

MATERIAL SAFETY DATA SHEET

1 IDENTIFICATION

Details of the supplier of the safety data sheet :

Company : Nanohelix Co., Ltd.
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 Telephone Number : +82-42-867-9055
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Information department :

Quality control, Nanohelix Co., Ltd.
 E-mail : info@nanohelix.net

Product Name : Taq-Plus Polymerase

U.N.Number : None allocated

Dangerous Goods Class : None allocated

and Subsidiary Risk

Hazchem Code : None allocated

Poison Schedule : None allocated

Use : Polymerase used in DNA amplification

2 HAZARDS IDENTIFICATION

GHS Classification : Not a hazardous substance or mixture.

GHS Label element : Not a hazardous substance or mixture.

Other hazards : Not a hazardous substance or mixture.

3 COMPOSITION/ INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture
Description : The product is a mixture of the hazardous substances listed below along with unlisted nonhazardous substances. The exact concentration percentages of the hazardous substances may be withheld as a Nanohelix Co., Ltd. trade secret.

Hazardous ingredients

Name	CAS No.	Weight (%)
Glycerol	56-81-5	>=50 - <70

4 FIRST-AID MEASURES

General advice : Show this material safety data sheet to the doctor in attendance.

If inhaled : Move to fresh air. If symptoms persist, call a physician.

In case of skin contact : Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. If symptoms persist, call a physician.

In case of eye contact : Remove contact lenses. Protect unharmed eye. Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed : If accidentally swallowed obtain immediate medical attention. Rinse mouth with water. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed : No information available.

Notes to physician : No information available.

5 | FIRE FIGHTING MEASURES

Suitable extinguishing media	: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Specific hazards during fire fighting	: Exposure to decomposition products may be a hazard to health.
Hazardous combustion products	: Carbon oxides
Specific extinguishing methods	: In the event of fire and/or explosion do not breathe fumes.
Special protective equipment for fire-fighters	: Wear self-contained breathing apparatus for firefighting if necessary.

6 | ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: Use personal protective equipment. Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
Methods and materials for containment and cleaning up	: Keep in suitable, closed containers for disposal.

7 | HANDLING AND STORAGE

Advice on protection against fire and explosion	: Normal measures for preventive fire protection.
Advice on safe handling	: For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area.

8 | EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Ingredients	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Glycerol	56-81-5	TWA (mist, respirable fraction)	5 mg/m ³	OSHA Z-1
		TWA (mist, total dust)	15 mg/m ³	OSHA Z-1
		TWA (Total)	10 mg/m ³	OSHA P0
		TWA (Respirable fraction)	5 mg/m ³	OSHA P0
		TWA	10 mg/m ³	ACGIH
		TWA (Mist - total dust)	10 mg/m ³	OSHA P0
		TWA (Mist - respirable fraction)	5 mg/m ³	OSHA P0

Hazardous components without workplace control parameters

Ingredients	CAS-No.
Glycerol	56-81-5

Personal protective equipment

Hand protection

Remarks

: The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).

Eye protection

: Safety glasses

Skin and body protection	: Choose body protection according to the amount and concentration of the dangerous substance at the work place. Footwear protecting against chemicals.
Hygiene measures	: Keep away from food and drink. When using do not eat, drink or smoke.

9 | PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Liquid
Color	: No data available.
Odor	: Characteristic
Odor Threshold	: No data available.
pH	: No data available.
Melting point/range	: No data available.
Boiling point/boiling range	: >40°C
Flash Point	: >101°C (Closed-cup)
Evaporation rate	: No data available.
Burning rate	: No data available.
Upper explosion limit	: No data available.
Lower explosion limit	: No data available.
Vapor pressure	: No data available.
Relative vapor density	: No data available.
Relative density	: No data available.
Density	: No data available.
Solubility(ies)	
<i>Water solubility</i>	: No data available.
<i>Solubility in other solvents</i>	: No data available.
Partition coefficient:	: No data available.
n-octanol/water	
Autoignition temperature	: Not determined.
Decomposition temperature	: No data available.
Viscosity	: No data available.
<i>Viscosity, dynamic</i>	
<i>Viscosity, kinematic</i>	: No data available.
Explosive properties	: No data available.
Oxidizing properties	: No data available.

