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1. Identification of the substance/mixture and of the company/undertaking

1.1 Identification of the substance/preparation

Product name : SMO-HiFi™ DNA Polymerase (include buffered aqueous solution)

Product code : TF1000

Recommended use : For laboratory use. Suitable for DNA dependent DNA polymerization/ amplification.

1.2 Company/Undertaking identification

SMOBIO Technology, Inc.
3F, No. 15, Industry E. 9th Rd., Hsinchu Science Park, Hsinchu 300096, Taiwan
Tel : +886 3 5799292
Fax : +886 3 5790202
E-mail : support@smobio.com

1.3 Emergency telephone number

Emergency telephone : +886 3 5799292 (09.00-18.00 TST)

2. Hazards identification

2.1 Classification of the substance or mixture

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS) Classification to Regulation (EC) No 1272/2008

2.2 Label elements

Symbol(s) : Void

Signal Word : Not dangerous

2.3 Other information

Hazards deriving from physical-chemical properties : The data available do not support any physical or chemical hazard. **Except for Dithiothreitol.**

Human health hazards : Inappropriate handling may cause formation of aerosols. Inhalation of aerosols may cause allergic type reactions in sensitized individuals. Prolonged skin contact may cause minor irritation.

Dithiothreitol can be absorbed through skin; concentrated dithiothreitol may cause eye injuries, skin, respiratory and nervous system damages.

Caution: Avoid inhalation, ingestion, and skin contacts.

Environmental hazards : The data available do not support any environmental hazard.

3. Composition/information on ingredient

3.1 Ingredients

3.1.1 ExcelTaq SMO-HiFi DNA Polymerase

Chemical name	Concentration	EC No.	CAS No.	Classification
Glycerol	> 50 %	200-289-5	56-81-5	Not classified
Dithiothreitol	< 0.02 %	222-468-7	3483-12-3	Xn;R22, 36-38 , AcuteTox.4; H302/H319/H315
KCl	< 0.4 %	231-211-8	7447-40-7	Not classified
Tris	< 0.5 %	201-064-4	77-86-1	Xi;R36-38 , H315/H319/H335

3.1.2 10X Reaction Buffer

Chemical name	Concentration	EC No.	CAS No.	Classification
Glycerol	> 50 %	200-289-5	56-81-5	Not classified
Tris	< 15 %	201-064-4	77-86-1	Xi;R36-38 , H315/H319/H335
KCl	< 15 %	231-211-8	7447-40-7	Not classified
Triton X-100	< 1.5 %	N.A.	9002-93-1	Xn;R22 , Xi;R41 , H318

3.2 Other components

Components not listed here are not dangerous or their concentrations do not exceed the limits specified in the EU directive 1272/2008/EC.

3.3 Additional information

For the wording of the listed risk phrases refer to section 16.

4. First aid measures

4.1 General information

No special measures required.

4.2 Description of first aid measures

In case of ingestion : If swallowed, rinse mouth and throat thoroughly with water. Consult a doctor in event of any complaints.

In case of inhalation : If inhaled, remove victim from area of exposure. If symptoms of irritation or respiratory allergy occur, consult a doctor.

In case of skin contact :Generally, the product does not irritate the skin. If symptoms of irritation after prolonged exposure occur, consult a doctor.

In case of eye contact : Wash out opened eyes with plenty of water for several minutes. Consult a doctor in event of any complaints.

5. Fire fighting measures

5.1 Suitable extinguishing agents

Water spray, Carbon dioxide (CO_2), dry chemical powder or appropriate foam.

5.2 Not suitable extinguishing agents

None.

5.3 Special exposure hazards from decomposition products

Not thoroughly investigated.

5.4 Protective equipment

Wear self-contained breathing apparatus and protective clothing.

6. Accidental release measures

6.1 Personal precautions

Wear appropriate gloves (see Section 8), safety glasses to clean small releases/spillage. In case of vapor/aerosol formation, wear suitable respiratory protection means. Ventilate the area.

6.2 Environmental precautions

No special measures required.

6.3 Methods for cleaning up

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

6.4 Additional information

No dangerous substances are released.

7. Handling and storage

7.1 Handling

No further requirements. Use appropriate personal protection measures (see Section 8). Avoid any contact with the liquid. Avoid the formation of aerosols. Ventilate area.

7.2 Storage

Store at - 20°C. No other specific requirements relating to the preparation.

