Safety Data Sheet
Dow Chemical Company Ltd

Product Name: BUTYL CARBITOL(TM) SOLVENT

Revision Date: 2011/03/29
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Dow Chemical Company Ltd encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

Section 1. Identification of the substance/preparation and of the company/undertaking

1.1 Product identifiers

Product Name
BUTYL CARBITOL(TM) SOLVENT

Chemical Name: 2-(2-Butoxyethoxy)ethanol; diethylene glycol monobutyl ether
CAS-No. 112-34-5
EC-No. 203-961-6
REACH Registration Number
01-2119475104-44-0002

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses
Manufacture of substance, industrial. Use as an intermediate, industrial. Formulation and (re)packing of substances and mixtures. Distribution of substance, industrial. Uses in Coatings, industrial. Uses in Coatings, professional. Use in Cleaning Agents, professional. Uses in Coatings, consumer. Use in Cleaning Agents, consumer.

1.3 Details of the supplier of the safety data sheet

COMPANY IDENTIFICATION
Dow Chemical Company Ltd
Diamond House, Lotus Park
Kingsbury Crescent
TW18 3AG Staines, Middlesex
United Kingdom

Customer Information Number: 0203 139 4000
SDSQuestion@dow.com

1.4 EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: 0031 115 694 982
Local Emergency Contact: 00 31 115 69 4982

Section 2. Hazards Identification

2.1 Classification of the substance or mixture

Classification - REGULATION (EC) No 1272/2008

Serious eye damage/eye irritation	Category 2	H319	Causes serious eye irritation.

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Xi	R36	Irritating to eyes.

2.2 Label elements

Labelling - REGULATION (EC) No 1272/2008

Hazard pictograms

Signal Word: Warning

Hazard statements:

H319 Causes serious eye irritation.

Precautionary Statements:

P264 Wash hands thoroughly after handling.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

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.

2.3 Other Hazards

No information available.

Section 3. Composition/information on ingredients

3.1 Substance

This product is a substance.

CAS-No. / EC-No. / Index	REACH No.	Amount	Component	Classification: REGULATION (EC) No 1272/2008
CAS-No. 112-34-5 **EC-No.** 203-961-6 **Index** 603-096-00-8	01-2119475104-44	>= 99.0 %	2-(2-Butoxyethoxy)ethanol; diethylene glycol monobutyl ether	Eye cor/irr, 2, H319

CAS-No. / EC-No. / Index	Amount	Component	Classification: 67/548/EEC
CAS-No. 112-34-5	>= 99.0 %	2-(2-Butoxyethoxy)ethanol;	Xi: R36

EC-No.	diethylene glycol
203-961-6	monobutyl ether
Index	
603-096-00-8	

For the full text of the H-Statements mentioned in this Section, see Section 16.
See Section 16 for full text of R-phrases.

Section 4. First-aid measures

4.1 Description of first aid measures

General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Inhalation: Move person to fresh air; if effects occur, consult a physician.
Skin Contact: Wash skin with plenty of water.
Eye Contact: Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.
Ingestion: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

4.2 Most important symptoms and effects, both acute and delayed

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), no additional symptoms and effects are anticipated.

4.3 Indication of immediate medical attention and special treatment needed

No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

Section 5. Fire Fighting Measures

5.1 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.

5.2 Special hazards arising from the substance or mixture

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.
Unusual Fire and Explosion Hazards: 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.

5.3 Advice for firefighters

Fire Fighting Procedures: 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.
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). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

Section 6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures: Isolate area. 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. Refer to Section 7, Handling, for additional precautionary measures.

6.2 Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

6.3 Methods and materials for containment and cleaning up: Small spills: Absorb with materials such as: Sand. Vermiculite. Collect in suitable and properly labeled containers. Large spills: Contain spilled material if possible. Pump into suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

Section 7. Handling and Storage

7.1 Precautions for safe handling

Handling
General Handling: Avoid contact with eyes. Wash thoroughly after handling. Keep container closed. Use 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. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

7.2 Conditions for safe storage, including any incompatibilities

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. See Section 10 for more specific information.

