GE Healthcare

Material Safety Data Sheet

Canada
English

Section 1. Chemical product and company identification

Product name

Ligate-IT T_4 DNA Ligase; part of 'Ligate-IT Rapid Ligation Kit, 25 reactions'

Catalogue Number

US78400

Component Number

78401

Material uses Industrial applications: Analytical reagent. Research.

Product type Liquid.

Validation date 4 September 2009

Print date 04 September 2009

Supplier

GE Healthcare UK Ltd
Amersham Place
Little Chalfont
Buckinghamshire HP7 9NA
England
+44 0870 606 1921

In case of emergency

US	ChemTrec (US)	1-800-424-9300
Canada	ChemTrec (US)	1-703-527-3887

2. Hazards identification

Physical state Liquid.

Odor Odorless.

Emergency overview

Warning!

CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS: KIDNEYS, RESPIRATORY TRACT, SKIN, EYE, LENS OR CORNEA.
MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION.

Avoid contact with skin and clothing. Avoid breathing vapor or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

Routes of entry Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eyes Moderately irritating to eyes.

Skin Moderately irritating to the skin.

Inhalation Moderately irritating to the respiratory system.

Ingestion No known significant effects or critical hazards.

Potential chronic health effects

Chronic effects Contains material that can cause target organ damage.

Carcinogenicity No known significant effects or critical hazards.

Mutagenicity No known significant effects or critical hazards.

Teratogenicity No known significant effects or critical hazards.

Developmental effects No known significant effects or critical hazards.

Fertility effects No known significant effects or critical hazards.

Target organs Contains material which causes damage to the following organs: kidneys, upper respiratory tract, skin, eye, lens or cornea.

Inhalation Adverse symptoms may include the following:
respiratory tract irritation
coughing

Ingestion No specific data.

Skin
Adverse symptoms may include the following:
irritation
redness

Eyes
Adverse symptoms may include the following:
irritation
watering
redness

Medical conditions aggravated by over-exposure
Repeated skin exposure can produce local skin destruction or dermatitis. Repeated or prolonged exposure to the substance can produce lung damage. Repeated or prolonged contact with spray or mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to the substance can produce target organs damage.

See toxicological information (section 11)

3. Composition/information on ingredients

Name		CAS number	% by weight	
Glycerol		56-81-5	50	**ACGIH TLV (United States, 1/2005). Notes: Inhalable fraction. See Appendix C, paragraph A. Inhalable Particulate Mass TLVs (IPM–TLVs) for those materials that are hazardous when deposited anywhere in the respiratory tract.** TWA: 10 mg/m³ 8 hour(s). Form: Mist

Section 4. First aid measures

Eye contact
Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention.

Skin contact
Flush contaminated skin with plenty of water. Continue to rinse for at least 10 minutes. Get medical attention. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Inhalation
Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if symptoms occur. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Ingestion
Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if symptoms occur. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Protection of first-aiders
No action shall be taken involving any personal risk or without suitable training.

Section 5. Fire fighting measures

Flammability of the product
No specific hazard.

Extinguishing media

Suitable
Use an extinguishing agent suitable for the surrounding fire.

Not suitable
None known.

Special exposure hazards

Special protective equipment for fire-fighters
Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions
Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment.

Environmental precautions
Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up
If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials), scoop up material and place in a sealable, liquid-proof container for disposal. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

Small spill
Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Handling Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing vapor or mist. Wash thoroughly after handling.

Storage Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8. Exposure controls/personal protection

Product name
Glycerol

Exposure limits
ACGIH TLV (United States, 1/2005). Notes: Inhalable fraction. See Appendix C, paragraph A. Inhalable Particulate Mass TLVs (IPM–TLVs) for those materials that are hazardous when deposited anywhere in the respiratory tract.
TWA: 10 mg/m^3 8 hour(s). Form: Mist

Recommended monitoring procedures If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.

Hygiene measures Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

Respiratory Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eyes Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts.

Skin Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Environmental exposure controls Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Section 9. Physical and chemical properties

Physical state Liquid.

Color Colorless.

Odor Odorless.

Boiling/condensation point Lowest known value: 100°C (212°F) (water). Weighted average: 195.96°C (384.7°F)

Melting/freezing point May start to solidify at the following temperature: 20°C (68°F) This is based on data for the following ingredient: Glycerol. Weighted average: 10.1°C (50.2°F)

Critical temperature Lowest known value: 374.3°C (705.7°F) (water).

