



PRODUCT: BUTYL DIGLYCOL ACETATE (BDGA) REVISION:6 DATED: 14/08/18 PAGE 1 OF 8

PRODUCT SPECIFICATION

Product Name	Butyl Diglycol Acetate (BDGA)
Alternative Name	(2-(2-butoxyethoxy) ethyl acetate
Specification Reference	BDGA/3 (03/05/R17/08)

SALES SPECIFICATION

Properties	Units	Limits	ASTM	ISO	DIN EN
Appearance		Clear, colourless and free of sediment	D4176		Visual
Colour	Pt-Co	10 max	D1209	6271	1557
Water	Mass %	0.1 max	D1364	760	13267
Butyl Glycol	Mass %	97.0 min	GC	GC	GC
Acid Number	mg	0.2 max	D664	2114	2114

TYPICAL PROPERTIES

Properties		Typical Values			DIN
Density @ 20°C	g/ml	0.976 – 0.980	D4052	12185	51757
Refractive Index n_D^{20}		1.425 – 1.427	D1218	5661	51423-3
Distillation @ 101.3 kPa	°C		D1078	918	53171
Initial Boiling Point	°C	235			
Dry Point		250			

NOTES

Exclusion of Liability

Information contained in this publication is accurate to the best of the knowledge and belief of Tennants.

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Tennants accepts no liability whatsoever (except as otherwise provided by law) arising out of the use of information supplied, the application, adaptation or processing of the products described herein, the use of other materials in lieu of Tennants materials or the use of Tennants materials in conjunction with such other materials.

Health and Safety

A Material Safety Data Sheet has been issued describing the health, safety and environmental properties of this product, identifying the potential hazards and giving advice on the handling precautions and emergency procedures. This must be consulted fully before handling, storage and use.



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SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY

1.1 Product Identifier

Trade Name Butyl Diglycol Acetate
REACH Registration Number 01-2119475110-51-XXXX
Substance Name (REACH/CLP) 2-(2-butoxyethoxy)ethyl acetate

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

Identified use(s): Industrial use. Solvent. Raw material for printing inks and printing ink additives
Uses advised against: No further data

1.3 Details of the supplier of the safety data sheet

Tennants Distribution Limited
Hazelbottom Road
Cheetham
Manchester
M8 0GR
Tel: 44(0)161 205 4454
Fax: 44(0) 161 203 4298
Email: msds@tennantsdistribution.com

1.4 Emergency telephone number

Tel: 44(0)844 335 0001 (24 hours)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Not a hazardous substance or mixture.

2.2 Label elements

Not a hazardous substance or mixture.

2.3 Other hazards

No hazards to be specially mentioned.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances

2-(2-butoxyethoxy)ethyl acetate

Component Type: Active Ingredient

CAS Number	EINECS Number	REACH registration number	COMPONENTS TO BE NAMED IN ACCORDANCE WITH REGULATION (EC) 1907/2006 AS WELL AS OTHER HAZARDOUS INGREDIENTS AND CONTAINED SUBSTANCES WITH WORK PLACE LIMIT VALUES
124-17-4	204-685-9	01-2119475110-51-XXXX	No hazardous ingredients

4. FIRST AID MEASURES

4.1 Description of first aid measures

General Advice

No hazards which require special first aid measures.

Inhalation

Remove from exposure, lie down. If breathing is irregular or stopped, administer artificial respiration. Monitor breathing, give oxygen if necessary. Consult a physician.

Skin contact

Wash off with soap and water.

Eye contact

Rinse with plenty of water.

Ingestion

Consult a physician if necessary. Rinse mouth.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms: No information available.

Risks: No information available.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment: No information available.



