

GPS Safety Summary

Substance Name:

1,4-butanediol dimethacrylate

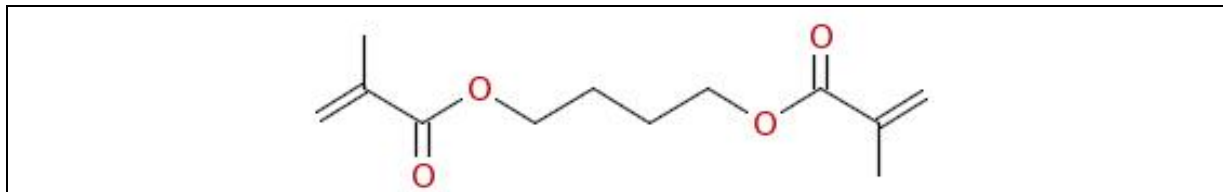
1. General Statement

1,4-Butanediol Dimethacrylate is a low viscosity, difunctional monomer offering high solvency.

2. Chemical Identity

Names:	1,4-butanediol dimethacrylate, tetramethylene dimethacrylate
Brand name:	SR214
Chemical name (IUPAC):	butane-1,4-diyl bis(2-methylacrylate)
CAS number(s):	2082-81-7
EC number:	218-218-1
Molecular formula:	C ₁₂ H ₁₈ O ₄

Structure:



3. Use and applications

1,4-Butanediol Dimethacrylate is a difunctional methacrylic monomer which can be used as a comonomer in free radical polymerization.

4. Physical / Chemical properties

1,4-Butanediol Dimethacrylate is a non flammable liquid, with a low volatility and a moderate solubility in water.

Property	Value
Physical state	liquid at 20°C and 1013.25 hPa
Particle size	Not applicable
Colour	Colourless to slightly yellowish
Odour	Acrylate (slight)
Molecular weight	226.27 g/mol
Relative density	1.024
Vapour pressure	0.1 Pa at 20°C

Freezing / boiling points	-23°C / > 211°C (polymerisation) at 1025 hPa
Flammability	Non flammable upon ignition.
Flash point	139°C at 1013 hPa
Self-ignition temperature	290°C at 1021 hPa
Explosive / oxidizing properties	Not expected based on structure
Water solubility	243 mg/L at 20°C
Dissociation constant (pK _a)	Not applicable
Octanol-water partition coefficient (Log K _{ow})	3.1 at 20°C

5. Health Effects

1,4-butanediol dimethacrylate is a moderate skin sensitizer.

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	Does not cause acute toxicity after oral and dermal exposure. No data is available by inhalation.
Irritation / corrosion Skin / eye/ respiratory tract	Skin contact does not cause skin irritation. Eye contact does not cause eye irritation.
Sensitisation	Does cause a moderate allergic skin reaction.
Toxicity after repeated exposure Oral / inhalation / dermal	Does not cause toxicity to internal organs after repeated exposure in animal studies by oral and dermal administration. No data is available by inhalation.
Genotoxicity / Mutagenicity	Based on the available test data, not expected to cause genetic effects.
Carcinogenicity	No reliable data is available.
Reproductive / Developmental Toxicity	Based on the available data, does not cause effects on the reproduction or on the foetal development in animal studies.

6. Environmental Effects

1,4-Butanediol Dimethacrylate is readily biodegradable. It can be thus assumed that 1,4-Butanediol Dimethacrylate is also biodegradable in soil and sediment and thus can be considered as non persistent in soil and sediment.

Effect Assessment	Result
Aquatic Toxicity	Toxic to aquatic life.

Fate and behaviour	Result
Biodegradation	Readily biodegradable.
Bioaccumulation potential	No bioaccumulation in aquatic organisms expected.
PBT / vPvB conclusion	As this substance is not considered to be persistent, it is not classified PBT. This substance is considered to be neither very persistent nor very bioaccumulative (vPvB).

7. Exposure

7.1 Human health

Workplace exposure: Exposure can occur either in a 1,4-butanediol dimethacrylate manufacturing facility or in the various industrial facilities that use the substance. Those working with the substance in industrial operations could be exposed during maintenance, sampling, testing, or other procedures. Each industrial facility should have a thorough training program for employees and appropriate work processes and safety equipment in place to limit unnecessary exposure. Safety showers and eye-wash stations should be accessible nearby. Workers should follow the safety measures recommended in the Extended Safety Data Sheet (eSDS).

7.2 Environment

Environmental exposure: 1,4-Butanediol Dimethacrylate is used in industrial settings and exposure of the environment is assessed for the manufacture, formulation and use. There are no direct consumer uses for 1,4-Butanediol Dimethacrylate. Based on the results of risk assessment, all uses are adequately controlled with regard to the environment.

8. Risk Management recommendations

Human health protective measures	
Organizational	Ensure workers are duly trained to minimize exposure.
Engineering controls	Apply technical measures to comply with the occupational exposure limits. When working in confined spaces (tanks, containers, etc.), ensure that there is a supply of air suitable for breathing and wear the recommended equipment.
Personal protective equipment	Eye/Face protection: Safety glasses with side-shields.
	Skin protection: Long sleeved clothing.
	Hand protection: Gloves: nitrile rubber > 0,5 mm,(suitable gloves tested to EN374). Replace gloves immediately when torn or any change in appearance (dimension, colour, flexibility, etc) is noticed.
	Respiratory protection: When using concentrated chemicals always make sure that there is adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipments.
Environmental protective measures	
Do not allow material to contaminate ground water system. When required, all effluent releases that may include the substance must be directed to a (municipal) waste water treatment plant that removes the substance from the final releases to the receiving water.	

9. Regulatory Information / Classification and Labelling

9.1 Regulatory Information

This substance has been registered under:

- EU Regulation EC 1907/2006 (REACH).


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9.2 Classification and labelling

Under GHS, substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the eSDS. GHS attempts to standardize hazard communication so that the intended audience (workers, consumers, transport workers, and emergency responders) can better understand the hazards of the chemicals in use. Substances registered for REACH are classified according to CLP (EC) 1272/2008, implementation of the GHS in the European Union.

Classification and labelling according to Regulation (EC) n° 1272/2008

Classification	
– Skin Sensitization Category 1B	
Labelling	
Hazard pictogram(s)	
– GHS07: Exclamation mark	
Signal word	
– Warning	
Hazard statement(s)	
– H317: May cause an allergic skin reaction.	

Classification and labelling according to GHS

Classification	
– Skin Sensitization Category 1B – Acute aquatic toxicity Category 2	
Labelling	
Hazard pictogram(s)	
– GHS07: Exclamation mark	
Signal word	
– Warning	
Hazard statement(s)	
– H317: May cause an allergic skin reaction. – H401: Toxic to aquatic life.	

10. Contact Information within Company

For further information on this substance or product safety summary in general, please contact:

- **ICCA portal where the GPS Safety Summary is posted:**
<http://www.icca-chem.org/en/Home/ICCA-initiatives/global-product-strategy/>

11. Date of Issues / Revision

- Date of issue: 2014/12/15
- Date of revision:

12. Disclaimer

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