SAFETY DATA SHEET

1. Identification

Product identifier Hypoxia Probe Solution (LOX-1)

Other means of identification

Product code NC-LOX-1S

Recommended use Research use only.

Recommended restrictions None known.

Manufacturer / Importer / Supplier / Distributor information

Manufacturer and Supplier (Asia) Medical & Biological Laboratories (MBL) Co., Ltd.
4-5-3 Sakae, Naka-ku, Nagoya, Aichi 460-0008, Japan

Telephone number +81-52-238-1901 (Monday to Friday, 9 AM to 5 PM JST)

Fax +81-52-238-1440

E-mail sds-support@mbl.co.jp

URL http://www.mbl.co.jp/e/index.html

Contact person SDS Support

Supplier MBL International Corporation
15A Constitution Way, Woburn, MA 01801, USA

Telephone number +1-800-200-5459, option 3

Fax +1-781-939-6963

E-mail tech@mblintl.com

URL http://www.mblintl.com/

Contact person Technical Service

2. Hazard(s) identification

Physical hazards Flammable liquids Category 4

Health hazards Not classified.

OSHA hazard(s) Not classified.

Label elements

Hazard symbol None.

Signal word Warning

Hazard statement Combustible liquid.

Precautionary statement

Prevention Keep away from flames and hot surfaces. - No smoking. Wear protective gloves/eye protection/face protection.

Response In case of fire: Use foam, carbon dioxide, dry powder or water fog for extinction.

Storage Store in a well-ventilated place. Keep cool.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) None.

3. Composition/Information on ingredients

Mixtures

Chemical name	CAS number	%
Dimethyl sulfoxide (DMSO)	67-68-5	90 - 100

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation	Move to fresh air. Get medical attention if any discomfort continues.
Skin contact	Remove contaminated clothing. Wash with soap and water. Get medical attention if irritation develops or persists. Wash contaminated clothing before reuse. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital.
Eye contact	Immediately flush eye(s) with plenty of water. Remove any contact lenses and open eyelids wide apart. Get medical attention if irritation develops or persists.
Ingestion	Rinse mouth thoroughly. Get medical attention if any discomfort continues.
Most important symptoms/ effects, acute and delayed	Mild eye irritation. May cause mild skin irritation.
Indication of immediate medical attention and special treatment needed	Treat symptomatically.
General information	Get medical attention if any discomfort develops.

5. Fire-fighting measures

Suitable extinguishing media	Water. Foam. Dry powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	Vapors may form explosive mixtures with air. By heating and fire, harmful vapors/gases may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus, operated in positive pressure mode and full protective clothing must be worn in case of fire.
Fire-fighting equipment/ instructions	Move containers from fire area if you can do that without risk. Use water spray to cool unopened containers. Prevent entry to sewers and pubic waters.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Ensure adequate ventilation. Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Avoid inhalation of mist and contact with skin and eyes. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Dike far ahead of liquid spill for later disposal. Small Spills: Absorb spillage with non-combustible, absorbent material. Clean contaminated surface thoroughly. After removal, flush contaminated area thoroughly with water. Large Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the productand place into a container for later
Environmental precautions	Prevent further leakage or spillage if safe to do so.

7. Handling and storage

Precautions for safe handling	Provide adequate ventilation. Use work methods which minimize production of vapors and mists. Avoid inhalation of mist and contact with skin and eyes. Do not smoke, use open fire or other sources of ignition. Wash hands after handling. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Keep away from sources of ignition - No smoking. Keep container tightly closed. Store away from incompatible materials.

8. Exposure controls/personal protection

Occupational exposure limits

US. Workplace Environmental Exposure Level (WEEL) Guides

Components	Type	Value
Dimethyl sulfoxide (DMSO) (CAS 67-68-5)	TWA	250 ppm

Biological limit values	No biological exposure limits noted for the ingredient(s).
Exposure guidelines	No exposure standards allocated.
Appropriate engineering controls	Provide adequate ventilation and minimize the risk of inhalation of vapors and mists. Use explosion-proof equipment.

Individual protection measures, such as personal protective equipment

Eye/face protection	If risk of splashing, wear safety goggles or face shield.
Skin protection	
Hand protection	Wear protective gloves. Butyl rubber gloves are recommended, but be aware that the liquid may penetrate the gloves. Frequent change is advisable. Suitable gloves can be recommended by the glove supplier.
Other	Wear apron or protective clothing in case of splashes.
Respiratory protection	If airborne concentrations are above the applicable exposure limits, use NIOSH approved respiratory protection. Seek advice from local supervisor.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice. Wash hands after handling. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Liquid.
Color	Colorless.
Odor	Garlic-like odor.
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	372.2 °F (189 °C) DMSO
Flash point	188.6 °F (87.0 °C) DMSO
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	Soluble in water.
Partition coefficient (*n*-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and
Chemical stability	Stable under normal temperature conditions.
Possibility of hazardous reactions	None known.
Conditions to avoid	Heat, flames and sparks. Moisture.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	Sulfur oxides. Carbon oxides.

