



# MATERIAL SAFETY DATA SHEET

|                        |                                                            |
|------------------------|------------------------------------------------------------|
| Company                | ELPIS-Biotech. Inc.                                        |
| Address                | 123-12 Jeonglim-dong, Seo-gu, Daejeon, Korea               |
| Emergency Telephone NO | +82-42-581-8448                                            |
| Fax                    | +82-42-581-8449                                            |
| e-mail address         | <a href="mailto:elpis@elpisbio.com">elpis@elpisbio.com</a> |

## SECTION 1. CHEMICAL INFORMATION

|              |                  |
|--------------|------------------|
| Product name | Lambda Integrase |
| Cat. No.     | EBT-3042         |

Enzyme (protein) in buffer solution; buffer solution. Volume of product package: 200ul.  
Supplied with: 5x Lambda Integrase-Exisionase reaction buffer (200ul)

**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 available

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

## SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

### Chemical characterization

#### Buffer's Components in Water:

| Reagent  | CAS#    | Concentration, % |
|----------|---------|------------------|
| Tris-HCl | 77-86-1 | < 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 appropriate 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 under 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/m<sup>3</sup> 1 hours [Rat].

**Special Remarks on Chronic Effects on Humans:**

Glycerin is transferred across the placenta 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, paralysis/convulsions), 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 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**

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 be used 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.

Date of preparation of the first version : 2010. 1. 12.

Revised frequency and Date of preparation of the latest version : 2013. 05. 11. (2nd version)