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MATERIAL SAFETY DATA SHEET

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**Ligase
#M0238**

MSDS Revision Date: 6/06

SECTION 1 –CHEMICAL INFORMATION

Product Name: 9°N™ DNA Ligase

1. Glycerol	50%	Cas.	#56-81-6
2. Potassium Chloride	< 1%	Cas.	#7447-40-7
3. Tris-HCl	< 1%	Cas.	#77-86-1
4. EDTA	< 1%	Cas.	#60-00-4
5. Dithiothreitol	< 1%	Cas.	#3483-12-3
6. Ammonium Sulfate	< 1%	Cas.	#7783-20-2
7. BSA	< 1%	Cas.	#None

SECTION 2–COMPOSITION/ INFORMATION ON INGREDIENT

CHEMICAL NAME: GLYCEROL

CAS No.: 56-81-5

Formula: C3H8O3

SARA 313: No

SYNONYMS: CITIFLOUR AF 2 * GLYCERIN * GLYCERIN, ANHYDROUS * GLYCERINE * GLYCERIN MIST (ACGIH, OSHA) * GLYCERIN, SYNTHETIC * GLYCERITOL GLYCYL ALCOHOL * CLYZERIN, WASSERFREI (GERMAN) * GROCOLENE * OSMOGLYN * 1,2,3-PROPANE-TRIOL * STAR * SYNTHETIC GLYCERIN * TECHNICAL GLYCERINE * TRIHYDROXYPROPANE * 1,2,3-TRIHYDROXYPROPANE.

RTECS Number: MA8050000

SECTION 3–HAZARDOUS IDENTIFICATION

Emergency Overview:

CAUTION

Avoid contact by inhalation, skin and ingestion.

Target Organ (S)

Kidney
Hygroscopic

HMIS Rating

Health: 1*
Flammability: 0
Reactivity: 1

NFPA Rating

Health: 1
Flammability: 0
Reactivity: 1

* additional chronic hazards present

SECTION 4 –FIRST AID MEASURES

ORAL EXPOSURE: If swallowed, wash out mouth with water provided person is conscious. Call a physician.

INHALATION EXPOSURE: If inhaled, remove to fresh air. If breathing is difficult, call a physician.

DERMAL EXPOSURE: In case of contact, immediately wash skin with soap and copious amounts of water. Remove clothing and call a physician.

EYE EXPOSURE: In case of contact, immediately flush eyes with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

SECTION 5–FIRE FIGHTING MEASURES

Extinguishing Media: Water Spray

Carbon Dioxide, Dry Chemical powder or appropriate foam

Special Firefighting Procedures: Wear self contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Unusual Fire and Explosions Hazard (s):

Emits toxic toxic fumes under fire conditions.

Flammability: N/A

Prevent contact with skin and eyes.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

PROCEDURE(S) OF PERSONAL PRECAUTION(S):

Exercise appropriate precautions to minimize direct contact with skin or eyes and prevent inhalation of vapors

Wear disposable coveralls and discard them after use.

METHODS FOR CLEANING UP:

Absorb on sand or vermiculite and place in a closed container for disposal.

Ventilate area and wash spill site after material pickup is complete.

SECTION 7 – HANDLING AND STORAGE

Handling

User Exposure: Avoid inhalation.
Avoid contact with eyes, skin and clothing.
Avoid prolonged or repeated exposure.

Storage

Suitable: Keep tightly closed.

Special Requirements

Hygroscopic

SECTION 8–EXPOSURE CONTROLS /PPE

Engineering Controls: Safety shower and eye bath. Mechanical exhaust required.

Personal Protective Equipment:

Respiratory

NIOSH/MSHA-approved respirator.

Eye:

Compatible safety goggles.

Hand:

Compatible chemical-resistant gloves.

General Hygiene Measures:

Wash thoroughly after handling.

Wash contaminated clothing before use.

AVOID INHALATION

Keep Tightly Closed

Store in a cool dry place.

Exposure Limits, RTECS

Country	Source	Type	Value
USA USA	ACGIH ACGIH	TWA TWA	10 MG/M3 10 MG/M3

Remarks: inhalable particulate

USA USA	MSHA Standard MSHA		
Remarks:	Nuisance Particulates	(mist.)	Nuisance
USA USA	OSHA OSHA.	PEL PEL	8H TWA 15 MG/M3, Total Dust 8H

New Zealand
OEL OEL
Remarks: check ACGIH TLV check ACGIH TLV

Exposure Limits

Country	Source	Type	Value
Poland		NDS	10 mg/m3
Poland		NDSch	-
Poland		NDSP	

Remarks: (OELS are valid for aerosols) aerozole

SECTION 9– PHYSICAL AND CHEMICAL PROPERTIES

Physical Properties:

Melting Point: 20° C

Boiling Point: 182° C

Flash Point: 320 F, 160° C Method: closed up

Autoignition Temp: 370° C

Explosion Limits in Air:

Lower: 0.9%

Specific Gravity: 1.262

Solubility: Water -Z26130

Vapor Pressure: < 1 MMHG @ 20°C

Vapor Density: 3.1 G/L

PH: 5.5–8.0

SECTION 10 – STABILITY AND REACTIVITY

Stability: Stable

Materials to Avoid:

Strong oxidizing agents, strong bases.