11. Toxicological information

Information on likely routes of exposure

Ingestion	Large quantities: May be absorbed in the body and cause dizziness, nausea and vomiting.

Inhalation Components of the product may be absorbed into the body by inhalation.

Skin contact May be absorbed through the skin. DMSO (dimethyl sulfoxide) easily penetrates the skin and may enhance the rate of skin absorption of skin-permeable substances.

Eye contact Direct contact with eyes may cause temporary irritation.

Symptoms related to the physical, chemical and toxicological characteristics Mild eye irritation. May cause mild skin irritation.

Information on toxicological effects

Acute toxicity Large quantities: May cause discomfort if swallowed. May be absorbed in the body and cause dizziness, nausea and vomiting.

Components		Species	Test Results
Dimethyl sulfoxide (DMSO) (CAS 67-68-5)			
Acute			
Oral	LD50	Mouse	7,920 mg/kg
		Rat	17.9 ml/kg

Skin corrosion/irritation May cause mild skin irritation. DMSO (dimethyl sulfoxide) easily penetrates the skin and may enhance the rate of skin absorption of skin-permeable substances.

Serious eye damage/eye irritation Direct contact with eyes may cause temporary irritation.

Respiratory sensitization No data available.

Skin sensitization No data available.

Germ cell mutagenicity No data available.

Carcinogenicity

IARC Monographs. Overall Evaluation of Carcinogenicity	Not listed.
NTP Report on Carcinogens	Not listed.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)	Not listed.

Reproductive toxicity No data available.

Specific target organ toxicity - single exposure No data available.

Specific target organ toxicity - repeated exposure No data available.

Aspiration hazard No data available.

12. Ecological information

Ecotoxicity The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills have a harmful or damaging effect on the environment.

Components		Species	Test Results
Dimethyl sulfoxide (DMSO) (CAS 67-68-5)			
Aquatic			
Fish	LC50	Rainbow trout,donaldson trout (*Oncorhynchus mykiss*)	33,000 - 37,000 mg/L, 96 hours

Persistence and degradability No data available.

Bioaccumulative potential

Partition coefficient *n*-octanol / water (log *K*ow)

Dimethyl sulfoxide (DMSO) (CAS 67-68-5)	-2.03

Mobility in soil This product is water soluble and may disperse in soil.

Mobility in general The product is water soluble and may spread in water systems.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Dispose of in accordance with all applicable regulations. Do not discharge into drains, water courses or onto the ground.

Local disposal regulations Dispose of in accordance with local regulations.

Hazardous waste code	Not regulated.
Waste from residues / unused products	Dispose of in accordance with local regulations.
Contaminated packaging	Dispose of in same manner as unused product.

14. Transport information

DOT

UN number	NA1993
UN proper shipping name	Combustible liquids, n.o.s. (Dimethyl sulfoxide (DMSO))
Transport hazard class(es)	
Class	Combustible Liquid.
Subsidiary risk	–
Label(s)	None
Packing group	III
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. This material is not regulated under 49 CFR if in a container of 119 gallon capacity or less.
Special provisions	IB3, T1, T4, TP1
Packaging exceptions	150
Packaging non bulk	203
Packaging bulk	241
IATA	Not regulated as dangerous goods.
IMDG	Not regulated as dangerous goods.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)	Not regulated.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)	Not listed.
CERCLA Hazardous Substance List (40 CFR 302.4)	Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - No Delayed Hazard - No Fire Hazard - Yes Pressure Hazard - No Reactivity Hazard - No
SARA 302 Extremely hazardous substance	Not listed.
SARA 311/312 Hazardous chemical	Yes
SARA 313 (TRI reporting)	Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List	Not regulated.
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)	Not regulated.
Safe Drinking Water Act (SDWA)	Not regulated.

US state regulations

Massachusetts RTK - Substance List	Not regulated.
New Jersey Worker and Community Right-to-Know Act	Dimethyl sulfoxide (DMSO) (CAS 67-68-5)
Pennsylvania Worker and Community Right-to-Know Law	Not regulated.
Rhode Island RTK	Not regulated.
California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT)	Not listed.

International Inventories

Country(s) or region	**Inventory name**	**On inventory (yes/no)***

Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	EC Inventory	Yes
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s). A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information

Issue date	07/03/2017
Revision date	–
Version	10
List of abbreviations	LC50: Lethal Concentration, 50%. LD50: Lethal Dose, 50%.
Further information	Not available.
References	International Chemical Safety Cards (ICSC) GESTIS Substance Database ECHA CHEM
Disclaimer	This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.