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5. FIRE FIGHTING MEASURES
5.1 Extinguishing Media Suitable extinguishing media: Water, Foam, Dry powder, Carbon dioxide (CO ₂) Unsuitable extinguishing media: No further information
5.2 Special hazards arising from the substance or mixture Dangerous gases or fumes may occur in case of fire.
5.3 Advice for fire-fighters Special protective equipment for firefighters Wear self-contained breathing apparatus for firefighting if necessary. Further information Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
6. ACCIDENTAL RELEASE MEASURES
6.1 Personal precautions, protective equipment and emergency procedures Personal precautions Handle in accordance with good industrial hygiene and safety practice. Special precautions Forms slippery/greasy layers with water.
6.2 Environmental precautions Avoid subsoil penetration. Do not flush into surface water or sanitary sewer system.
6.3 Methods and material for containment and cleaning up Use mechanical handling equipment. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
6.4 Reference to other sections For personal protection see section 8.
7. HANDLING AND STORAGE
7.1 Precautions for safe handling Advice on safe handling No special technical protective measures required. Advice on protection against fire and explosion Normal measures for preventive fire protection.
7.2 Conditions for safe storage, including any incompatibilities Requirements for storage areas and containers No special storage conditions required. Storage class (TRGS 510): 10: Combustible liquids Other data: Protect from frost, heat and sunlight.
7.3 Specific end use(s) No further information
8. EXPOSURE CONTROLS/PERSONAL PROTECTION
8.1 Control parameters
8.1.1 Occupational exposure National occupational exposure limits No data available European occupational exposure limits No data available
Derived No Effect Level (DNEL) Substance name: 2-(2-Butoxyethoxy)ethyl acetate Workers Dermal, Acute/short-term exposure - systemic effects. Not relevant / not applicable Inhalation, Acute/short-term exposure - systemic effects. Not relevant/not applicable Dermal, Acute/short-term exposure - local effects. Not relevant/not applicable Inhalation, Acute/short-term exposure - local effects. Not relevant/not applicable Dermal, long term exposure – systemic. 100 mg/kg bw/day Inhalation, long-term exposure - systemic effects. Not relevant / not applicable Dermal, long-term exposure - local effects. Not relevant/not applicable Inhalation, long-term exposure – local effects. Not relevant/not applicable Consumers Dermal, Acute/short-term exposure - systemic effects. Not relevant/not applicable



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Inhalation, Acute/short-term exposure - systemic effects. Not relevant/not applicable
Oral, Acute/short-term exposure - systemic effects. Not relevant/not applicable
Dermal, Acute/short-term exposure - local effects. Not relevant/not applicable
Inhalation, Acute/short-term exposure - local effects. Not relevant/not applicable
Dermal, long-term exposure - systemic effects. 60 mg/kg Body weight/day
Inhalation, long-term exposure - systemic effects. Not relevant/not applicable
Oral, long-term exposure - systemic effects. 7.9 mg/kg Body weight/day
Dermal, long-term exposure - local effects. Not relevant/not applicable
Inhalation, long-term exposure - local effects. Not relevant/not applicable

Predicted No Effect Concentration (PNEC)

Substance name: 2-(2-Butoxyethoxy)ethyl acetate

Environmental Compartment	Value	Note
Fresh water	0.108 mg/l	
Marine water	0.0108 mg/l	
Intermittent release	0.6 mg/l	
Treatment plant	100 mg/l	
Fresh water sediment	0.8 mg/kg	based on dry weight
Marine sediment	0.08 mg/kg	based on dry weight
Soil	0.18 mg/kg	based on dry weight
Food	70 mg/kg	

8.2 Exposure controls

Personal Protective Equipment

Respiratory protection

No personal respiratory protective equipment normally required. In inadequately ventilated areas, where workplace limits are exceeded, where unpleasant odours exist or where aerosols are in use, or smoke and mist occur, use self-contained breathing apparatus or breathing apparatus with a type A filter or appropriate combined filter (e.g. where aerosols are in use, or smoke and mist occur, A-P2 or ABEK-P2), in compliance with EN 141.

Hand protection

The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Be aware that in daily use the durability of a chemical resistant protective glove can be notably shorter than the break through time measured according to EN 374, due to the numerous outside influences (e.g. temperature).

Gloves suitable for permanent contact: Material: butyl-rubber. Break through time: ≥ 480 min. Layer thickness: 0.4 mm

Unsuitable gloves: Material: Natural rubber/natural latex, Polychloroprene, Fluorinated rubber, Nitrile rubber/nitrile latex, Polyvinylchloride

Eye protection

Safety glasses

Skin and body protection

Wear suitable protective equipment.

Hygiene measures

General industrial hygiene practice.

Protective measures

No special protective equipment required.

