vapour pressure	:	0.029 hPa (25 °C)
Relative vapour density	:	5.59
Relative density	:	1 (20 °C)
Density	:	0.96 g/cm3 (20 °C)
Solubility(ies)		
Water solubility	:	Completely miscible
Partition coefficient: n-octanol/water	:	log Pow: 1 (20 °C)pH: 7
Auto-ignition temperature	:	228 °C
Decomposition temperature	:	Decomposes on heating.
Viscosity		
Viscosity, dynamic	:	5.85 mPa.s (20 °C)
Viscosity, kinematic	:	5.2 mm2/s (25 °C)
Molecular weight	:	162.2 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	:	Do not distill to dryness.Product can oxidize at elevated temperatures.Exposure to elevated temperatures can cause product to decompose.Generation of gas during decomposition can cause pressure in closed systems.Heat, sparks, flame and build-up of static electricity.
Incompatible materials	:	Strong oxidizing agentsStrong acids and strong bases
Hazardous decomposition products	:	Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Aldehydes. Ketones. Organic acids.

SECTION 11: Toxicological information

Acute toxicity

Components:
Butyl Carbitol (Diethylene Glycol Monobutyl Ether):

Acute oral toxicity	:	LD50 (Rat): 2,410 mg/kg
Acute inhalation toxicity	:	Remarks: No data available
Acute dermal toxicity	:	LD50 (Rabbit): 2,764 mg/kg

Skin corrosion/irritation

Components:
Butyl Carbitol (Diethylene Glycol Monobutyl Ether):

Species	:	Rabbit
Result	:	No skin irritation

Serious eye damage/eye irritation

Components:
Butyl Carbitol (Diethylene Glycol Monobutyl Ether):

Species	:	Rabbit
Result	:	Irritating to eyes.

Respiratory or skin sensitisation

Components:
Butyl Carbitol (Diethylene Glycol Monobutyl Ether):

Exposure routes	:	Inhalation
Remarks	:	No data available
Exposure routes	:	Skin contact
Result	:	Not sensitising

Germ cell mutagenicity

Components:
Butyl Carbitol (Diethylene Glycol Monobutyl Ether):

Germ cell mutagenicity - Assessment	:	Animal testing did not show any mutagenic effects.

Carcinogenicity

Components:
Butyl Carbitol (Diethylene Glycol Monobutyl Ether):

Carcinogenicity - Assessment	:	No data available

Reproductive toxicity

Components:
Butyl Carbitol (Diethylene Glycol Monobutyl Ether):

Reproductive toxicity - Assessment	:	No data available

STOT - single exposure

Components:
Butyl Carbitol (Diethylene Glycol Monobutyl Ether):

Assessment	:	The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT - repeated exposure

Components:
Butyl Carbitol (Diethylene Glycol Monobutyl Ether):

Remarks	:	No data available

Aspiration toxicity

Components:
Butyl Carbitol (Diethylene Glycol Monobutyl Ether):

Statement on Aspiration Tox.	:	No data available

SECTION 12: Ecological information

Ecotoxicity

Components:
Butyl Carbitol (Diethylene Glycol Monobutyl Ether):

Toxicity to fish	:	LC50 (Lepomis macrochirus (Bluegill sunfish)): 1,300 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 100 mg/l Exposure time: 48 h
Toxicity to algae	:	ErC50 (Desmodesmus subspicatus (green algae)): > 100 mg/l Exposure time: 96 h
Toxicity to fish (Chronic toxicity)	:	Remarks: No data available
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	Remarks: No data available
Toxicity to microorganisms	:	EC10 (Activated sludge): > 1,995 mg/l Exposure time: 30 min

Persistence and degradability

Components:
Butyl Carbitol (Diethylene Glycol Monobutyl Ether):

Biodegradability	:	Result: Readily biodegradable.

Bioaccumulative potential

Components:
Butyl Carbitol (Diethylene Glycol Monobutyl Ether):

Bioaccumulation	:	Remarks: No data available
Partition coefficient: n-octanol/water	:	log Pow: 1 (20 °C) pH: 7

Mobility in soil

Components:
Butyl Carbitol (Diethylene Glycol Monobutyl Ether):

Mobility	:	Remarks: No data available

Other adverse effects

Components:
Butyl Carbitol (Diethylene Glycol Monobutyl Ether):

Additional ecological information	:	No data available

SECTION 13: Disposal information

Disposal methods

Waste from residues	:	This product, when being disposed of in its unused and uncontaminated state should be treated as a hazardous waste according to EC Directive 91/689/EEC. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. Do not dump into any sewers, on the ground, or into any body

		of water. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.
Contaminated packaging	:	Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

SECTION 14: Transport information

International Regulations

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	:	01.03.2018
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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