

**Expand HiFi PCR System dNTPack, 100 U**Version  
1.11Revision Date:  
05-08-2023Date of last issue: 03-18-2022  
Date of first issue: 11-20-2015**SECTION 1. IDENTIFICATION**

Product name : Expand HiFi PCR System dNTPack, 100 U

Product code : 04738250001

**Manufacturer or supplier's details**

Company name of supplier : Roche Diagnostics Deutschland GmbH

Address : 116 Sandhoferstrasse  
Mannheim, 68305  
Germany

Telephone : +496217590

Telefax : +496217592890

E-mail address : info.dia-sds@roche.com

Emergency telephone

In case of emergencies: : CHEMTREC +1 703-741-5970 /  
1-800-424-9300**Recommended use of the chemical and restrictions on use**

Restrictions on use : For professional users only.

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**SECTION 2. HAZARDS IDENTIFICATION****GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)****GHS label elements**

Not a hazardous substance or mixture.

**Other hazards**

None known.

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**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS*****Expand High Fidelity Enzyme mix*****GHS Classification**

Not a hazardous substance or mixture.

**Components**

| Chemical name                | CAS-No.     | Concentration (% w/w) |
|------------------------------|-------------|-----------------------|
| 1,2,3-Propanetriol           | 56-81-5     | >= 30 - < 50          |
| Taq DNA Polymerase           | 123340-12-5 | < 0.1                 |
| DNA-dependent DNA polymerase | 9012-90-2   | < 0.1                 |

Actual concentration is withheld as a trade secret

***HF Buffer, 10x conc. with MgCl<sub>2</sub>***

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Not a hazardous substance or mixture.

**Components**

| Chemical name                                                    | CAS-No.   | Concentration (% w/w) |
|------------------------------------------------------------------|-----------|-----------------------|
| 1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1) | 1185-53-1 | $\geq 5 - < 10$       |

Actual concentration is withheld as a trade secret

**HF Buffer, 10x conc. without MgCl<sub>2</sub>****GHS Classification**

Not a hazardous substance or mixture.

**Components**

| Chemical name                                                    | CAS-No.   | Concentration (% w/w) |
|------------------------------------------------------------------|-----------|-----------------------|
| 1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1) | 1185-53-1 | $\geq 5 - < 10$       |

Actual concentration is withheld as a trade secret

**MgCl<sub>2</sub> Solution, 25mM****GHS Classification**

Not a hazardous substance or mixture.

**Components**

No hazardous ingredients

**Nucleotide Mix****GHS Classification**

Not a hazardous substance or mixture.

**Components**

No hazardous ingredients

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**SECTION 4. FIRST AID MEASURES**

- General advice : Do not leave the victim unattended.
- If inhaled : Move to fresh air.  
If unconscious, place in recovery position and seek medical advice.  
If symptoms persist, call a physician.
- In case of skin contact : If on skin, rinse well with water.
- In case of eye contact : Immediately flush eye(s) with plenty of water.

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- Remove contact lenses.  
Protect unharmed eye.  
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.  
Do not give milk or alcoholic beverages.  
Never give anything by mouth to an unconscious person.  
If symptoms persist, call a physician.  
Rinse mouth with water.
- Most important symptoms and effects, both acute and delayed : No information available.
- Notes to physician : The first aid procedure should be established in consultation with the doctor responsible for industrial medicine.

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**SECTION 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 : Do not allow run-off from fire fighting to enter drains or water courses.
- Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.  
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
- Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.

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**SECTION 6. ACCIDENTAL RELEASE MEASURES**

- Personal precautions, protective equipment and emergency procedures : Refer to protective measures listed in sections 7 and 8.
- Environmental precautions : Prevent product from entering drains.
- Methods and materials for containment and cleaning up : Wipe up with absorbent material (e.g. cloth, fleece).  
Keep in suitable, closed containers for disposal.

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**SECTION 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.
- Conditions for safe storage : Containers which are opened must be carefully resealed and

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kept upright to prevent leakage.  
Electrical installations / working materials must comply with the technological safety standards.

Further information on storage conditions : See label, package insert or internal guidelines

Materials to avoid : No materials to be especially mentioned.

Further information on storage stability : No decomposition if stored and applied as directed.

