

Date: 15.9.2009

Former date:

## 1. Identification of the Chemical and of the Manufacturer, Importer or Other Undertaking

### Identification of the substance or preparation

 Trade name: **Phusion™ Hot Start II High-Fidelity DNA Polymerase**

 Code of the preparation: **F-549S, F-549L**

### Use of the substance or preparation

**DNA amplification reactions**

### Identification of the manufacturer, importer or other undertaking

 Manufacturer, importer, other undertaking: **Finnzymes Oy**

Street address: Keilaranta 16 A

Postcode and post office: 02150 Espoo

Telephone number: +358-9-24723010

Telefax: +358-9-24723200

E-mail: fz@finnzymes.fi

### Emergency telephone number

HUS 09-471977 HUS Poison Information Centre, or +358-9-4711 (operator), Helsinki, Finland, or your local centre for detoxification.

## 2. Hazards Identification

Health hazard of the chemical mixture as a whole: No information available. However it is recommended to prevent ingestion and skin contact.

- DMSO: Harmful if inhaled. May cause respiratory tract irritation, skin irritation and eye irritation.
- Tris-HCl: Harmful if swallowed. May cause irritation to skin, eyes and respiratory tract.
- Glycerol: Irritating to eyes, skin and respiratory system.

## 3. Composition and Information on Ingredients

### Description

The concentrations of the following ingredients in the purchased product exceed the limits for which notification is needed according to Regulation (EC) N:o 1907/2006 of the European Parliament and Council. Glycerol is not classified hazardous according to Regulation (EC) N:o 1907/2006 EPC.

### Hazardous ingredients:

CAS number or other code	Name of the ingredient	Concentration % w/w	Warning symbol, R phrases and S phrases	Tubes containing the ingredient
67-68-5	DMSO	100	X <sub>n</sub> R: 20,36,37,38 S: 2,13,24,25,26,36,46	DMSO
1185-53-1	Tris-HCl	<4	X <sub>i</sub> R: 36,37,38 S: 26,36	Buffer solution
56-81-5	Glycerol	<56		Enzyme solution

**Full chemical name of the ingredient (CAS number: name):**
**Other information:** R and S phrases: see section 16.

## 4. First Aid Measures

**Special instructions:** Wearing of gloves and other protective clothing are advised.

## Safety Data Sheet

Date: 15.09.2009

**Inhalation:** Remove from exposure immediately. Get medical attention if needed.

**Skin:** Wash the area of exposure with plenty of water for at least 15 minutes. Remove contaminated clothing, jewellery and shoes immediately. Wash clothing before reuse. Get medical attention if needed.

**Splashes in eyes:** Wash the eyes for at least 15 minutes holding eyelids open while flushing, until no evidence of chemical remains. Get medical attention if needed.

**Ingestion:** Seek medical advice. Do not induce vomiting unless directed to do so by medical personnel. Never make an unconscious person vomit or drink fluids. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side.

**Information to doctor or other trained persons giving first aid:** DMSO: For ingestion, consider gastric lavage and activated charcoal slurry. Consider oxygen.

## 5. Fire-Fighting Measures

**Suitable extinguishing media:** CO<sub>2</sub>, alcohol resistant foam, dry chemical.

**Extinguishing media which must not be used for safety reasons:**

**Special exposure hazards in a fire:** Toxic gases and vapors heavier than air may be released if glycerol is involved in a fire. Glycerol decomposes upon heating above 290°C forming corrosive gas (acrolein). Tris-HCl may produce toxic fumes upon decomposition (HCl gas).

**Special protective equipment for a fire:** Wear full protective clothing and approved self-contained breathing apparatus with full face piece operated in the pressure demand.

**Other instructions:** DMSO: vapor is heavier than air. Stay upwind and keep away from low areas.

## 6. Accidental Release Measures

**Personal precautions:** Wear appropriate personal protective equipment.

**Environmental precautions:** Avoid heat, flames and other sources of ignition.

**Methods for cleaning up:**

DMSO: Stop leak if possible without personal risk. Reduce vapors with water spray. After spillage absorb with sand or other non-combustible material.

Tris-HCl: Sweep up, place in a sealed container, and hold for waste disposal.

Glycerol: Absorb liquid spills with a dry absorbent.

**Other instructions:**

DMSO: Remove source of ignition. Isolate hazard area and deny entry.

Tris-HCl, Glycerol: Ventilate area.

## 7. Handling and Storage

**Handling:** Handling and storage in accordance with all current regulations and standards.

**Storage:** Keep separated from incompatible substances. Store in a tightly closed container, in a cool, dry, ventilated area.

## 8. Exposure Controls/Personal Protection

**Technical measures for exposure controls:** Use adequate ventilation. Provide access to a safety shower and eye-wash in the immediate work area.

