

MATERIAL SAFETY DATA SHEET

**VIVANTIS TECHNOLOGIES SDN BHD
REVONGEN CORPORATION CENTER**

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SECTION 1: CHEMICAL IDENTIFICATION

Catalogue Number: ME4303; ME4304; ME4303-S
Product Name: T4 DNA Ligase
An *E.coli* strain that carries the cloned DNA ligase gene from
bacteriophage T4

Intended Use:
For research use only. Not for use in diagnostic procedures.

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SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

Composition	CAS No.	%
T4 DNA Ligase	-	<1% (w/v)
Glycerol	56-81-5	50% (v/v)
Tris-HCl	77-86-1 7647-01-0	<1% (w/v)
Sodium chloride	7647-14-5	<1% (w/v)
EDTA disodium salt	139-33-3	<0.01% (w/v)
2-Mercaptoethanol	60-24-2	<0.1% (w/v)
Water	7732-18-5	<50% (v/v)

Ingredients indicated above do not present a health or environmental hazard within the meaning of Council Directive 67/548/EEC, or their concentration do not exceed the limits specified in Council Directive 1999/45/EC, and in Commission Directive 2001/58/EC.

SECTION 3: HAZARDS IDENTIFICATION

GHS Classification

The preparation is not classified as dangerous according to Directive 1999/45/EC or Directive 67/548/EC and is not labeled with danger symbols or indications of danger.

Hazards deriving from physical-chemical properties:

The data available do not support any physical or chemical hazard.

Human Health Hazards

Aqueous glycerol enzyme solutions are aerosol-free preparations. However, inappropriate handling may cause formation of aerosols.

Inhalation – May cause allergic type reactions in sensitized individuals

Skin Contact – May cause minor irritation

Environmental Hazards

The data available do not supply any environmental hazard.

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Label Elements

The product is not subject to identification regulations according to directives on hazardous materials.

SECTION 4: FIRST-AID MEASURES

In case of contact with eyes, immediately wash out opened eyes with plenty of water for several minutes. Consult a doctor in event of any complaints.

In case of contact with skin, immediately wash with soap and copious amounts of water. If symptoms of irritation after prolonged exposure occur, consult a doctor.

If inhaled, remove to fresh air. If symptoms of irritation or respiratory allergy occur, consult a doctor.

If swallowed, wash out mouth with water provided the person is conscious. Consult a doctor in event of any complaints.

SECTION 5: FIRE FIGHTING MEASURES

Extinguishing Media

Water spray, carbon dioxide, dry chemical powder or appropriate foam. Fight larger fires with water spray or alcohol resistant foam.

Wear self contained breathing apparatus and protective clothing.

Special exposure hazards from decomposition products:

Not thoroughly investigated.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions

Wear appropriate gloves, safety glasses to clean small releases/spillage. In case of vapor/aerosol formation, wear suitable respiratory protection means. Ventilate the area.

Measures for Cleaning / Collecting

Absorb spillages with liquid-binding material. Ventilate and wash the area after the spillage is completely removed.

No special measures required for environmental precautions.

No dangerous substances are released.

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SECTION 7: HANDLING AND STORAGE

Handling

No further requirements.

Use appropriate personal protection measures. Avoid any contact with the liquid. Avoid formation of aerosols. Ventilate area.

Storage

Keep tightly closed in a dry and well-ventilated place. Store at -20°C.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with limit values that require monitoring at the workplace:

The product does not contain any relevant quantities of materials with critical values that need to be monitored at the workplace.

Hygiene Measures

General practice, wash hands and skin thoroughly after handling. Remove and wash contaminated clothing.

Engineering controls

No specific requirements relating to the preparation.

Personal protection

Respiratory protection:

No special measures required.

Skin Protection:

The usual precautionary measures accepted in research laboratories; no specific requirements.

Hand protection:

Wear rubber gloves; no special requirements to rubber. Protective lab coat and chemical-resistant gloves

Eye Protection:

No need to wear glasses (goggles) when ordinary operations with the preparation. Safety glasses are recommended during certain operations when aerosol formation is possible.

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SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical Appearance:	Liquid
Odor:	None or odorless
Color:	Clear or colorless
pH at 25°C:	7.5
Boiling Point:	182°C
Melting Point:	20°C
Flash Point:	No applicable
Flammability:	The preparation is not flammable / self-igniting
Explosive properties:	The preparation does not possess explosive properties
Oxidizing properties:	Not applicable
Vapor pressure:	Not applicable
Relative density at 20°C:	1.13g/cm ³
Solubility in/miscibility with water:	Fully miscible
Fat solubility:	Not applicable
Vapor density:	Not applicable
Evaporation rate:	Not applicable
Conductivity:	Not applicable
Viscosity:	Viscous

SECTION 10: STABILITY AND REACTIVITY

Stability:	Stable under storage conditions. Storage at room temperature may result in lowering of the specific activity, but not result in any hazardous reactions.
Conditions to avoid:	No conditions which may cause dangerous reactions.
Materials to avoid:	No materials which may cause dangerous reactions.
Possibility of hazardous reactions:	No dangerous reactions known.
Hazardous Decomposition Products:	No dangerous decomposition products known.
Hazardous Polymerization:	Will not occur

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SECTION 11: TOXICOLOGICAL INFORMATION

Acute and chronic effects based on routes of exposure

- Eye contact: Prolonged eye contact may cause minor irritation.
Skin contact: Prolonged skin contact may cause minor irritation.
Ingestion: Repeated ingestion or excessive dosage may cause irritation of the gastrointestinal tract.
Inhalation: Inhalation of enzyme aerosols may cause allergic type reactions in sensitized individuals.

When used and handled according to specifications, the product does not have any harmful effects. The product is not listed in a priority list (as foreseen under Council Regulation (EEC) No. 793/93 on the evaluation and control of the risks of the existing substances.)

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity:

The preparation is considered not dangerous to the environment with respect to mobility, persistence and degradability, bioaccumulation, aquatic toxicity and other data relating to ecotoxicity.

Persistence and degradability:

The preparation is readily biodegradable.

Bioaccumulative potential:

It is considered that the preparation does not accumulate in biota and does not pass through food chain.

Other adverse effects:

Not applicable.

SECTION 13: DISPOSAL CONSIDERATIONS

No special disposal methods required, except to be in accordance with federal, state and local environmental regulations

SECTION 14: TRANSPORT INFORMATION

This product is not dangerous, and no special precautions are needed according to ADR/RID (cross border), IMDG and IATA/ICAO.

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SECTION 15: REGULATORY INFORMATION

United States Regulatory Information:

Sara listed: No

Canada Regulatory Information:

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

DSL: No

NDSL: No

EU Guidelines:

The preparation is not dangerous within the meaning of Directives 67/548/EC, 1999/45/EC, and 88/379/ECC, and is not labeled with danger symbols or indications of danger.

WHMIS Classification

This product has been classified in accordance with hazard criteria or the CPR, and the MSDS contains all the information required by the CPR.

DSL: No

NDSL: No

SECTION 16: OTHER INFORMATION

The information contained in this MSDS relates only to the material(s) designed and does not relate to use(s) in combination with any other material, process(es) and /or chemical reaction(s). Vivantis Technologies Sdn. Bhd. provides this information in good faith, from sources believed to be accurate; however, Vivantis assumes no liability for its accuracy or completeness, and thus shall not be held liable for any damage resulting from handling or from contact with the above product.

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