

SAFETY DATA SHEET

SDS: A5001-0000_E001

Date Prepared: 2019/08/09

Date Revised: 2023/01/10

Product Name: **BUTYL GLYCOL****1. Identification of the substance/mixture and of the company/undertaking**

Product name: BUTYL GLYCOL
 Identification of the supplier: Nippon Nyukazai Co., Ltd.
 Address: No.4-1.Nihonbashi Kobuna-cho, Chuo-ku, Tokyo 103-0024, Japan
 Charge section: Business Operation Department
 (TEL:+81-3-5651-5640,FAX:+81-3-5651-5646)
 Emergency telephone number: Business Operation Department
 (TEL:+81-3-5651-5640,FAX:+81-3-5651-5646)
 Recommend use: diluent , Detergent , deposition aid , reaction solvent
 Restrictions on use: Seek expert judgment when using for purposes other than those recommended.

2. Hazards identification

Hazard category

Flammable liquids	Category 4
Acute toxicity (oral)	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Toxic to reproduction	Category 2
Specific target organ systemic toxicity following single exposure	Category 1
Specific target organ systemic toxicity following single exposure	Category 3
Specific target organ systemic toxicity following repeated exposure	Category 1

Label elements

Hazard pictograms:



Signal word:

Danger

Hazard statements:

H227 Combustible liquid
 H302 Harmful if swallowed.
 H315 Causes skin irritation.
 H319 Causes serious eye irritation.
 H361 Suspected of damaging fertility or the unborn child.
 H370 Causes damage to organs (blood systems,respiratory apparatus,liver,kidney).
 H335+H336 May cause respiratory irritation, or May cause drowsiness or dizziness.

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	H372 Causes damage to organs (blood systems) through prolonged or repeated exposure.
Precautionary statements:	
Prevention	<p>P201 Obtain special instructions before use.</p> <p>P202 Do not handle until all safety precautions have been read and understood.</p> <p>P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.</p> <p>P260 Do not breathe dust/fume/gas/mist/vapours/spray.</p> <p>P261 Avoid breathing dust/fume/gas/mist/vapours/spray.</p> <p>P264 Wash hands and face thoroughly after handling.</p> <p>P270 Do not eat, drink or smoke when using this product.</p> <p>P271 Use only outdoors or in a well-ventilated area.</p> <p>P280 Wear protective gloves/protective clothing/eye protection/face protection.</p>
Response	<p>P312 Call a POISON CENTRE/doctor/healthcare professionals under the supervision of a doctor if you feel unwell.</p> <p>P314 Get medical advice/attention if you feel unwell.</p> <p>P330 Rinse mouth.</p> <p>P362+P364 Take off contaminated clothing and wash it before reuse.</p> <p>P301+P312 IF SWALLOWED: Call a POISON CENTRE/doctor/healthcare professionals under the supervision of a doctor if you feel unwell.</p> <p>P302+P352 IF ON SKIN: Wash with plenty of water/or shower.</p> <p>P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.</p> <p>P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p> <p>P308+P313 IF exposed or concerned: Get medical advice/attention.</p> <p>P308+P311 IF exposed or concerned: Call a POISON CENTER/doctor/healthcare professionals under the supervision of a doctor.</p> <p>P332+P313 If skin irritation occurs: Get medical advice/attention.</p> <p>P337+P313 If eye irritation persists: Get medical advice/attention.</p> <p>P370+P378 In case of fire : Use appropriate extinguishing media for extinction.</p>
Storage	<p>P403 Store in a well ventilated place.</p> <p>P405 Store locked up.</p> <p>P403+P233 Store in a well ventilated place. Keep container tightly closed.</p>
Disposal	P501 Dispose of contents/container in accordance with local/regional/national/international regulation.

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Product Name: **BUTYL GLYCOL****3. Composition/information on ingredients****3.1. Substances**

Ingredients and Concentration

Ingredient Name	Concentration wt. %	CAS RN®	Existing and New Chemical Substances (JAPAN)	Industrial Safety and Health Law Substances (JAPAN)	Industrial Safety and Health Law (JAPAN)	Pollutant Release Transfer Register Law (JAPAN)	Poisonous and Deleterious Substances Control Act (JAPAN)
			Gazette notice reference number	Gazette notice reference number	Notifiable Substances	Specified Substances	Poisonous and Deleterious Substances
Ethylene glycol monobutyl ether	99-100	111-76-2	2-407, 2-2424, 7-97	Public	Applicable	Not applicable	Not applicable