Relative density Only known value: 1.261 (Water = 1) (Glycerol).

Vapor pressure Highest known value: 3.2 kPa (23.8 mm Hg) (at 20°C) (water). Weighted average: 1.58 kPa (11.85 mm Hg) (at 20°C)

Vapor density Highest known value: 3.1 (Air = 1) (Glycerol).

Volatility 0% (v/v)

Odor threshold Lowest known value: 4400 ppm (Glycerol)

Evaporation rate 0.36 (water) compared with Butyl acetate.

VOC 0 (g/l).

Viscosity Kinematic: Highest known value: 1412 cSt (Glycerol)

Dispersibility properties See solubility in the following materials: water, methanol, acetone.

Solubility Easily soluble in the following materials: cold water and hot water.

Section 10. Stability and reactivity

Stability The product is stable.

Materials to avoid No specific data.

Hazardous polymerization Will not occur.

Conditions of reactivity Non-flammable in the presence of the following materials or conditions: open flames, sparks and static discharge, heat, shocks and mechanical impacts, oxidizing materials, reducing materials, combustible materials, organic materials, metals, acids, alkalis and moisture.
Not considered to be a product presenting a risk of explosion.

Section 11. Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
glycerol	LD50 Dermal	Rabbit	>10 g/kg	-
	LD50 Intraperitoneal	Rat	4420 mg/kg	-
	LD50 Intravenous	Rat	5566 mg/kg	-
	LD50 Oral	Rat	12600 mg/kg	-
	LD50 Subcutaneous	Rat	100 mg/kg	-
	LDLo Intramuscular	Rat	10 mg/kg	-
	TDLo Intramuscular	Rat	8 mL/kg	-
	TDLo Intramuscular	Rat	5000 mg/kg	-

Conclusion/Summary Not available.

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Not available.						

Synergistic products Not available.

Section 12. Ecological information

Environmental effects No known significant effects or critical hazards.

Aquatic ecotoxicity

Product/ingredient name	Test	Result	Species	Exposure
glycerol	-	Acute LC50 54 to 57 ml/L Fresh water	Fish - Rainbow trout,donaldson trout - Oncorhynchus mykiss - 0.9 g	96 hours

Conclusion/Summary Not available.

Octanol/water partition coefficient Not available.

Bioconcentration factor Not available.

Toxicity of the products of biodegradation The products of degradation are more toxic than the product itself.

Other adverse effects No known significant effects or critical hazards.

Section 13. Disposal considerations

Waste disposal The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

RCRA classification Not available.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport information

International transport regulations

Not classified.

-

Section 15. Regulatory information

WHMIS (Canada) Not controlled under WHMIS (Canada).

Canadian lists CEPA DSL: Glycerol; water

Canada inventory All components are listed or exempted.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

EU regulations

Hazard symbol or symbols

Risk phrases R36/37/38- Irritating to eyes, respiratory system and skin.

Safety phrases Not applicable.

International regulations

International lists Australia: Glycerol; Dithiothreitol (R*,R*)

Australia (NICNAS): Glycerol; Sodium chloride; Tris(hydroxymethyl)aminomethane hydrochloride; Ethylenediaminetetraacetic acid, disodium salt, dihydrate; Dithiothreitol (R*,R*); water

China: Glycerol; Sodium chloride; Tris(hydroxymethyl)aminomethane hydrochloride; Ethylenediaminetetraacetic acid, disodium salt, dihydrate; Dithiothreitol (R*,R*); water

Germany water class: Glycerol; Sodium chloride; Tris(hydroxymethyl)aminomethane hydrochloride; Ethylenediaminetetraacetic acid, disodium salt, dihydrate; Dithiothreitol (R*,R*)

Japan (METI): Glycerol; Sodium chloride; Tris(hydroxymethyl)aminomethane hydrochloride; water

Korea (TCCL): Glycerol; Sodium chloride; Tris(hydroxymethyl)aminomethane hydrochloride; Dithiothreitol (R*,R*); water

Philippines (RA6969): Glycerol; Sodium chloride; Tris(hydroxymethyl)aminomethane hydrochloride; Ethylenediaminetetraacetic acid, disodium salt, dihydrate; water

Section 16. Other information

The customer is responsible for determining the PPE code for this material.

Indicates information that has changed from previously issued version.

History

Date of printing	04 September 2009	**Date of previous issue**	20 July 2006
Date of issue	04 September 2009	**Version**	3

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.