

## MATERIAL SAFETY DATA SHEET

### 1 IDENTIFICATION

**Details of the supplier of the safety data sheet :**

Company : Nanohelix Co., Ltd.  
 Address : 43-15, Techno 5-ro, Yuseong-gu Daejeon 34014, South Korea  
 Telephone Number : +82-42-867-9055  
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<http://www.nanohelix.net>

**Information department :**

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

**Product Name** : QRT Enzyme Mix [Green]  
**U.N.Number** : None allocated  
**Dangerous Goods Class and Subsidiary Risk** : None allocated  
**Hazchem Code** : None allocated  
**Poison Schedule** : None allocated  
**Use** : Mixture used in quantitative RT-PCR

### 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 Description** : Mixture  
 : 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.

<b>5   FIRE FIGHTING MEASURES</b>	
<b>Suitable extinguishing media</b>	: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
<b>Specific hazards during fire fighting</b>	: Exposure to decomposition products may be a hazard to health.
<b>Hazardous combustion products</b>	: Carbon oxides
<b>Specific extinguishing methods</b>	: In the event of fire and/or explosion do not breathe fumes.
<b>Special protective equipment for fire-fighters</b>	: Wear self-contained breathing apparatus for firefighting if necessary.

<b>6   ACCIDENTAL RELEASE MEASURES</b>	
<b>Personal precautions, protective equipment and emergency procedures</b>	: Use personal protective equipment. Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
<b>Methods and materials for containment and cleaning up</b>	: Keep in suitable, closed containers for disposal.

<b>7   HANDLING AND STORAGE</b>	
<b>Advice on protection against fire and explosion</b>	: Normal measures for preventive fire protection.
<b>Advice on safe handling</b>	: For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area.

<b>8   EXPOSURE CONTROLS/PERSONAL PROTECTION</b>				
<b>Ingredients with workplace control parameters</b>				
Ingredients	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Glycerol	56-81-5	TWA (mist, respirable fraction)	5 mg/m <sup>3</sup>	OSHA Z-1
		TWA (mist, total dust)	15 mg/m <sup>3</sup>	OSHA Z-1
		TWA (Total)	10 mg/m <sup>3</sup>	OSHA P0
		TWA (Respirable fraction)	5 mg/m <sup>3</sup>	OSHA P0
		TWA	10 mg/m <sup>3</sup>	ACGIH
		TWA (Mist - total dust)	10 mg/m <sup>3</sup>	OSHA P0
		TWA (Mist - respirable fraction)	5 mg/m <sup>3</sup>	OSHA P0
<b>Personal protective equipment</b>				
<b>Hand protection</b>				
<i>Remarks</i>	: 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).			
<b>Eye protection</b>	: Safety glasses.			
<b>Skin and body protection</b>	: Choose body protection according to the amount and concentration of the dangerous substance at the work place. Footwear protecting against chemicals.			
<b>Hygiene measures</b>	: Keep away from food and drink. When using do not eat, drink or smoke.			

## 9 | PHYSICAL AND CHEMICAL PROPERTIES

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

## 10 | STABILITY AND REACTIVITY

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

## 11 | TOXICOLOGICAL INFORMATION

<b>Acute toxicity</b>	: Not classified based on available information.
<b><u>Product</u></b>	
<i>Acute oral toxicity</i>	: No data available.
<i>Acute inhalation toxicity</i>	: No data available.
<i>Acute dermal toxicity</i>	: No data available.
	Acute toxicity estimate : > 5,000 mg/kg
	Method : Calculation method
<b><u>Ingredients</u></b>	
<i>glycerol</i>	
<i>Acute oral toxicity</i>	: LD <sub>50</sub> Oral (Rat): 12,000 mg/kg
<i>Acute dermal toxicity</i>	: LD <sub>50</sub> Dermal (Rabbit): 10,000 mg/kg
<b>Skin corrosion/irritation</b>	: Not classified based on available information.

<b><u>Product</u></b>	: Remarks - May cause skin irritation in susceptible persons.
<b><u>Ingredients</u></b>	
glycerol	: Species - Rabbit Exposure time - 24 h Result - Mild skin irritation
<b>Serious eye damage/eye irritation</b>	: Not classified based on available information.
<b><u>Product</u></b>	: Remarks - May irritate eyes.
<b><u>Ingredients</u></b>	
glycerol	: Species - Rabbit Result - Mild eye irritation Exposure time - 24 h
<b>Respiratory or skin sensitization</b>	: Skin sensitization - Not classified based on available information. Respiratory sensitization - Not classified based on available information.
<b>Germ cell mutagenicity</b>	: Not classified based on available information.
<b>Carcinogenicity</b>	: Not classified based on available information.
<b>IARC</b>	: 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.
<b>OSHA</b>	: 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.
<b>NTP</b>	: 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.
<b>Reproductive toxicity</b>	: Not classified based on available information.
<b>STOT-single exposure</b>	: Not classified based on available information.
<b>STOT-repeated exposure</b>	: Not classified based on available information.
<b>Aspiration toxicity</b>	: Not classified based on available information.
<b>Further information</b>	: 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 : LC<sub>50</sub> (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

**Additional ecological information**

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).  
: No data available.

**13 DISPOSAL CONSIDERATION**

**Disposal methods**

*Waste from residues* : Dispose of as hazardous waste in compliance with local and national regulations.  
*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 Extremely Hazardous Substances Reportable Quantity** : 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.