8. Exposure controls/personal protection

8.1 Control parameters

Chemical name	CAS No.	Exposure limits
Glycerol	56-81-5	TWA : 10 mg/m3
Dithiothreitol	3483-12-3	No data available
Tris	77-86-1	No data available
KCl	7447-40-7	No data available
Triton X-100	9002-93-1	No data available

8.2 Exposure controls

Engineering measures : Ensure adequate ventilation, especially in confined areas.

8.3 Personal protection

Respiratory protection : No special measures required.

Hand protection : Wear rubber gloves. No special requirements to rubber.

Eye protection : Safety glasses (goggles) are recommended during ordinary operations with the preparation.

Skin protection : The usual precautionary measures accepted in research laboratories, e.g. protective clothes (gowns). No specific requirements.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

9.1.1 SMO HiFi DNA Polymerase

Appearance: Liquid.

Color: Colourless.

Odor: Odorless or weak.

pH-value at 25°C: 7.5.

Boiling point: 100°C.

Flash Point: Not applicable.

Flammability / autoflammability: 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 g/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: Slightly viscous.

9.1.2 10X Reaction Buffer

Appearance: Liquid.

Color: Colourless.

Odor: Odorless or weak.

pH-value at 25°C: ~9.2.

Boiling point: ~100°C.

Flash Point: Not applicable.

Flammability / autoflammability: 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 g/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: Slightly viscous.

9.2 Other information

No further relevant information available.

10. Stability and reactivity

10.1 Stability

Stable under storage conditions(see section 7).

10.2 Reactivity

No information available.

10.3 Possibility of hazardous reactions

No dangerous reactions known.

10.4 Conditions to avoid

No conditions which may cause dangerous reactions.

10.5 Incompatible materials

No in particular.

10.6 Hazardous decomposition products

No dangerous decomposition products known.

11. Toxicological information

11.1 Information on toxicology effects

Acute toxicity:

Not hazardous.

Inhalation:

Inhalation of aerosols may cause allergic type reactions in sensitized individuals.

Ingestion:

Repeated ingestion or excessive dosage may cause irritation of the gastrointestinal tract.

Skin and eye contact:

Generally, the product does not irritate the skin and eyes. Prolonged skin or eye contact may cause minor irritation.

Chemical name	LD50 Oral	LD50 Dermal
Glycerol	12600 mg/kg (Rat)	21900 mg/kg (Rat)
Tris	5900 mg/kg (Rat)	
Dithiothreitol	400 mg/kg (Rat)	
KCl	2600 mg/kg (Rat)	
Triton X-100	4190 mg/kg (Rat)	>3000 mg/kg (Rabbit)

Chronic toxicity:

Product does not present a chronic toxicity hazard based on known or supplied information.

Carcinogenic effects:

Product does not present a carcinogenic effects based on known or supplied information.

Mutagenic effects:

Product does not present a c mutagenic effects based on known or supplied information.

Reproductive toxicity:

Product does not present a reproductive toxicity hazard based on known or supplied information.

Sensitization:

Product does not present a sensitization hazard based on known or supplied information.

Target organ effects:

Product does not present a target organ effects based on known or supplied information.

12. Ecological information

12.1 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.

12.2 Persistence and degradability

The preparation is readily biodegradable.

12.3 Bioaccumulative potential

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

12.4 Other adverse effects

Not applicable.

13. Disposal consideration

13.1 Waste treatment methods

Waste from residues / unused products: Dispose of in accordance with local regulation.

Contaminated packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

IMDG/IMO: Non-hazardous for sea freight.

RID: Non-hazardous for rail transport.

ARD: Non-hazardous for road transport.

ICAO/IATA: Non-hazardous for air transport.

Other information: The preparation may be stored in ice during the transportation.

15. Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

No information available.

15.2 Chemical safety assessment

No information available.

15.3 Regulatory information

US：

Labelling according to US Regulations: Caution: Avoid contact and inhalation.

US Regulatory information: SARA LISTED: No.

EU：

Labelling according to EU Guidelines: The preparation is not dangerous within the meaning of Directives 1272/2008/EC, and is not labelled with danger symbols or indications of danger.

Canada：

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.

16. Other information

16.1 Full text of R-phrases referred to under sections 3

R20：Harmful by inhalation.

R22：Harmful if swallowed.

R36-38：Irritating to eyes, respiratory system and skin.

R41：Risk of serious damage to eyes.

16.2 Full text of physical and health hazards referred to under sections 3

H302：Harmful if swallowed.

H303：May be harmful if swallowed.

H315：Causes skin irritation.

H319：Causes serious eye irritation.

H318：Causes serious eye damage.

H335：May cause respiratory irritation.

The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide. SMOBIO shall not be held liable for any damage resulting from handling or from contact with the above product.