7.3 Specific end uses
See the technical data sheet on this product for further information.

Section 8. Exposure Controls / Personal Protection

8.1 Control parameters

Exposure Limits

Component	List	Type	Value
2-(2-Butoxyethoxy)ethanol; diethylene glycol monobutyl ether	Dow IHG	TWA	35 ppm
	EU IOELV	TWA	67.5 mg/m3 10 ppm

EU IOELV	STEL	101.2 mg/m3 15 ppm
UK WEL	TWA	67.5 mg/m3 10 ppm
UK WEL	STEL	101.2 mg/m3 15 ppm

Derived No Effect Level (DNEL)

Workers

Potential Health Effects	Possible route(s) of exposure:	Value
Acute - systemic effects	Skin Contact	Not available
Acute - systemic effects	Inhalation	Not available
Acute - local effects	Skin Contact	Not available
Acute - local effects	Inhalation	15 ppm
Long-term - systemic effects	Skin Contact	20 mg/kg bw/day
Long-term - systemic effects	Inhalation	10 ppm
Long-term - local effects	Skin Contact	Not available
Long-term - local effects	Inhalation	5 ppm

Consumers

Potential Health Effects	Possible route(s) of exposure:	Value
Acute - systemic effects	Skin contact	Not available
Acute - systemic effects	Inhalation	Not available
Acute - systemic effects	Ingestion	Not available
Acute - local effects	Skin contact	Not available
Acute - local effects	Inhalation	7.5 mg/m3
Long-term - systemic effects	Skin contact	10 mg/kg bw/day
Long-term - systemic effects	Inhalation	5 mg/kg bw/day
Long-term - systemic effects	Ingestion	1.3 mg/kg bw/day
Long-term - local effects	Skin contact	Not available
Long-term - local effects	Inhalation	5 mg/m3

Predicted No Effect Concentration (PNEC)

Compartment	Value	Remarks
Fresh water	1 mg/l	
Marine water	0.1 mg/l	
Intermittent releases	3.9 mg/l	
STP	200 mg/l	
Fresh water sediment	4.0 mg/kg d.w.	
Marine sediment	0.4 mg/kg d.w.	
Soil	0.4 mg/kg d.w.	

8.2 Exposure controls

Personal Protection

Eye/Face Protection: Use chemical goggles. Chemical goggles should be consistent with EN 166 or equivalent.

Skin Protection: Wear clean, body-covering clothing.

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Butyl rubber. Polyethylene. Chlorinated polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Viton. Natural rubber ("latex"). Polyvinyl chloride ("PVC" or "vinyl"). 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. NOTICE: 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: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions, no respiratory protection should be needed; however, if material is heated or sprayed, use an approved air-purifying respirator. Use the following CE approved air-purifying respirator: Organic vapor cartridge, type A (boiling point >65 ºC)

Ingestion: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

Engineering Controls

Ventilation: 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

9.1 Information on basic physical and chemical properties

Appearance	
Physical State	Liquid.
Color	colourless
Odor	faint
Odor Threshold	No test data available
pH	No test data available
Melting Point	Not applicable to liquids
Freezing Point	-68 °C *Literature*
Boiling Point (760 mmHg)	230 °C *Literature* .
Flash Point - Closed Cup	114 °C *Literature*
Flash Point - Open Cup	93 °C *Literature*
Evaporation Rate (Butyl Acetate = 1)	0.01 *Literature*
Flammability (solid, gas)	Not applicable to liquids
Flammable Limits In Air	**Lower**: 0.85 %(V) *Literature* **Upper**: 24.6 %(V) *Literature*
Vapor Pressure	2.9 Pa @ 25 °C *Literature*
Vapor Density (air = 1)	No test data available
Specific Gravity (H2O = 1)	0.951 *Literature*
Solubility in water (by weight)	100 % *Literature* completely miscible with water
Partition coefficient, n-octanol/water (log Pow)	1 *Measured*
Autoignition Temperature	210 °C *Literature*
Decomposition Temperature	No test data available
Dynamic Viscosity	6 mPa.s @ 20 °C *Literature*
Kinematic Viscosity	5.2 cSt @ 25 °C *Literature*
Explosive properties	no data available
Oxidizing properties	no data available

9.2 Other information

Liquid Density	955 kg/m3 @ 20 °C *Literature*

Molecular Weight 162.2 g/mol *Calculated*
Henry's Law Constant (H) 1.52E-09 atm*m3/mole; 25 °C Estimated.