3.2. Mixtures

Not Applicable

4. First aid measures

Inhalation:	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If breathing is stopped, lie on your back and perform cardiopulmonary respiration. Get medical advice/attention.
Skin contact:	Take off contaminated clothing and wash before reuse. Wash with plenty of soap and water. If skin irritation or a rash occurs: Get medical advice/attention.
Eye contact:	Immediately flush eye with plenty of clean water for at least 15 minutes. (If easy to do, remove contact lenses, if worn.) Get medical attention immediately.
Ingestion:	After having swallowed it, Drink a large quantity of water when consciousness becomes clear and receive treatment for the doctor immediately. A mouth must not give a person without the consciousness a thing.
Protection for first aid person:	The rescuer wears a tool for appropriate protection depending on the situation.

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Product Name: **BUTYL GLYCOL****5. Firefighting measures**

Suitable extinguishing media:	Use water spray(fog), foam, dry chemical or CO2.
Extinguishing media to avoid:	Straight stream water.
Specific hazards arising from the chemical:	At the time of fire, hazardous gases (carbon monoxide and others) can be generated.
Fire fighting:	Keep upwind of fire. Eliminate all ignition sources if safe to do so. In case of fire in the surroundings, move the content/container to the safety place. If it is not possible to move, cool the content/container with water spray.
Special protective equipment and precautions for fire fighters:	Gloves, protection glasses, wear fire, flame resistant, retardant clothing, air respiratory organs wear a tool for appropriate protection.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:	Promptly remove possible ignition sources from the vicinity. Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel.
Environmental precautions:	To environment (area of the sea, the soil) must not release it.
Methods and materials for containment and cleaning up:	Absorb this product with inactive materials (example: dry sand, earth) and recover it into a waste material container. In the case of large amount, stop leakage with earth/sand to begin with, and, then, recover it. In the case of a small quantity, I adsorb it in the earth and sand, a waste and collect it in empty container which I can seal up after having removed it.

7. Handling and storage

Handling	
Technical measures:	During handling, be sure to wear proper protective equipment (refer to the section 8). This product can be charged with static electricity. Take countermeasures for static electricity removal (grounding, others). Wear antistatic clothes and antistatic shoes to prevent human body electrification. Use explosion-proof electrical/ventilating/lighting equipment.
Ventilation requirements:	Use the ventilation equipment described in Section 8.
Precautions for safe handling:	Not especially.

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Storage

Storage conditions: Store the containers avoiding direct sunlight. Store in less than 40°C in a well-ventilated room.

Safety adequate container materials: Use the container specified by the Fire Service ACT and the United Nations Transport Regulations.

8. Exposure controls/personal protection

Appropriate engineering controls: Use local ventilation equipment.
Install eye and body washing facilities near the handling place.
Display the position of equipment clearly.

Control parameters

Ingredient Name	Industrial Safety and Health Law (JAPAN)	Japan Society for Occupational Health	ACGIH-TLV	
	Administrative Control Levels	Occupational Exposure Limits	TWA	STEL
Ethylene glycol monobutyl ether	25ppm -mg/m ³	20ppm Ceiling limit, Skin, 97mg/m ³ Ceiling limit, Skin	20ppm -mg/m ³	Not established

Personal protective equipment

Respiratory protection: Use a gas mask for organic gases, air-supplied respirator, self-contained compressed air breathing apparatus on the situation.

Hand protection: Organic solvent impermeable protective gloves (Antistatic ones are desirable.)

Eye/face protection: Protective glasses, goggle, protective face shield.

Skin/body protection: Wear long-sleeved working clothes and protective shoes. (Antistatic ones are desirable.)

Use an oiliness apron-resistant, boots depending on the situation.

Hygiene measures: Wash with soap and water after handling.

