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Safety Data Sheet

1. Chemical product and company identification

Product name : EL-GBL

Company information

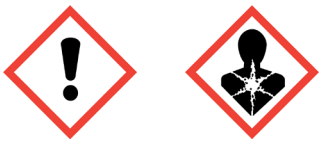
Name of manufacturer : KANTO CHEMICAL CO., INC.
Address : 2-1, Nihonbashi, Muromachi 2-Chome, Chuo-Ku, Tokyo, 103-0022, Japan
Name of section : Electronic materials division technical department
Telephone number : +81-3-6214-1080
Facsimile number : +81-3-3241-1043
Mail address : el-info@kanto.co.jp
Reference No : GE00432 1.0

2. Hazards identification

GHS classification

Health hazards	Acute toxicity (oral)	Category 4
	Serious eye damage/eye irritation	Category 2A
	Specific target organ toxicity (single exposure)	Category 2 (central nervous system)
	Specific target organ toxicity (single exposure)	Category 3 (narcosis)

Hazard pictograms



Signal word : Warning

Hazard statements : Harmful if swallowed
Causes serious eye irritation
May cause drowsiness or dizziness
May cause damage to organs (central nervous system)

Precautionary statements

Prevention : Do not breathe mist, vapors.
Wash hands, forearms and face thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.

Response : IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Call a POISON CENTER or doctor.
Call a POISON CENTER or doctor if you feel unwell.
Rinse mouth.

If eye irritation persists: Get medical advice/attention.

Storage : Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal : Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

3. Composition/information on ingredients

Distinction of substance or mixture : Substance

Synonyms : γ-Butyrolactone

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
4-Butyrolactone	min. 99.5	C4H6O2	Listed	202-509-5	96-48-0

4. First aid measures

First aid measures

First-aid measures after inhalation : Remove the victim to fresh air, and make him blow his nose and gargle.

First-aid measures after skin contact : Wash the affected areas under running water.

First-aid measures after eye contact : Wash the affected areas under running water for at least 15 minutes. If necessary, get medical treatment.

First-aid measures after ingestion : Give the victim water or salt water and make him vomit. Get medical attention.

Personal Protection in First Aid and Measures : Rescuers should wear proper protective equipment like rubber gloves, goggles.

5. Fire fighting measures

Suitable extinguishing media : Water, dry chemical powder, carbon dioxide, dry sand

Unsuitable extinguishing media : None

Firefighting instructions : Move containers from fire area if it can be done without risk, if not possible, apply water from a safe distance to cool and protect surrounding area.

Dry chemical powder, carbon dioxide or dry sand should be used for small fires. Foam extinguisher is effective for a large scale fire.

Personal protection (Emergency response) : Wear breathing apparatus.

6. Accidental release measures

Personal Precautions, Protective Equipment and Emergency Procedures

General measures : Wear proper protective equipment and avoid contact with skin and inhalation of vapor. Conduct operations from upwind and evacuate people downwind. Remove all sources of ignition. Keep away personnel except for authorized ones from spillage area by

stretching ropes.

Environmental precautions

Environmental precautions	:	Attention should be given to avoid discharge of spilled product into rivers and resulting environmental damage. When diluting spill with large amounts of water, discharge of untreated wastewater into the environment must be avoided.

Methods and Equipment for Containment and Cleaning up

For containment	:	Absorb spill with inert material (e.g, diatomaceous earth, sand) and flush spillage area with copious amounts of water.
Prevention Measures for Secondary Accidents	:	Remove nearby sources of ignition and prepare extinguishing media.

7. Handling and storage

Handling

Technical measures	:	Wear proper protective equipment to avoid contact with skin or inhalation of vapor. Fire is strictly prohibited. Ventilate well at working places.
Precautions for safe handling	:	Use with an enclosed system or a local exhaust ventilation. Use in well-ventilated areas. Do not allow contact with oxidizing substances.

Storage

Storage conditions	:	Store in a dark, cool place and tightly closed.
Material used in packaging/containers	:	Glass, fluorine resin, stainless steel.

8. Exposure controls / Personal protection equipment

ACGIH TWA	Not established

Appropriate engineering controls	:	Use with an enclosed system or a local exhaust ventilation.

Protective equipment

Respiratory protection	:	If necessary, wear chemical cartridge respirator with an organic vapor cartage
Hand protection	:	Impervious protective gloves
Eye protection	:	Safety goggles
Skin and body protection	:	Protective clothing, protective boots

9. Physical and chemical properties

Physical state	:	Liquid
Color	:	Colorless — pale yellow
Odor	:	Acetone like odor
pH	:	No data available
Melting point	:	-43.53 ° C
Freezing point	:	No data available
Boiling point	:	204 ° C
Flash point	:	98.3 ° C

Auto-ignition temperature	:	455 ° C
Decomposition temperature	:	No data available
Flammability (solid, gas)	:	No data available
Vapor pressure	:	1.5 hPa (20℃)
Relative density	:	No data available
Density	:	1.13 g/cm³ (25℃)
Relative gas density	:	3.0
Solubility	:	Water: Miscible.
Partition coefficient n-octanol/water (Log Pow)	:	0.298
Explosive limits (vol %)	:	3.6 - 16 vol %
Viscosity, kinematic:	:	1.5 mm²/s (25℃)
Particle characteristics	:	No data available

10. Stability and reactivity

Reactivity	:	May react with oxidizing substances.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No data available
Conditions to avoid	:	Light, heat.
Incompatible materials	:	Oxidizing substances.
Hazardous decomposition products	:	Carbon monoxide.

