1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: iso-Propanol

NAME OF SUPPLIER: GL Sciences Inc.

ADDRESS: 22-1 Nishishinjuku 6-chome Shinjuku-ku Tokyo 163-1130, Japan

CHARGE SECTION: International Sales Section

TELEPHONE No.: +81-3-5323-6620

FACSIMILE No.: +81-3-5323-6621

PRODUCT No.: 1021-15104

SDS No.: 1021-15104

Research use only.

2. HAZARDS IDENTIFICATION

GHS CLASSIFICATION:
- Flammable liquid: Category 2
- Serious eye damage/eye irritation: Category 2
- Reproductive toxicity: Category 2
- Specific target organ toxicity (Single exposure): Category 1 (central nervous system, systemic toxicity), Category 3 (respiratory irritation)
- Specific target organ toxicity (Repeated exposure): Category 1 (blood system), Category 2 (respiratory tract, liver, spleen)

HAZARD SYMBOL:

SIGNAL WORD: Danger

HAZARD STATEMENTS:
- H225: Highly flammable liquid and vapour
- H319: Cause serious eye irritation
- H361: Suspected of damaging fertility or the unborn child
- H370: Cause damage to organs <central nervous system, systemic toxicity>
- H335: May cause respiratory irritation
- H372: Cause damage to organs through prolonged or repeated exposure <blood>
- H373: May cause damage to organs through prolonged or repeated exposure <respiratory tract, liver, spleen>

PRECAUTIONARY STATEMENTS:
- P202: Do not handle until all safety precautions have been read and understood.
- P210: Keep away from heat/sparks/open flames/hot surfaces. -No smoking.
- P233: Keep container tightly closed.
- P240: Ground/bond container and receiving equipment.
- P241: Use explosion-proof electrical/ventilating/lighting/equipment.
- P242: Use only non-sparking tools.
- P243: Take precautionary measures against static discharge.
- P280: Wear protective gloves/protective clothing/eye protection/face protection.
- P260: Do not breathe fume/gas/mist/vapours.
- P264: Wash hands thoroughly after handling.
- P270: Do not eat, drink or smoke when using this product.
- P271: Use only outdoors or in a well-ventilated area.
- P303+P361+ P353: IF ON SKIN: Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P370+P378: In case of fire: Use appropriate media such as chemical powder or carbon dioxide to extinguish.
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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 attention.

P308+P313 IF EXPOSED OR CONCERNED: Get medical advice/attention.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P314 Get medical attention if you feel unwell.


P405 Store locked up.

P501 Dispose of contents/container in accordance with all applicable regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL IDENTITY: iso-Propanol

SYNONYMS: iso-Propyl alcohol, Propane-2-ol, 2-Propanol

CONTENT: > 99 %

CHEMICAL FORMULA: (CH₃)₂CHOH

MOLECULAR WEIGHT: 60.1

CAS No.: 67-63-0

TSCA INVENTRY: Listed

EINECS No.: 200-661-7

EC INDEX No.: 603-117-00-0

4. FIRST AID MEASURES

GENERAL ADVICE: Consult a physician. Show this safety data sheet to the doctor in attendance.

INHALATION: Move victim to fresh air. If breathing is difficult, give oxygen. If irritation persists, consult a physician.

SKIN CONTACT: Remove contaminated clothes and shoes, rinse skin with plenty of water or shower. Use soap to help assure removal. Consult a physician immediately.

EYE CONTACT: Flush eyes well with flooding large amounts of running water for at least 15 minutes. Assure adequate flushing by separating the eyelids with sterile fingers. If possible, remove any contact lenses. Consult a physician immediately.

INGESTION: Rinse mouth, give plenty of water to dilute the substance. Do not induce vomiting. Never give anything by mouth to an unconscious person. Consult a physician immediately.

MOST IMPORTANT SYMPTOMS AND EFFECTS: High concentration inhalation induce to irritating eyes, nose and throat. May induce drowsiness, headache and poor coordination. May induce dry skin, chapped skin and dermatitis by long term inhalation.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

FIRE & EXPLOSION HAZARDS: Toxic, irritating, dust/fume/smoke may be emitted. Carbon monoxide may be foamed.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS: Firemen should wear normal protective equipment(full bunker gear) and positive-pressure self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: Remove ignition sources and ventilate the area. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid raising dust and avoid contact with skin and eyes.

ENVIRONMENTAL PRECAUTIONS: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

METHODS FOR CLEAN UP: Do not touch spilled material without suitable protection. Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.
**7. HANDLING AND STORAGE**

**HANDLING**: Keep away from ignition sources and ventilate the area — No smoking. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with eyes, skin, and clothing. Avoid inhalation of vapour or mist. Avoid prolonged or repeated exposure. Handle this product with suitable protection. Wear protections when cutting ample and treating this product.

**STORAGE**: Store away from sunlight, heat and all ignition sources in well-ventilated dry place. Keep container tightly closed. Keep cool (2 ~ 10 °C).

**INCOMPATIBLE PRODUCTS**: Strong oxidizers, acids

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**8. EXPOSURE CONTROL/PERSONAL PROTECTION**

**ENGINEERING MEASURES**: Use exhaust ventilation to keep airborne concentrations below exposure limits. Use adequate ventilation.