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9. Physical and chemical properties

Product

Form:	Liquid (20°C)
Color:	Colorless transparent
Odor:	Faint Odor
Melting point/freezing point:	< -70(°C)
Initial boiling point and boiling range:	171.2(°C)
Flammability (solid, gas):	No data
Upper/lower flammability or explosive limits:	1.1 – 10.6(%)
Flash point:	63.5(°C)
Auto-ignition temperature:	244(°C)
Decomposition temperature:	No data
pH:	No data
Kinematic viscosity:	No data
Solubility:	water : Soluble. organic solvents : Soluble.
Partition coefficient: n-octanol/water:	No data
Vapour pressure:	80(Pa)(20°C)
Specific Gravity:	0.902(20°C)
Vapour density:	4.07
Evaporation rate:	6
Particle characteristics:	No data

10. Stability and reactivity

Chemical stability:	Stable under normal temperatures and pressures.
Possibility of hazardous reactions:	It may react with the oxidizing agent and generate heat.
Conditions to avoid:	Avoid heat, flames, sparks and ignition sources.
Incompatible materials:	Acid, Oxidizing agents.
Hazardous decomposition products:	No data available

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Product Name: **BUTYL GLYCOL****11. Toxicological information****Product**

Acute toxicity (oral):	Category 4
Acute toxicity (dermal):	No Classification
Acute toxicity (inhalation):	Exempt classification (Gas) No Classification (Vapour) Classification not possible (Dust/Mist)
Skin corrosion/irritation:	Category 2
Serious eye damage/irritation:	Category 2A
Respiratory sensitization:	Classification not possible
Skin sensitization:	No Classification
Mutagenicity:	Classification not possible
Carcinogenicity:	Classification not possible
Reproductive toxicity:	Category 2
Target organ effect/Single exposure:	Category 1(blood systems,respiratory apparatus,liver,kidney)
Target organ effect/Multi exposure:	Category 1(blood systems)
Respiratory toxic:	Classification not possible

Ingredient**Ethylene glycol monobutyl ether**

Acute toxicity (oral):	Category 4 LD50: 1200 mg/kg[guinea pig]
Acute toxicity (dermal):	No Classification LD50:> 2000 mg/kg[guinea pig]
Acute toxicity (inhalation):	Exempt classification (Gas) LC50:> 690 ppm[guinea pig] No Classification (Vapour) Classification not possible (Dust/Mist) Effect on animals : In rats and rabbits, toxicity is caused by the hemolysis of 2-butoxyacetic acid produced by metabolism, but dogs, guinea pigs, etc. do not show toxicity. It is believed that human erythrocytes also show no toxicity.

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Skin corrosion/irritation:

Category 2

Severe [rabbit]

Effect on animals : There were multiple reports of skin irritation test with rabbits. It was reported that, in 2 tests equivalent to OECD TG 404, it was irritating (SIDS (2006), ECETOC TR95 (2005), NICNAS (1996)), and that although severe and persistent erythema and severe edema were observed as the findings, they disappeared after 7 days (SIDS (2006)). It was reported that in other skin irritation tests by 4-hour application, it was "mildly irritating" or "irritating" (SIDS (2006), ECETOC TR95 (2005), EU-RAR (2006)). In addition, after applying to rabbits under semi-occlusive conditions for 24 hours, mild to moderate erythema (5/6 animals) and mild edema (4/6 animals) were observed immediately after application, and mild to moderate erythema (4/6 animals) and mild edema (3/6 animals) were observed 48 hours after application (EU-RAR (2006)). The primary irritation score was 1.5 in this test. Additionally, there is a result that it was irritating in a skin irritation test with guinea pigs (SIDS (2006), EU-RAR (2006)). Based on the above results, it was classified in Category 2.

Serious eye damage/irritation:

Category 2A

Severe [rabbit]

Effect on person : It is described that, in humans, although it caused painful irritation and sometimes with corneal clouding, the symptoms generally disappeared within a few days (DFGOT vol. 6 (1994)).

Effect on animals : There are reports that, in eye irritation test with rabbits (OECD TG 405, GLP-compliant), although 24-27 hours after administration, corneal opacity score was 0.9, iritis score was 0.6, conjunctivitis score was 2.6, and conjunctival edema score was 1.8, they disappeared within 21 days (ECETOC TR95 (2005), EU-RAR (2006)). Moreover, there were several other reports of eye irritating tests with rabbits, and there is a report that it was severely irritating in a Draize test (SIDS (2006), EU-RAR (2006)). Based on the above result, it was classified in Category 2A.

Respiratory sensitization:

Classification not possible

Effect on person : Classification not possible due to lack of data.

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Skin sensitization:

No Classification

Effect on person : There is a report that it was negative in a patch test to 214 volunteers (ATSDR (1998), ECETOC TR95 (2005)).