**Limit values for workplace air**

TLV values: Glycerol TLV (mist): 10 mg/m<sup>3</sup> (TWA) (ACGIH 2006).  
HTP 20 mg/m<sup>3</sup> / 8h (Finland)

Other information on limit values:

**Personal protective equipment**

Special instructions for protection and hygiene:

## Safety Data Sheet

Date: 15.09.2009

**Respiratory protection:** If mist or vapors are present use an approved respirator.

**Hand protection:** Wear protective, impervious, chemical resistant gloves.

**Eye protection:** Safety glasses with side shields or goggles.

**Skin protection:** Wear chemical resistant clothing.

## 9. Physical and Chemical Properties

### Physical state, color and odor

DMSO: Liquid, clear, colorless, faint odor.

Tris-HCl: Transparent, colorless, odorless.

Glycerol: Liquid, colorless, odorless.

**pH:** n.a.

### Information on changes in the physical state

Boiling point/boiling range: n.a.

Melting point/melting range: n.a.

Decomposition temperature: n.a.

**Flash point:** n.a.

**Flammability (solid/gas):** Glycerol: combustible

**Autoflammability:** n.a.

**Explosion hazard:** n.a.

**Explosive limits** a) lower: n.a.

b) upper: n.a.

**Oxidizing properties:** n.a.

**Vapor pressure:**

DMSO: 0.4 mmHg at 20 °C

Glycerol: 0.0025 at 50 °C

**Relative density:** n.a.

**Solubility** a) water solubility: soluble

b) fat solubility: n.a.

**Partition coefficient (for ingredients): n-octanol/water:**

**Viscosity:** n.a.

**Other information:**

## 10. Stability and Reactivity

### Conditions to avoid:

Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials.

DMSO: Containers may rupture or explode if exposed to heat.

### Materials to avoid:

Glycerol: Strong oxidizers and concentrated acids. Glycerol has been reported to react violently or explosively with many oxidizers. It can react violently with acetic anhydride, calcium oxychloride, chromium, oxides, alkali metal hydrides, potassium permanganate.

DMSO: Combustible materials, acids, metals, oxidizing materials, halogens, metal salts, and reducing agents.

Tris-HCl: Copper, brass, aluminium and oxidizing agents.

### Hazardous decomposition products:

Glycerol: Toxic gases and vapors may be released if glycerol is involved in a fire. Glycerol decomposes upon heating above 290°C forming corrosive gas (acrolein).

DMSO: Thermal decomposition products: aldehydes, various organic fragments, oxides of sulfur.

Tris-HCl: Burning may produce carbon monoxide, carbon dioxide and nitrogen oxides.

## Safety Data Sheet

Date: 15.09.2009

## 11. Toxicological Information

**Acute toxicity:**

Glycerol	LD50 (oral, rat) 12.600 mg/kg
Tris-HCl	n.a.
DMSO	LD50 (oral, rat) 14,500 mg/kg

**Irritancy and corrosiveness:**

Liquid and vapors are irritating to eyes, skin, mucous membranes and by inhalation.

**Sensitization:****Subacute, subchronic and prolonged toxicity:**

Glycerol: Repeated excessive exposures may cause increased fat levels in the blood. Observations in animals include liver and kidney effects.

DMSO: irritation, allergic reactions, blisters, rash, itching; nausea, vomiting, diarrhea; headache, dizziness, drowsiness; chest pain, blood disorders; blurred vision (in eye contact).

**Empirical data on effects on humans:****Other information on health effects:**

## 12. Ecological Information

**Persistence in the environment**

Biodegradation:

Chemical degradation:

**Bioaccumulation:****Mobility:****Toxic effects on organisms**

Aquatic toxicity: Glycerol: generally non-hazardous to the water supply.

Other toxicity:

**Other information:** Keep out of water supplies and sewers.

## 13. Disposal Conditions

Dispose in accordance with all applicable regulations. Keep out of water supplies and sewers.

## 14. Transport Information

**UN number:****Packaging category:****Land transport**

Transport class:

Risk code:

Name according to bill of freight:

Other information:

**Sea transport**

IMDG class:

Correct technical name:

Other information:

**Air transport**

ICAO/IATA class:

Correct technical name:

Other information:

## 15. Regulatory Information

Date: 15.09.2009

**Chemical Safety Assessment:** Not required.

**Information on the warning label**

Letter code of the warning symbol and indications of danger for the preparation:

Names of the ingredients given on the warning label:

R phrases:

S phrases:

Special regulations on certain preparations:

**National regulations:**

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## 16. Other Information

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**R phrases used**

20: Harmful by inhalation

36: Irritating to eyes

37: Irritating to respiratory system

38: Irritating to skin

**S phrases used**

2: Keep out of reach of children

13: Keep away from food, drink and animal foodstuffs

24: Avoid contact with skin

25: Avoid contact with eyes

26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

36: Wear suitable protective clothing

46: If swallowed, seek medical advice immediately and show container or label

**Directions for use**

**Other information**

The information here is believed to be correct as of the date hereof but is provided without warranty of any kind. The recipient of our products is responsible for observing any laws and guidelines applicable.

**Additional information available from**

Finzymes Oy

**Sources of information used in the compilation of the safety data sheet**

MSDS Canadian Centre for Occupational Health and Safety

MSDS US Centre for Occupational Health and Safety

International Chemical Safety Cards

**Revisions**