10 | STABILITY AND REACTIVITY

Reactivity	: No decomposition if stored and applied as directed.
Chemical stability	: No decomposition if stored and applied as directed.
Possibility of hazardous reactions	: Stable under recommended storage conditions. Hazardous decomposition products formed under fire conditions.
Conditions to avoid	: No data available.
Incompatible materials	: No data available.
Hazardous decomposition products	: No decomposition if stored and applied as directed.

11 | TOXICOLOGICAL INFORMATION

Acute toxicity	: Not classified based on available information.
Product	
<i>Acute oral toxicity</i>	: No data available.
<i>Acute inhalation toxicity</i>	: No data available.

<i>Acute dermal toxicity</i>	: Acute toxicity estimate : > 5,000 mg/kg Method : Calculation method – Not data available.
<u>Ingredients</u>	
<i>Glycerol</i>	
<i>Acute oral toxicity</i>	: LD ₅₀ Oral (Rat) : 12,000 mg/kg
<i>Acute dermal toxicity</i>	: LD ₅₀ Dermal (Rabbit) : 10,000 mg/kg
<i>Skin corrosion/irritation</i>	: Not classified based on available information.
<u>Product</u>	
: Remarks - May cause skin irritation in susceptible persons.	
<u>Ingredients</u>	
<i>Glycerol</i>	
	: Species - Rabbit Exposure time - 24 h Result - Mild skin irritation
<i>Serious eye damage/eye irritation</i>	: Not classified based on available information.
<u>Product</u>	
: Remarks - May irritate eyes.	
<u>Ingredients</u>	
<i>Glycerol</i>	
	: Species - Rabbit Result - Mild eye irritation Exposure time - 24 h
<i>Respiratory or skin sensitization</i>	: Skin sensitization : Not classified based on available information. Respiratory sensitization : Not classified based on available information.
<i>Germ cell mutagenicity</i>	: Not classified based on available information.
<i>Carcinogenicity</i>	: Not classified based on available information.
<i>IARC</i>	: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
<i>OSHA</i>	: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
<i>NTP</i>	: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
<i>Reproductive toxicity</i>	: Not classified based on available information.
<i>STOT-single exposure</i>	: Not classified based on available information.
<i>STOT-repeated exposure</i>	: Not classified based on available information.
<i>Aspiration toxicity</i>	: Not classified based on available information.
<i>Further information</i>	: No data available.

12 ECOLOGICAL INFORMATION

Ecotoxicity

Product

Toxicity to fish : No data available.

Toxicity to algae : No data available.

Toxicity to bacteria : No data available.

Ingredients

Glycerol

Toxicity to fish : LC₅₀ (Leuciscus idus (Golden orfe)) : > 250 mg/l
Exposure time : 48 h.

Persistence and degradability : No data available.

Bioaccumulative potential

Product : Bioaccumulation – No data available.

Mobility in soil : No data available.

Other adverse effects

Product

Ozone-Depletion Potential : Regulation - 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks - This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information : No data available.

13 DISPOSAL CONSIDERATION

Disposal methods

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

14 TRANSPORT INFORMATION

UNRTDG : Not regulated as a dangerous good.

IATA-DGR : Not regulated as a dangerous good.

IMDG-Code : Not regulated as a dangerous good.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : No data available.

Domestic regulation 49 CFR : Not regulated as a dangerous good.

15 REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

SARA 304 : This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : No SARA Hazards.

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

US State Regulations

California Prop. 65 : This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

TSCA list

No substances are subject to TSCA 12(b) export notification requirements.

16 OTHER INFORMATION

The data provided in this Material Safety Data Sheet is based on current experience and knowledge. The purpose of this Material Safety Data Sheet is to describe products in terms of their safety requirements. This data given is designed only as a guidance for safe handling, use, storage, transportation, disposal and is not to be considered quality specification or warranty. The above details do not imply any guarantee concerning composition or performance of this product.