Effect on animals : There is a report that it was negative in a maximization test with guinea pigs (OECD TG 406, GLP) (SIDS (2006), ECETOC TR95 (2005), NICNAS (1996)). There is a report that it was negative also in another maximization test (SIDS (2006), ATSDR (1998), NICNAS (1996)). In addition, there is a report that, when a patch test (GLP-compliant) of a 10% aqueous solution of this substance was conducted in 200 volunteers, it was negative (SIDS (2006)). Based on the above results, it was classified as "Not classified."

Mutagenicity:

Classification not possible

The substance was classified as "Classification not possible" because it was not possible to classify a substance as "Not classified" according to the revised GHS classification guidance for the Japanese government. As for in vivo, it was negative in bone marrow micronucleus tests with rats and mice (Environmental Risk Assessment for Chemical Substances Vol. 6 (Ministry of the Environment, 2008), SIDS (2007), EU-RAR (2006), NICNAS (1996)). As for in vitro, there were both negative and positive results in bacterial reverse mutation tests, and gene mutation tests and sister chromatid exchange tests with cultured mammalian cells, and it was negative in a chromosomal aberration test and a micronucleus test (EU-RAR (2006), NICNAS (1996), SIDS (2007), Environmental Risk Assessment for Chemical Substances Vol. 6 (Ministry of the Environment, 2008)).

Carcinogenicity:

Classification not possible

It was classified in group 3 by IARC (IARC 88 (2006)), in A3 by ACGIH (ACGIH (7th, 2003)), and as group C by EPA (IRIS (1999)), showing different carcinogenicity assessments among institutions. However, in a subsequent evaluation, EPA expressed the view that this substance was not likely to be a carcinogen for humans (IRIS TR (2010)), and also SIDS (2007) similarly described that there was no evidence for it being a carcinogen. From the above, according to the revised GHS classification guidance for the Japanese government, it was classified as "Classification not possible."

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Reproductive toxicity:

Category 2

In a teratogenicity test with rats by the inhalation route, a teratogenicity test with rabbits by the inhalation route (OECD TG 414) and a teratogenicity test with rats by the oral route (gavage) (OECD TG 414), developmental effects (such as decreased numbers of implantations and increased resorptions) were observed at doses (200 ppm (970 mg/m³) by inhalation and 200 mg/kg bw/day by gavage) where maternal toxicities (decreased body weight gain, changes in organs' weight and hemal parameter) developed (SIDS (2006)). Therefore, it was classified in Category 2.

Target organ effect/Single exposure: Category 1(blood systems,respiratory apparatus,liver,kidney)

Category 3(anesthetic action)

In humans, respiratory tract irritation, vomiting, dizziness, lethargy, coma, dyspnea, mydriasis, metabolic acidosis, decreased hemoglobin and hematuria were reported by the inhalation and oral route, and hypokalemia, increased serum creatinine concentration, significantly increased urinary excretion of oxalate ester crystals, hypoxemia, pulmonary edema, adult respiratory distress syndrome (ARDS) and nonhemolytic hypochromic anemia with thrombocytopenia were reported by oral ingestion (EU-RAR (2006), SIDS (2007), Environmental Risk Assessment for Chemical Substances Vol. 6 (Ministry of the Environment, 2008), ACGIH (7th, 2003)).

By inhalation exposure to rats, rapid and shallow breathing, loss of coordination, red staining around the urogenital area, enlarged and discolored kidneys and red fluid in the bladder at 450 ppm (SIDS (2007)), severe hemoglobinuria, dyspnea, changes in the lung, kidney, liver and spleen (no specific description) at 486 ppm (ACGIH (7th, 2003)), and bloody urine and poor coordination at 475 ppm were observed. At or above 560 ppm by inhalation exposure of mice, dyspnea, severe hemoglobinuria, follicular phagocytosis and congestion of the veins in the spleen, focal necrosis, lymphoid hyperplasia, interstitial nephritis and bronchopneumonia were observed (EU-RAR (2006)). In the case of oral exposure, there are reports that sluggishness,

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prostration, narcosis, hemorrhaged lungs, severely congested kidneys, hemoglobinuria, bloody urine and mottled livers were observed at 1,120-1,420 mg/kg with rats, and that inactivity, labored breathing, dyspnea, anorexia, tremors, hematuria at a high dose, blood in the stomach and intestines in dead animals were observed at 1,519-2,005 mg/kg with mice (EU-RAR (2006)). In the case of dermal application, there is a report that prostration, hypothermia, hemoglobinuria, narcosis, failure of respiration, renal impairment, modified lungs (no detail description), congestion of the liver, necrotic foci with mesenchymatous reactions, inconstant steatosis, congestion of the spleen, enlarged kidney with hemoglobinemic nephrosis and cutaneous lesions including necrosis were observed at 72-225 mg/kg for rabbits (EU-RAR (2006)). Besides, these findings were confirmed within the guidance value range of Category 1.