Environmental exposure controls

Avoid subsoil penetration. Do not flush into surface water or sanitary sewer system.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	liquid; 20 °C; 1,013 hPa
Form	liquid
Colour	colourless
Odour	mild
Odour Threshold	no valid method available
pH	no data available
Melting point/range	< -32 °C; 1,013 hPa 241 K; 1,013 hPa
Boiling point/boiling range	245 °C; 1,013 hPa. 518 K; 1,013 hPa
Flash point	102 °C; DIN 51758. 375 K; 1,013 hPa
Evaporation rate	No data available
Lower explosion limit	0.6 %(V)



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Upper explosion limit	10.7 %(V)
Vapour pressure	0.005 hPa; 20 °C
Relative vapour density	> 1
Density	0.9765 g/cm ³ ; 20 °C
Water solubility	65 g/l; 20 °C
Partition coefficient: n- octanol/water log Pow:	1.772; (calculated) log Pow: 1.7; 20 °C
Ignition temperature	265 °C; DIN 51794 538 K; 1,013 hPa
Auto-ignition temperature	538 K; 1,013 hPa
Viscosity, dynamic	3.5 mPas; 20 °C
Explosive properties	not expected based on structure and functional groups
Oxidising properties	not expected based on structure and functional groups

9.2 Other information

Refractive index 1.425 - 1.427 at 20 °C

10. STABILITY AND REACTIVITY

10.1 Reactivity

Stable at normal ambient temperature and pressure. No decomposition if stored and applied as directed.

10.2 Chemical stability

No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions

None known.

10.4 Conditions to avoid

Direct heating, dirt, chemical contamination, sunlight, UV or ionising radiation.

10.5 Incompatible materials

None known.

10.6 Hazardous decomposition products

Hazardous decomposition products: No decomposition if stored normally.

Thermal decomposition: No decomposition if used as directed.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Acute oral toxicity

2-(2-Butoxyethoxy)ethyl acetate: LD50 Rat: > 2,000 mg/kg (literature value). Based on available data, the classification criteria are not met.

Acute inhalation toxicity

2-(2-Butoxyethoxy)ethyl acetate: LC50 Rat: 4 h. An LC50/inhalation/4h/rat could not be determined because no mortality of rats was observed at the maximum achievable concentration. (literature value). The data are derived from the evaluations or test results achieved with similar products (conclusion by analogy). Test substance: 2-butoxyethyl acetate. Based on available data, the classification criteria are not met.

Acute dermal toxicity

2-(2-Butoxyethoxy)ethyl acetate: LD50 Rabbit: > 5,000 mg/kg; (literature value). Based on available data, the classification criteria are not met.

Skin irritation

2-(2-Butoxyethoxy)ethyl acetate: Rabbit: slightly irritating (literature value). Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation

Eye irritation

2-(2-Butoxyethoxy)ethyl acetate: Rabbit: slightly irritating (literature value). The data are derived from the evaluations or test results achieved with similar products (conclusion by analogy). Test substance: 2-butoxyethyl acetate. Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation

Sensitisation

2-(2-Butoxyethoxy)ethyl acetate: Buehler Test Guinea pig: not sensitizing; OECD Test Guideline 406 Based on available data, the classification criteria are not met.

Germ cell mutagenicity

Genotoxicity in vitro

2-(2-Butoxyethoxy)ethyl acetate: In vitro tests did not show mutagenic effects (literature value). The data are derived from the evaluations or test results achieved with similar products (conclusion by analogy). Test substance: 2-butoxyethyl acetate

Genotoxicity in vivo

2-(2-Butoxyethoxy)ethyl acetate: No data available. Remarks 2-(2-Butoxyethoxy)ethyl acetate: Based on available data,



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the classification criteria are not met.

Carcinogenicity

2-(2-Butoxyethoxy)ethyl acetate: This information is not available.

Reproductive toxicity

2-(2-Butoxyethoxy)ethyl acetate: No toxicity to reproduction (literature value). The data are derived from the evaluations or test results achieved with similar products (conclusion by analogy). Test substance: 2-butoxyethanol

Remarks: Reproductive toxicity: 2-(2-Butoxyethoxy)ethyl acetate: Based on available data, the classification criteria are not met.

Teratogenicity

2-(2-Butoxyethoxy)ethyl acetate: Did not show teratogenic effects in animal experiments. (literature value). The data are derived from the evaluations or test results achieved with similar products (conclusion by analogy). Test substance: 2-(2-butoxyethoxy)ethanol

Remarks-Teratogenicity: (2-Butoxyethoxy)ethyl acetate: Based on available data, the classification criteria are not met.