Section 10. Stability and Reactivity

10.1 Reactivity
No dangerous reaction known under conditions of normal use.

10.2 Chemical stability
Thermally stable at typical use temperatures.

10.3 Possibility of hazardous reactions
Polymerization will not occur.

10.4 Conditions to Avoid: Do not distill to dryness. Product can oxidize at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

10.5 Incompatible Materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

10.6 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

11.1 Information on toxicological effects

Acute Toxicity
Ingestion
Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.
LD50, Mouse 2,410 mg/kg
LD50, Rat 3,305 mg/kg
Aspiration hazard
Based on physical properties, not likely to be an aspiration hazard.
Dermal
Prolonged skin contact is unlikely to result in absorption of harmful amounts.
LD50, Rabbit 2,764 mg/kg
Inhalation
No adverse effects are anticipated from single exposure to vapor. For respiratory irritation and narcotic effects: No relevant data found.
As product: The LC50 has not been determined.

Eye damage/eye irritation
May cause severe eye irritation. May cause slight corneal injury.

Skin corrosion/irritation
Prolonged contact may cause slight skin irritation with local redness.

Sensitization
Skin
Did not cause allergic skin reactions when tested in guinea pigs.
Respiratory
No relevant data found.

Repeated Dose Toxicity
In animals, effects have been reported on the following organs: Blood. Kidney. Liver.

Chronic Toxicity and Carcinogenicity
No specific, relevant data available for assessment.

Developmental Toxicity
Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

Reproductive Toxicity
In animal studies, did not interfere with reproduction. However, body weights of newborn animals were decreased.

Genetic Toxicology
In vitro genetic toxicity studies were predominantly negative. Animal genetic toxicity studies were negative.

Section 12. Ecological Information

12.1 Toxicity

Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

Fish Acute & Prolonged Toxicity
LC50, bluegill (Lepomis macrochirus), static, 96 h: 1,300 mg/l
Aquatic Invertebrate Acute Toxicity
EC50, water flea Daphnia magna, static, 48 h, immobilization: > 100 mg/l
Aquatic Plant Toxicity
ErC50, alga Scenedesmus sp., static, Growth rate inhibition, 96 h: > 100 mg/l
ErC50, alga Scenedesmus sp., static, biomass growth inhibition, 96 h: > 100 mg/l
Toxicity to Micro-organisms
EC50; bacteria, static: 255 mg/l

12.2 Persistence and Degradability

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
89 - 93 %	28 d	OECD 301C Test	Not applicable
100 %	28 d	OECD 302B Test	Not applicable

Biological oxygen demand (BOD):

BOD 5	BOD 10	BOD 20	BOD 28
27 %	60 %	81 %	

12.3 Bioaccumulative potential
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient, n-octanol/water (log Pow): 1 Measured

12.4 Mobility in soil
Mobility in soil: Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process., Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient, soil organic carbon/water (Koc): 2 Estimated.
Henry's Law Constant (H): 1.52E-09 atm*m3/mole; 25 °C Estimated.

12.5 Results of PBT and vPvB assessment
This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

12.6 Other adverse effects
This substance is not in Annex I of Regulation (EC) 2037/2000 on substances that deplete the ozone layer.

Section 13. Disposal Considerations

13.1 Waste treatment methods

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. For used, contaminated and residual materials additional evaluations may be required. Do not dump into any sewers, on the ground, or into any body of water.

Section 14. Transport Information

ROAD & RAIL
NOT REGULATED

OCEAN
NOT REGULATED

AIR
NOT REGULATED

INLAND WATERWAYS
Proper Shipping Name: SUBSTANCES with a flashpoint above 61°C but not more than 100°C, N.O.S.
Technical Name: Diethylene glycol monobutyl ether
ID Number: ID9003

Section 15. Regulatory Information

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

European Inventory of Existing Commercial Chemical Substances (EINECS)
The components of this product are on the EINECS inventory or are exempt from inventory requirements.

15.2 Chemical Safety Assessment
A Chemical Safety Assessment has been carried out for this substance.

Section 16. Other Information

Hazard statement in the composition section

H319 Causes serious eye irritation.

Risk-phrases in the Composition section

R36 Irritating to eyes.

Product Literature

Additional information on this product may be obtained by calling your sales or customer service contact.

Revision

Identification Number: 818 / 3005 / Issue Date 2011/03/29 / Version: 3.0
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Dow Chemical Company Ltd urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.