



Safety Data Sheet

1 PRODUCT AND COMPANY IDENTIFICATION

Product Name	Ligation high Ver.2
Product Code	LGK-201
SUPPLIER	
Name	TOYOBO Co., Ltd.
Address	2-2-8 Dojima Hama Kita-ku Osaka, 530-8230 Japan
Department	Biotech support Department
Emergency Telephone No.	+81-6-6348-3786
Fax No.	+81-6-6348-3833
Recommended use and restrictions on use	Ligation reagent (Reagent for research)

2 HAZARDS IDENTIFICATION

Important Hazards	Few adverse human health effects are anticipated.
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GHS Classification

Hazard class and category

Physical Hazards	Not classified.	
Health Hazards	Acute toxicity - oral	Classification not possible.
	Skin corrosion/Irritation	Category 3
	Serious eye damage/Eye irritation	Category 2B
Environmental Hazards	Classification not possible.	

Label elements

Pictograms or symbols	—
Signal word	Warning
Hazard statements	Causes mild skin irritation. Causes eye irritation.
Precautionary statement(s)	
Prevention	Avoid substance contact. After handling, wash hands with clean
Response	If skin irritation occurs: Get medical advice / attention. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice / attention.

3 COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Product	Mixture
(Substance/Preparation)	
Chemical Nature	Aqueous solution
Parts Name	Main components
Ligation high Ver.2	T4 DNA Ligase
	Tris(Hydroxymethyl)aminomethane
	Glycerol
	Magnesium chloride
	Sodium chloride
	Dithiothreitol
	CAS No. (EC NO.)
	(EC 6.5.1.1)
	77-86-1
	56-81-5
	7786-30-3
	7647-14-5
	3483-12-3



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Components Contributing to the Hazard

Common Chemical Name (or Generic Name)	Glycerol
Synonyms	Glycerin
Chemical formula	$\text{CH}_2\text{OHCHOHCH}_2\text{OH}$
CAS No.	56-81-5
Concentration	approximately 10%

4 FIRST-AID MEASURES

Inhalation	Remove person to fresh air. Call a doctor if you feel unwell.
Skin Contact	Wash with clean water, immediately.
Eye Contact	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice / attention.
Ingestion	If swallowed: Rinse mouth. Do NOT induce vomiting. If indisposition continues, seek medical attention.

5 FIRE-FIGHTING MEASURES

Extinguishing Media	Water, Carbon Dioxide, Foam, Dry Chemical Powder.
Protection of fire-fighters	Fire-fighting should be done from the windward side of fire area. Fire-fighters should wear proper protective equipment in case of large scale fire.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions	Wear protective gear to avoid eye/skin contact and inhalation.
Environmental Precautions	Avoid disposition to the environment.
Methods for Cleaning up	Use cloth, paper or anything similar to soak up the solution leaking out of the container. Take up under vacuum using dust collecting filter.

7 HANDLING AND STORAGE

HANDLING

Technical Measures	Wear protective equipments and avoid contact with eyes and skin.
Precautions	Always keeping things tidy and in order, and keep laboratory Clean.
Safe Handling Advice	Avoid substance contact. After handling, wash hands with clean water.

STORAGE

Technical Measures	Store in the laboratory bottle.
Storage Conditions	Store at about -20°C.
Incompatible Products	Oxidizers
Packaging Materials	Store in the original package.



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8 EXPOSURE CONTROLS/ PERSONAL PROTECTION

ENGINEERING Set up good ventilation and exhaust system in the work area.

Control Parameter

Limit Values

JSOH OEL

ACGIH TLV

OSHA PEL

Glycerol

Not established

10mg/m³

total dust:15mg/m³TWA

respirable fr.: 5mg/m³TWA

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection Wear a dust mask.

Hand Protection Chemical safety gloves.

Eye Protection Chemical safety goggles.

Skin and Body Protection Long sleeves to prevent contact with skin.

9 PHYSICAL AND CHEMICAL PROPERTIES

Physical State Liquid over -20°C.

Colour Colourless

Odour None

pH 6.0-9.0

Flash Point Not flammable due to aqueous solution.

Explosion limit Not explosible.

Specific Gravity 1.0-1.2

Solubility Soluble in water.

10 STABILITY AND REACTIVITY

Stability Stable at -20°C

Possible Hazardous None

Reactions

Conditions to Avoid Strong heat and direct sunlight.

Material to Avoid Strong oxidizers and strong reducers.

Hazardous Decomposition No information available.

Product

11 TOXICOLOGICAL INFORMATION

Acute Toxicity No data available.

Local Effects May cause eye and skin irritation. May cause respiratory tract irritation.

Toxicological information on the component of this product

Glycerol

Acute toxicity (LD50) Oral-mouse: 4090mg/kg

Oral-rat: 12.6g/kg

Skin corrosion/Irritation rabbit:500mg/24hr:Mild (Category 3)

Serious eye damage/Eye irritation rabbit:500mg/24hr:Mild (Category 2B)



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12 ECOLOGICAL INFORMATION

Mobility	Soluble in water and diffusible into water environment.
Persistence/Degradability	Not available.
Bioaccumulation	Not available.

13 DISPOSAL CONSIDERATIONS

Waste from Residues	Dispose of in accordance with all applicable local and national laws and regulations.
Contaminated Packaging	Dispose of in accordance with all applicable local and national laws and regulations.

14 TRANSPORT INFORMATION

International Regulations	
UN Classification Number	Not classified.
	Follow all of the laws and regulations in your respective country.
Specific Precautions	To prevent packages from breaking, handle with care. Store at about -20° C when it is transported.

15 REGULATORY INFORMATION

Follow all of the laws and regulations in your country.

16 OTHER INFORMATION

Notice	The information in this SDS, to the best of our knowledge, is accurate and correct. However, TOYOBO makes no warranty and assumes no liability whatsoever in connection with any use of this information. The information shall not be taken as being all inclusive and is to be used only a guide. All materials and mixtures may be present unknown hazards and should be used with caution. The SDS is subject to revision as new information becomes available.
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