STOT - single exposure

Remarks: 2-(2-Butoxyethoxy)ethyl acetate: The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT - repeated exposure

Remarks: 2-(2-Butoxyethoxy)ethyl acetate: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Repeated dose toxicity

2-(2-Butoxyethoxy)ethyl acetate: Rat; Oral; 90-day. NOAEL: 315 mg/kg (based on body weight and day) LOAEL: 1,260 mg/kg (based on body weight and day) (literature value). The data are derived from the evaluations or test results achieved with similar products (conclusion by analogy). Test substance: 2-(2-butoxyethoxy) ethanol

Aspiration hazard

2-(2-Butoxyethoxy)ethyl acetate: Not applicable

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish

2-(2-Butoxyethoxy)ethyl acetate: LC50 (96 h) Danio rerio (zebra fish): > 10 - 100 mg/l ; static test; OECD Test Guideline 203 (literature value)

Toxicity to fish - Chronic toxicity

2-(2-Butoxyethoxy)ethyl acetate: The study is not necessary. Justification: exposure considerations

Toxicity to daphnia and other aquatic invertebrates

2-(2-Butoxyethoxy)ethyl acetate: EC50 (48 h) Daphnia magna (Water flea): > 100 mg/l ; static test (literature value)

Toxicity to daphnia and other aquatic invertebrates - Chronic toxicity

2-(2-Butoxyethoxy)ethyl acetate: EC10 (7 d) Ceriodaphnia Dubia (water flea): 10.8 mg/l; mortality; semi-static test; (literature value)

Toxicity to aquatic plants

2-(2-Butoxyethoxy)ethyl acetate: EC50 (72 h) Pseudokirchneriella subcapitata (green algae): > 100 mg/l ; Growth rate; static test; ISO 8692; (literature value). The data are derived from the evaluations or test results achieved with similar products (conclusion by analogy). Test substance: 2-butoxyethyl acetate

Toxicity to bacteria

2-(2-Butoxyethoxy)ethyl acetate: EC0 (30 min) activated sludge, industrial: 1,575 mg/l; static test (literature value)

Toxicity to soil dwelling organisms

2-(2-Butoxyethoxy)ethyl acetate: The study is not necessary. Unlikely direct and indirect exposure of the soil compartment

Toxicity to terrestrial flora

2-(2-Butoxyethoxy)ethyl acetate: The study is not necessary. Unlikely direct and indirect exposure of the soil compartment

Toxicity for other terrestrial non-mammalian fauna

2-(2-Butoxyethoxy)ethyl acetate: study scientifically unjustified low bioaccumulation potential Readily biodegradable.

Accumulation in terrestrial organisms is unlikely.

12.2 Persistence and degradability

Biodegradability

2-(2-Butoxyethoxy)ethyl acetate: Readily biodegradable.; > 60 %; 20 d; aerobic; OECD Test Guideline 301B

12.3 Bioaccumulative potential

Bioaccumulation

2-(2-Butoxyethoxy)ethyl acetate: Bioconcentration factor (BCF): 1.99; calculated low bioaccumulation potential (literature value)

12.4 Mobility in soil

Mobility

2-(2-Butoxyethoxy)ethyl acetate: The study is not necessary. Not expected to adsorb on soil. (literature value)