**CONTROL PARAMETERS**

- ACGIH: 200 ppm
- OSHA: 400 ppm
- NIOSH: 400 ppm

**PERSONAL PROTECTION**

- Respiratory protection: Use respirators approved under appropriate government standards and follow all regulations.
- HAND PROTECTION: Chemical resistant gloves
- EYE PROTECTION: Safety glasses(goggles)
- SKIN PROTECTION: Protective clothing

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**9. PHYSICAL AND CHEMICAL PROPERTIES**

**APPEARANCE**: Colorless, clear liquid

- ODOR: Characteristic odor
- pH: No data available
- BOILING POINT: approx. 82.3 °C
- MELTING POINT: -89.7 °C
- FLASH POINT: 12 °C (TCC)
- EXPLOSIVE LIMITS: 2.0 ~ 12.0 vol %
- VAPOR PRESSURE: 4.4 kPa (at 20°C)
- VAPOR DENSITY: 2.1
- SPECIFIC GRAVITY: 0.78505 g/cm³ (at 20/4°C)

**SOLUBILITY IN**

- Water: Miscible
- Organic solvent: Miscible

**PARTITION COEFFICIENT**: n-octanol/water

- log Pow: 0.05

**AUTOIGNITION TEMPERATURE**: 399 °C

**DECOMPOSITION TEMPERATURE**: No data available

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**10. STABILITY AND REACTIVITY**

**REACTIVITY**: Stable under recommended storage conditions.

**CHEMICAL STABILITY**: Deteriorated by sun-light.

**CONDITION TO AVOID**: Sunlight, heat, open flames, high temperature, sparks, static electrical charge, other ignition sources, moisture

**INCOMPATIBLE MATERIALS**: Oxidizers and strong acids

**HAZARDOUS DECOMPOSITION PRODUCTS**: CO, CO₂
11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY: Oral; rat LD₅₀=4,384 - 5,840 mg/kg (EPA pestosides, 1995)
Dermal; rabbit LC₅₀=12,870 mg/kg (PATTY(6th, 2012))
Inhalation; rat LC₅₀=68.5, 72.6 mg/L (EHC 103(1990), SIDS(2002))

SKIN CORROSION/IRRITATION: Human; not irritating (EHC 103, 1990)
Rabbit; non to mild irritating

EYE DAMAGE/EYE IRRITATION: Rabbit; mild to severe irritating, no serious damage (EHC(1990), SIDS(2002), PATTY(6th, 2012), ECETOC TR48(1998)).

SENSITIZATION: No data available

GERM CELL MUTAGENICITY: Lack of data

CARCINOGENICITY: This substance is classified in Group 3(IARC 71,1999), is classified in A4 (ACGIH(7th,2001).

REPRODUCTIVE TOXICITY: Effect to parent rats and babies (PATTY(6th,2012), SIDS(2002)).

SPECIFIC TARGET ORGAN TOXICITY - single exposure -
Systemically Effect/Damage to human (Central nervous system inhibition, stimulation to the digestive tract system and effect to cardiovascular system). Irritating to nose or throat by inhalation (SIDS(2002), EHC 103(1990), Risk assessment report vol.6(2005)).

SPECIFIC TARGET ORGAN TOXICITY - repeated exposure -
Effect/damage to rat by inhalation (SIDS(2002), PATTY(6th,2012)).

ASPIRATION HAZARD: No data available

12. ECOLOGICAL INFORMATION

ECOTOXICITY:
- Killifish; LC₅₀>100 mg/L, 96h
- Daphnia magna; EC₅₀>1,000 mg/L, 48h
(Aquatic toxicity tests of chemicals conducted by Ministry of the Environment in Japan, 1997)

BIODEGRADABILITY: BOD=86 % (Existing chemical substances safety evaluation data,1993)

BIOACCUMULATIVE POTENTIAL: infinitely soluble (25°C)(HSDB,2013)

MOBILITY IN SOIL: No data available

OTHER ADVERSE EFFECTS: Not listed in Montreal Protocol list.

13. DISPOSAL INFORMATION

Dispose in a hazardous-waste site in accordance with all applicable regulations. Any disposal practice must be in compliance with country, local, state, and federal laws and regulations (contact country, local or state environment agency for specific rules).

14. TRANSPORT INFORMATION

IATA
UN NUMBER: 1219
UN PROPER SHIPPING NAME: iso-Propanol
CLASS: 3, flammable liquid
PACKING GROUP: II
ADR/RID: 1219, iso-Propanol, II
DOT: 1219, iso-Propanol, II
MARINE POLLUTANT: No

15. REGULATORY INFORMATION

US REGULATIONS: Labeling according to EC Directives; See section 2
EU REGULATIONS: Labeling according to EC Directives; See section 2

16. OTHER INFORMATION

NOTICE:
The information contained in the SDS description is applicable exclusively to the chemical substance identified herein and for its intended use as an analytical reference standard or reagent and to the unit quantity intended for that purpose. The information does not relate to, and may not be appropriate for, any application or larger quantity of the substance described. Our products are intended for the use by individuals possessing sufficient technical skill and qualification on use the material potential hazardous chemical. Accordingly, no representation or warranty, express or implied, with respect to merchantability and fitness for a particular purpose is made with respect to the information contained herein.

Attention:
This product in terms of chemical identity and the unit amount provide is intended for use in chemical analysis and not for human consumption, nor any other purpose.