MATERIAL SAFETY DATA SHEET

Company	ELPIS-Biotech. Inc.
Address	123-12 Jeonglim-dong, Seo-gu, Daejeon, Korea
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SECTION 1. CHEMICAL INFORMATION

Product name	T4 Gene 32 Protein
Cat. No.	EBT-3038

Protein in buffer solution; Volume of product package: 100ul.

Product Use : Laboratory Reagent. For R&D use only. Not for drug, household or other uses.

Manufacturer/ Supplier information

Supply company : ELPIS-Biotech. Inc.

Address : 123-12 Jeonglim-dong, Seo-gu, Daejeon, Korea

Information service or emergency call : +82-42-581-8448 (042-581-8448, Korea)

Department in charge : Research Department

SECTION 2. HAZARDOUS IDENTIFICATION

Primary routes of entry : Skin or eye contact from splashes. Inhalation of the vapor at room temperature is unlikely.

Potential Acute Health Effects: Slightly hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects: CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys. Repeated or prolonged exposure to the substance can produce target organs damage.

Evidence for reproductive toxicity, carcinogenicity and mutagenicity : No data availalbe

HMIS RATING - Health : 2 Flammability : 0 Reactivity : 0

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical characterization

Description: Solution, consisting of the following components.

Buffer's Components in Water:

Reagent	CAS#	Concentration, %
Tris-HCl	77-86-1	< 1
Dithiothreitol (DTT)	3483-12-03	< 0.01
EDTA	6381-92-6	< 0.01
Sodium chloride	7647-14-5	< 0.1
Glycerol	56-81-5	< 50

Components:

Glycerol	CAS: 56-81-5	EI;ECS: 200-289-5	≤50 %
water	CAS: 7732-18-5	EI;ECS: 231-791-2	25-50 %

Other components are not dangerous or their concentrations do not exceed the limits specified in the EU directive 1999/45/EC.

SECTION 4. FIRST AID MEASURES

After skin contact

Wash skin with water and soap and rinse thoroughly. Remove contaminated clothing. Get medical attention if irritating occurs.

After eye contact

Rinse opened eyes for several minutes under running water. Get medical attention if eyes become irritating.

After swallowing (ingestion)

Rinse mouth. Drink plenty of water. Get medical attention if irritating or symptoms occur.

After inhalation

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

SECTION 5. FIRE FIGHTING MEASURES

Extinguishing media

Water spray. Carbon dioxide, dry chemical powder or appopriate foam.

Special firefighting procedures

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Unusual fire and explosions hazards

Emit toxic fumes undrer fire conditions.

Prevent contact with skin and eyes.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Wear self-contained breathing apparatus, chemical safety goggles, rubber boots, and chemical resistant gloves. Wear disposable coveralls and discard them after use.

Environmental precautions

Do not allow entering sewers, surfaces or ground water.

Measures for cleaning / collecting

Collect spilled liquid with liquid-binding material or inert absorbent and place it in container for disposal. Wash spill site after material pickup is complete.

SECTION 7. HANDLING AND STORAGE

Handling:

No special measures necessary. Good laboratory technique should be used when handling. Keep away from heat.

Storage:

No special measures necessary. Store at -20'C. Keep container tightly closed.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Safety shower and eye bath. Mechanical exhaust required.

Exposure limits Eye protection Skin protection:

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

Personal Protection:

Safety glasses. Lab coat. Vapor respirator. Be sure to use an approved/ certified respirator or equivalent. Gloves.

General Hygiene Measures:

Wash thoroughly after handling. Wash contaminated clothing before use.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Liquid.
Color	Clear Colorless.
Odor	Odorless.
Melting Point	20 °C.
Boiling Point	182 °C.
Flash point	> 392 F, > 200 °C.
Explosive properties	No data available.
Vapor pressure	< 1 MMHG @ 20 °C.
PH	5.5–8.0

SECTION 10. STABILITY AND REACTIVITY

Stability	Stable.
Hazardous polymerization	Will not occur
Materials to Avoid	Strong oxidizing agents, strong bases.

Hazardous Decomposition Products: Carbon Monoxide, Carbon Dioxide

Protect from heat

SECTION 11. TOXICOLOGICAL INFORMATION

Eye Contact: Irritating to eyes

Skin Contact Irritating to skin.

Multiple Routes May be harmful by inhalation, ingestion, or skin absorption

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

RTECS #:MA8050000 Glycerol

Chronic Effects on Humans :

May cause damage to the following organs: kidneys.

Other Toxic Effects on Humans:

Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Toxicity to Animals:

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 12600 mg/kg [Rat]. 4090 mg/kg [Mouse]. Acute dermal toxicity (LD50): 10000 mg/kg [Rabbit]. Acute toxicity of the mist (LC50): >570 mg/m3 1 hours [Rat].

Special Remarks on Chronic Effects on Humans:

Glycerin is transferred across the plancenta in small amounts. May cause adverse reproductive effects based on animal data (Paternal Effects (Rat): Spermatogenesis (including genetic material, sperm morphology, motility, and count), Testes, epididymis, sperm duct). May affect genetic material.

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: Low hazard for normal industrial handling or normal workplace conditions. Skin: May cause skin irritation. May be absorbed through skin Eyes: May cause eye irritation with stinging, redness, burning sensation, and tearing, but no eye injury. Ingestion: Low hazard. Low toxicity except with very large doses. When large doses are ingested, it can cause gastrointestinal tract irritation with thirst (dehydration), nausea or vomiting diarrhea. It may also affect behavior/central nervous system/nervous system (central nervous system depression, general anesthetic, headache, dizziness, confusion, insomnia, toxic psychosis, muscle weakness, paralysisconvulsions), urinary system/kidneys(renal failure, hemoglobinuria), cardiovascular system (cardiac arrhythmias), liver. It may also cause elevated blood sugar. Inhalation: Due to low vapor pressure, inhalation of the vapors at room temperature is unlikely. Inhalation of mist may cause respiratory tract irritation. Chronic Potential Health Effects: Ingestion: Prolonged or repeated ingestion may affect the blood(hemolysis, changes in white blood cell count), endocrine system (changes in adrenal weight), respiratory system, and may cause kidney injury.

SECTION 12. ECOLOGICAL INFORMATION

Data not yet avaliable

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 combustable solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

SECTION 14. TRANSPORT INFORMATION

Contact ELPIS Biotech, Inc. Company for Transportation Information.

SECTION 15. REGULATORY INFORMATION

International Inventories

TSCA : listed / PICCS : listed / ENCS : listed / DSL : listed / AICS : listed

EU Additional Classification

S: 23 24/25 Safety Statements: Do not breathe vapor. Avoid contact with skin and eyes.

U.S. Federal Regulations

SARA 313 : This product is not regulated by SARA.

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61) : This product does not contains HAPs.

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

SECTION 16. OTHER INFORMATION

The above information is believed to be correct but does not purport to be all inclusive and shall beused only as a guide.

ELPIS Biotech Inc. shall not be held liable for any damage resulting from handling or from contact with the above product.

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