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12.5 Results of PBT and vPvB assessment Results of PBT assessment 2-(2-Butoxyethoxy)ethyl acetate: Based on available data, the classification criteria are not met.																					
12.6 Other adverse effects General advice 2-(2-Butoxyethoxy)ethyl acetate: None known.																					
13. DISPOSAL CONSIDERATIONS																					
13.1 Waste treatment methods Product Can be incinerated, when in compliance with local regulations. Contaminated packaging Empty remaining contents. Waste code of the European Union: EWC A waste code in accordance with the European Waste Catalogue (EWC) may not be assigned to this product since it admits of a classification only when the consumer uses it for some purpose. The waste code must be determined in agreement with the regional waste disposal authority or company. Waste material code packaging (Directive 2008/98/EC). Packaging containing residues of or contaminated by dangerous substances.																					
14. TRANSPORT INFORMATION																					
14.1 UN Number Not classified as dangerous goods																					
14.2 Proper Shipping Name Not classified as dangerous goods																					
14.3 Transport hazard class Not classified as dangerous goods																					
14.4 Packing group Not classified as dangerous goods																					
14.5 Environmental It is not considered hazardous to the environment.																					
14.6 Special precautions for users It is not classified as dangerous goods																					
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Ship type 2 Pollution category Y Remarks MARPOL NAME: Poly(2-8)alkylene glycol monoalkyl (C1–C6) ether acetate																					
15. REGULATORY INFORMATION																					
15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture																					
15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture Legislation on the control of major-accident hazards involving dangerous substances Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances. List entry in the directive: Not applicable Directive 1999/13/EC (VOC) The question whether this product or components thereof has/have to be considered as volatile organic compound/compounds (VOC) as defined by Directive 1999/13/EU can only be answered when detailed knowledge on the use as solvent in connection with certain activities in certain facilities is available. Notification Status <table> <tr> <td>Switzerland. Consolidated Inventory</td><td>CH INV listed (product or constituents are listed)</td></tr> <tr> <td>US. Toxic Substances Control Act</td><td>TSCA listed (product or constituents are listed)</td></tr> <tr> <td>Canada. Canadian Environmental Protection Act (CEPA).</td><td></td></tr> <tr> <td>Domestic Substances List (DSL)</td><td>DSL listed (product or constituents are listed)</td></tr> <tr> <td>Australia. Industrial Chemical (Notification and Assessment) Act</td><td>AICS listed (product or constituents are listed)</td></tr> <tr> <td>Japan. Kashin-Hou Law List</td><td>ENCS (JP) listed (product or constituents are listed)</td></tr> <tr> <td>Japan. Industrial Safety & Health Law (ISHL) List</td><td>ISHL (JP) listed (product or constituents are listed)</td></tr> <tr> <td>Korea. Existing Chemicals Inventory (KECI)</td><td>KECI (KR) listed (product or constituents are listed)</td></tr> <tr> <td>Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act</td><td>PICCS (PH) listed (product or constituents are listed)</td></tr> <tr> <td>China. Inventory of Existing Chemical Substances</td><td>INV (CN) listed (product or constituents are listed)</td></tr> </table> Please note: the names and CAS numbers which are used for this product in the stated inventories may deviate from the information which is listed in chapter 3.		Switzerland. Consolidated Inventory	CH INV listed (product or constituents are listed)	US. Toxic Substances Control Act	TSCA listed (product or constituents are listed)	Canada. Canadian Environmental Protection Act (CEPA).		Domestic Substances List (DSL)	DSL listed (product or constituents are listed)	Australia. Industrial Chemical (Notification and Assessment) Act	AICS listed (product or constituents are listed)	Japan. Kashin-Hou Law List	ENCS (JP) listed (product or constituents are listed)	Japan. Industrial Safety & Health Law (ISHL) List	ISHL (JP) listed (product or constituents are listed)	Korea. Existing Chemicals Inventory (KECI)	KECI (KR) listed (product or constituents are listed)	Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act	PICCS (PH) listed (product or constituents are listed)	China. Inventory of Existing Chemical Substances	INV (CN) listed (product or constituents are listed)
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2-(2-Butoxyethoxy)ethyl acetate . A chemical safety assessment is not required for this substance

16. OTHER INFORMATION**Key or legend to abbreviations and acronyms used in the safety data sheet**

ADN Accord européen relatif au transport international des marchandises dangereuses par voie de navigation intérieure

ADR Accord européen relatif au transport international des marchandises Dangereuses par Route

AICS Australian Inventory of Chemical Substances

ANSI American National Standards Institute

ASTM American Society of Testing and Materials (US)

BCF Bioconcentration factor

CLP Regulation on Classification, Labelling and Packaging of Substances and Mixtures

DIN Deutsches Institut für Normung

DNEL Derived No-Effect Level

DSL Domestic Substances List

EC Effect concentration ... %

ENCS Existing Notified Chemical Substances (Japan)

EWC European Waste Catalogue

IATA International Air Transport Association

IBC Intermediate Bulk Container

ICAO International Civil Aviation Organization

IMDG International Maritime Dangerous Goods

IMO International Maritime Organization

ISHL Industrial Safety and Health Law (Japan)

ISO International Organization for Standardization

IUAPC International Union of Pure and Applied Chemistry

KECI Korea Existing Chemicals Inventory

LC Lethal Concentration, ...%

LD Lethal Dose, ...%

MARPOL International Convention for the Prevention of Pollution From Ships

NDSL Non-Domestic Substances List

NOAEL no observable adverse effect level

NOEL/NOEC No

Observed-effect level/concentration

NZIoC New Zealand Inventory of Chemicals

OECD Organisation for Economic Co-operation and Development

PBT persistent, bioaccumulative, toxic

PICCS Philippine Inventory of Chemicals and Chemical Substances

PNEC Predicted No-Effect Concentration

REACH Registration, Evaluation, Authorisation and Restriction of Chemicals

RID Règlement concernant le transport international ferroviaire de marchandises dangereuses

TG Test Guideline

TRGS Technische Regeln für Gefahrstoffe

TSCA Toxic Substances Control Act

vPvB very persistent, very bioaccumulative

WGK Wassergefährdungsklasse

Source of key data used to compile the data sheet

Supplier information

Modifications from last revision

The Safety Data Sheets have been revised throughout in accordance with current requirements

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