From the above, it was classified in Category 1 (hemal system, respiratory organs, liver, kidney), Category 3 (narcotic effects).

Target organ effect/Multi exposure:

Category 1(blood systems)

There was no available information on effects from repeated exposure in humans (SIDS (2007), CICAD 67 (2010)). In experimental animals, in a 13-week administration test with rats by drinking water, effects on the hemal system (such as decreased erythrocyte counts) and decreased sperm concentrations were observed at a dose (ca. 70 mg/kg/day) equivalent to Category 2 (CICAD 67 (2010)).

By the inhalation route, in 14-week or 2-year inhalation exposure tests with rats or mice, findings of anemia (decreases in erythrocytes, hemoglobin concentration and hematocrit values, increased reticulocyte count, etc.) were observed from the low concentration (0.15 mg/L/6 hours) equivalent to Category 1 (SIDS (2007), CICAD 67 (2010)), and the effects tended to be more intense in rats than in mice, and in females rather than in males (CICAD 67 (2010)). In 14-week inhalation exposure tests with rats and mice, secondary changes related to hemal effects, such as an increase in extramedullary hematopoiesis in the spleen, hemosiderin deposition in the spleen, liver and kidneys, hematopoietic cell proliferation in the bone marrow, were observed at high concentrations corresponding to "Not classified"(CICAD 67 (2010)). Besides, this substance caused no obvious effects on the testis both in human and experimental animals. From the above, it was classified in Category 1 (hemal system).

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Respiratory toxic:

Classification not possible

Effect on person : Classification not possible due to lack of data.

12. Ecological information

Product

Ecotoxicity

Acute toxicity:

No Classification

Chronic toxicity:

No Classification

Persistence and degradability :

No information.

Bioaccumulative potential :

No information.

Mobility in soil:

No information.

Hazardous to the ozone layer:

Classification not possible

Other impact :

No information.

Ingredient

Ethylene glycol monobutyl ether

Ecotoxicity

Acute toxicity:

No Classification

Fish:

96hrLC50: 116 mg/L[Cyprinodon variegatus]

Daphnia:

96hrLC50: 130 mg/L[Penaeus monodon]

Algae:

No data

Chronic toxicity:

No Classification

Fish:

No data

Daphnia:

No data

Algae:

No data

Persistence and degradability :

Readily biodegradable

Bioaccumulative potential :

Low bioaccumulation

Hazardous to the ozone layer:

Classification not possible

13. Disposal considerationsDisposal
methods:

When waste materials and waste water are to be treated, collect them into specified containers and entrust the disposal to a disposal contractor having an industrial waste disposal contractor permit.

Do not use the used containers for other purposes like filling other substances. Be sure to dispose of them after treating the content according to the above description. In case of recycling the container, return the container as it is after fitting a stopper without filling anything into it.

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14. Transport information

International classification regulations	UN classification :	Not applicable
	UN number :	Not applicable
	Proper shipping name :	Not applicable
	Packing group :	Not applicable
Domestic restriction:	Transport the material in accordance with the regulations in your country or region.	
Specific security precaution and condition of transportation:	Load the containers in such a way as not to wet with water, fall down, tumble, or being damaged. Cover the loaded cargo to prevent direct sunlight.	
Emergency Response Guide (ERG) Numbers:	171	

15. Regulatory information

Regulatory information with regard to this substance in your country or region should be examined by your own responsibility.

16. Other information

Reference	Information obtained in NITE (National Institute of Technology and Evaluation) and other literature surveys.
Disclaimer	<p>About the description: This SDS was created in accordance with JIS Z 7253 based on the materials and data available at the time of creation.</p> <p>Detailed information such as composition and ingredients corresponding to overseas legal regulation registration confirmation etc. may not be described, so please contact our sales staff separately if necessary.</p> <p>Precautions are for normal handling. In case of special handling, it is the responsibility of the user to take safety measures suitable for the intended use and usage.</p> <p>We have paid close attention to the contents, but we do not guarantee the contents.</p> <p>This product can only be used for industrial purposes. If you want to use it for other purposes, please contact us in advance.</p>