

## 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** : 2x Direct qPCR Premix [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 amplification of DNA

### 2 HAZARDS IDENTIFICATION

**GHS Classification**

Eye irritation : Category 1, H318

**GHS Label element**



**Signal word** : Danger

**Hazard statements** : H318 Causes serious eye damage.

**Precautionary statements**

**Prevention**

P280 : Wear eye protection.

**Response**

None known.

P305 + P351 + P338 : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P313 : Get medical advice/ attention.

### 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	>=10 - <20
Name	CAS No.	Weight (%)
Betain	590-46-5	>=1 - <10

#### 4 | FIRST-AID MEASURES

<b>General advice</b>	: Show this material safety data sheet to the doctor in attendance.
<b>If inhaled</b>	: Move to fresh air. If symptoms persist, call a physician. After inhalation: fresh air. In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses. After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.
<b>In case of skin contact</b>	: Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. If symptoms persist, call a physician.
<b>In case of eye contact</b>	: Remove contact lenses. Protect unharmed eye. Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
<b>If swallowed</b>	: If accidentally swallowed obtain immediate medical attention. Rinse mouth with water. Never give anything by mouth to an unconscious person.
<b>Most important symptoms and effects, both acute and delayed</b>	: Irritation and corrosion Risk of serious damage to eyes.
<b>Notes to physician</b>	: No information available.

#### 5 | FIRE FIGHTING MEASURES

<b>Suitable extinguishing media</b>	: Water, Foam, Carbon dioxide (CO <sub>2</sub> ), Dry powder Unsuitable extinguishing media for this substance/mixture no limitations of extinguishing agents are given. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
<b>Specific hazards during fire fighting</b>	: Combustible. Development of hazardous combustion gases or vapours possible in the event of fire. Fire may cause evolution of nitrogen oxides, Hydrogen chloride gas. Exposure to decomposition products may be a hazard to health.
<b>Hazardous combustion products</b>	: Carbon oxides, Nitrogen oxides (NO <sub>x</sub> )
<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. Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing. Further information Suppress (knock down) gases/vapours/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

#### 6 | ACCIDENTAL RELEASE MEASURES

<b>Personal precautions, protective equipment and emergency procedures</b>	: Use personal protective equipment. Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray. Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
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<b>Environmental precautions</b>	: Do not let product enter drains.
<b>Methods and materials for containment and cleaning up</b>	: Keep in suitable, closed containers for disposal. Cover drains. Collect, bind, and pump off spills. Observe possible material. Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

<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. Advice on safe handling Observe label precautions. Hygiene measures Change contaminated clothing. Wash hands after working with substance.
<b>Materials to avoid</b>	: Do not store near acids.
<b>Conditions for safe storage, including any incompatibilities</b>	: Storage conditions Tightly closed. Dry. Recommended storage temperature see product label.

<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>				
<b>Remarks</b>	: 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>				
<b>Respiratory protection</b>	: Safety glasses			
: Required when dusts are generated. Recommended Filter type: Filter P 2 (acc. to DIN 3181) for solid and liquid particles of harmful substances The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer.				
<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.
<b>Engineering measures</b>	: Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.
<b>Individual protection measures</b>	: Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

## 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>	: >40°C
<b>Flash Point</b>	: >101°C (Closed-cup)
<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.
<b>n-octanol/water</b>	
<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>	: Sensitive to moisture. Sensitive to air.
<b>Possibility of hazardous reactions</b>	: Stable under recommended storage conditions. Hazardous decomposition products formed under fire conditions. Violent reactions possible with: Strong oxidizing agents
<b>Conditions to avoid</b>	: Strong heating (decomposition).
<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>	
Acute oral toxicity	: No data available.
Acute inhalation toxicity	: No data available.
Acute dermal toxicity	: No data available.
<b><u>Ingredients</u></b>	
glycerol	
Acute oral toxicity	: LD <sub>50</sub> Oral (Rat): 12,000 mg/kg
Acute dermal toxicity	: 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

<b>Ecotoxicity</b>	
<b><u>Product</u></b>	
Toxicity to fish	: No data available.
Toxicity to algae	: No data available.

<i>Toxicity to bacteria</i>	: No data available.
<b><u>Ingredients</u></b>	
<i>glycerol</i>	
<i>Toxicity to fish</i>	: LC <sub>50</sub> (Leuciscus idus (Golden orfe)): > 250 mg/l Exposure time: 48 h.
<b><i>Persistence and degradability</i></b>	: No data available.
<b><i>Bioaccumulative potential</i></b>	
<b><u>Product</u></b>	: Bioaccumulation – No data available.
<b><i>Mobility in soil</i></b>	: No data available.
<b><i>Other adverse effects</i></b>	
<b><u>Product</u></b>	
<i>Ozone-Depletion Potential</i>	: 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).
<b><i>Results of PBT and vPvB assessment</i></b>	: PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.
<b><i>Additional ecological information</i></b>	: 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.  
Notice Directive on waste 2008/98/EC.

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

### 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.

***Land transport (ADR/RID)*** : Not classified as dangerous in the meaning of transport regulations.

***Inland waterway transport (ADN)*** : Not relevant.

***Sea transport (IMDG)*** : Not classified as dangerous in the meaning of transport regulations.

***Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code*** : Not relevant.

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

### 15 REGULATORY INFORMATION

#### **EPCRA - Emergency Planning and Community Right-to-Know**

***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)

**US State Regulations**

*California Prop. 65*

reporting levels established by SARA Title III, Section 313.

: 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 a Significant New Use Rule.

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.