11. Toxicological information

Acute toxicity (oral)	:	Harmful if swallowed rat oral LD50=1540mg/kg
Acute toxicity (dermal)	:	No classification guinea pig skin LD50>5000mg/kg
Acute toxicity (inhalation)	:	No classification (gas) Classification not possible (vapor) No classification (dust, mist)
Acute toxicity (mist) - Description	:	rat inhalation LC50>5.1mg/L/4H
Skin corrosion/irritation	:	No classification In the rabbit test, application of undiluted substance for 20 hours caused no irritating effects. In other rabbit test, slightly, hardly perceptible or moderate erythema and hardly perceptible edema occurred and resulted as "mildly irritating". Based on the information, the substance was classified into "No classification".
Serious eye damage/irritation	:	Causes serious eye irritation In several reports of rabbit tests, there was only one information of the study in conformity with OECD TG 405 and GLP from the "List 1" information source. In the test with 0.1mL of undiluted substance, the modified maximum average score (MMAS) was 43.9 (maximum score was 110) equivalent to AOI 30-80. Thus, the substance was classified into category 2A.
Respiratory sensitization	:	Classification not possible
Skin sensitization	:	Classification not possible

Germ cell mutagenicity	:	Classification not possible There are negative results in both of two micronucleus tests using bone marrow cells obtained from the mice intraperitoneally administered (in vivo mutagenicity test in somatic cells).
Carcinogenicity	:	No classification IARC classifies it as group 3(not classifiable as to its carcinogenicity to humans).
Reproductive toxicity	:	Classification not possible
STOT-single exposure	:	May cause damage to organs (central nervous system) May cause drowsiness or dizziness As for acute toxic effects based on human cases, the following symptoms were described: bradycardia, hypothermia, depression of central nervous system, prolonged unconsciousness, confusion, aggression, torpor, and ataxia. In fact, unconsciousness was reported in numerous cases who ingested the substance or its products, and the signs concurrently observed included coma, narcosis, convulsions and hypopnea (KemI-Riskline (2004), HSDB (2000)). In the animal study, signs of sedation and loss of righting reflex were described in rats (LD50 value: 1800 mg/kg) following single oral administration. With regard to the results described above, since information on humans were collected from the "List 2" information source and the findings of rats corresponded to category 2 within the range of the guidance values, the substance was classified as category 2 (central nervous system). Moreover, narcotic effects were also described, so that category 3 (narcosis) was added.
STOT-repeated exposure	:	Classification not possible
Aspiration hazard	:	Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute	:	No classification Fish (Carp) LC50=220-460mg/L/96H
Aquatic chronic	:	No classification

Persistence and degradability

No additional information available

Bioaccumulative potential

No additional information available

Mobility in soil

No additional information available

Hazardous to the ozone layer

Ozone	:	Classification not possible

13. Disposal considerations

Ecology - waste materials	:	Burn in a chemical incinerator equipped with an afterburner and a scrubber. Or entrust approved waste disposal companies with the disposal.
Contaminated container and packaging	:	In case of disposal of empty bottles, dispose bottles after removing the content thoroughly.

14. Transport information

International Regulations

Transport by sea(IMDG)

UN-No. (IMDG)	:	Not applicable
Proper Shipping Name (IMDG)	:	Not applicable
Packing group (IMDG)	:	Not applicable
Transport hazard class(es) (IMDG)	:	Not applicable

Air transport(IATA)

UN-No. (IATA)	:	Not applicable
Proper Shipping Name (IATA)	:	Not applicable
Packing group (IATA)	:	Not applicable
Transport hazard class(es) (IATA)	:	Not applicable
Marine pollutant	:	Not applicable

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

Data sources : Dictionary of Organic Compounds, The society of Synthetic Organic Chemistry, Kodansha Ltd. (1985) .
Solvents Handbook, T, Asahara el, Kodansha Scientific Ltd. (1976) .
Dangerous Properties of Industrial Materials,6th ed. N.I.Sax Van Nostrand Reinhold Company (1984) .
Handbook of 17322 Chemical Products, The Chemical Daily Co. (2022) .
NITE Chemical Risk Information Platform (NITE-CHRIP), National Institute of Technology and Evaluation.

The information contained herein is based on several references and the present state of our knowledge. However the SDS does not always cover all information about the product, handle the product carefully.The information is intended to ordinary usage, in case of particular handlings, conduct appropriate safety measurements.The information herein is only provision of information, and it does not represent a guarantee the properties of the product.The Safety Data Sheet(SDS) is prepared based on JIS Z7253.