PROTECT FROM HEAT AND MOISTURE

Hazardous Decomposition Products:

Carbon Monoxide, Carbon Dioxide

Hazardous Polymerization:

Hazardous Polymerization: Will not occur.

SECTION 11–TOXICOLOGICAL INFORMATION

Route of Exposure:

Skin Contact

May cause skin irritation

Eye Contact:

May cause eye irritation

Multiple Routes

May be harmful by inhalation, ingestion, or skin absorption

Materials may be irritating to mucous membranes and upper respiratory tract.

Chronic Effects: Target Organs, Kidney

Signs and Symptoms of Exposure: Prolonged exposure can cause: Nausea, headache and vomiting

RTECS #: MA8050000

To the best of our knowledge, the properties have not yet been thoroughly investigated.

IRRITATION DATA:

SKN-RBT 500 MG/24H MLD
EYE-RBT 126 MG MLD
EYE-RBT 500 MG/24H MLD

85JCAE -, 207, 1986
BIOFX* 9-4/970
85JCAE -, 207, 1986

TOXICITY DATA:

ORL-RAT LD50: 12600 MG/KG
IHL-RAT LC50: > 570 MG/M3/1H
IPR-RAT LD50: 4420 MG/KG
SCU-RAT LD50: 100 MG/KG
IVN-RAT LD50: 5566 MG/KG
ORL-MUS LD50: 4090 MG/KG
IPR-MUS LD50: 8700 MG/KG
SCU-MUS LD50: 91 MG/KG
IVN-MUS LD50: 4250 MG/KG
ORL-RBT LD50: 27 GM/KG
SKN-RBT LD50: >10 GM/KG
IVN-RBT LD50: 53 GM/KG
ORL-GPG LD50: 7750 MG/KG

FEPRA7 4, 142, 1945
BIOFX* 9-4/970
RCOCB8 56, 125, 1987
NIIRDN 6, 215, 1982
ARZNAD 26, 1581, 1976
FRZKAP (6), 56, 1977
ARZNAD 28, 1579, 1978
NIIRDN 6, 215, 1982
JAPMA8 39, 583, 1950
DMDJAP 31, 276, 1959
BIOFX* 9-4/970
NIIRDN 6, 215, 1982
JIHTAB 23, 259, 1941

TARGET ORGAN DATA:

Behavioral (headache)
Gastrointestinal (nausea or vomiting)
Kidney, ureter, bladder (changes in tubules)
Kidney, ureter, bladder (changes in urine composition)
Paternal effects (spermatogenesis)

Paternal effects (testes, epididymis, sperm duct)
Effects on fertility (male fertility index)
Effects on fertility (post-implantation mortality)
Only selected registry of toxic effects of chemical substance (RTECS) data is presented here. See actual entry in RTECS

SECTION 12—ECOLOGICAL INFORMATION

Data not yet available

SECTION 13—DISPOSAL CONSIDERATIONS

Contact a licensed professional waste disposal service to dispose of this material.
Observe all federal state and local environmental regulations.
Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

SECTION 14—TRANSPORT INFORMATION

DOT

Proper Shipping Name: None

Non-hazardous for transport

This substance is considered to be non-hazardous for transport

IATA

Non-Hazardous for Air Transport: Non-hazardous for air transport.

SECTION 15—REGULATORY INFORMATION

EU Additional Classification

S: 23 24/25

Safety Statements: Do not breathe vapor.
Avoid contact with skin and eyes.:

Canada Regulatory Information

WHMIS Classification: This product has been classification in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR

DSL: Yes

NDSL: No

US Classification and Label Text:

US Statements: **Caution:** Avoid contact and inhalation.
Target Organ(s): Kidneys

United States Regulatory Information:

Sara Listed: No
TSCA Inventory Item: Yes Yes

SECTION 16—OTHER INFORMATION

DISCLAIMER

For R&D use only. Not for drug, household or other uses.

The above information is believed to be correct but does not purport to be allinclusive and shall be used only as a guide.

New England Biolabs shall not be held liable for any damage resulting from handling or from contact with the above product.