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Expand High Fidelity Enzyme mix

##### Ingredients with workplace control parameters

| Components                   | CAS-No.     | Value type (Form of exposure)    | Control parameters / Permissible concentration | Basis                                     |
|------------------------------|-------------|----------------------------------|------------------------------------------------|-------------------------------------------|
| 1,2,3-Propanetriol           | 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 (Mist - total dust)          | 10 mg/m <sup>3</sup>                           | OSHA P0                                   |
|                              |             | TWA (Mist - respirable fraction) | 5 mg/m <sup>3</sup>                            | OSHA P0                                   |
| Taq DNA Polymerase           | 123340-12-5 | IOEL                             | 0.00006 mg/m <sup>3</sup>                      | Roche Industrial Hygiene Committee (RIHC) |
| DNA-dependent DNA polymerase | 9012-90-2   | IOEL                             | 0.00006 mg/m <sup>3</sup>                      | Roche Industrial Hygiene Committee (RIHC) |

#### HF Buffer, 10x conc. with MgCl<sub>2</sub>

##### Ingredients with workplace control parameters

Contains no substances with occupational exposure limit values.

#### HF Buffer, 10x conc. without MgCl<sub>2</sub>

##### Ingredients with workplace control parameters

Contains no substances with occupational exposure limit values.

#### MgCl<sub>2</sub> Solution, 25mM

##### Ingredients with workplace control parameters

Contains no substances with occupational exposure limit values.

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Contains no substances with occupational exposure limit values.

**Engineering measures** : No data available**Personal protective equipment**

Respiratory protection : No personal respiratory protective equipment normally required.

Hand protection

In case of contact through splashing:

Material : Nitrile rubber  
Break through time : > 30 min  
Glove thickness : > 0.11 mm

In case of full contact:

Material : butyl-rubber  
Break through time : > 480 min  
Glove thickness : > 0.4 mm

Remarks : Wear appropriate protective gloves to prevent skin contact.  
Replace torn or punctured gloves promptly.

Eye protection : Safety glasses

Skin and body protection : Protective suit

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.

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**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES*****Expand High Fidelity Enzyme mix***

Appearance : liquid

Color : clear, colorless

Odor : none

Odor Threshold : No data available

pH : 8.0 (39 °F / 4 °C)

Melting point/range : No data available

Boiling point/boiling range : No data available

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|                                                  |   |                                                               |
|--------------------------------------------------|---|---------------------------------------------------------------|
| Flash point                                      | : | does not flash                                                |
| Evaporation rate                                 | : | No data available                                             |
| Flammability (liquids)                           | : | The product is not flammable.<br>Does not sustain combustion. |
| Self-ignition                                    | : | No data available                                             |
| Upper explosion limit / Upper flammability limit | : | No data available                                             |
| Lower explosion limit / Lower flammability limit | : | No data available                                             |
| Vapor pressure                                   | : | No data available                                             |
| Relative vapor density                           | : | No data available                                             |
| Relative density                                 | : | No data available                                             |
| Solubility(ies)                                  |   |                                                               |
| Water solubility                                 | : | completely miscible                                           |
| Solubility in other solvents                     | : | No data available                                             |
| Partition coefficient: n-octanol/water           | : | No data available                                             |
| Autoignition temperature                         | : | No data available                                             |
| Decomposition temperature                        | : | No data available                                             |
| Viscosity                                        |   |                                                               |
| Viscosity, dynamic                               | : | No data available                                             |
| Viscosity, kinematic                             | : | No data available                                             |
| Oxidizing properties                             | : | The substance or mixture is not classified as oxidizing.      |

***HF Buffer, 10x conc. with MgCl<sub>2</sub>***

|                |   |                     |
|----------------|---|---------------------|
| Appearance     | : | liquid              |
| Color          | : | clear, colorless    |
| Odor           | : | none                |
| Odor Threshold | : | No data available   |
| pH             | : | 8.9 (77 °F / 25 °C) |

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|                                                  |   |                                                               |
|--------------------------------------------------|---|---------------------------------------------------------------|
| Melting point/range                              | : | No data available                                             |
| Boiling point/boiling range                      | : | No data available                                             |
| Flash point                                      | : | No data available                                             |
| Evaporation rate                                 | : | No data available                                             |
| Flammability (liquids)                           | : | Does not sustain combustion.<br>The product is not flammable. |
| Self-ignition                                    | : | No data available                                             |
| Upper explosion limit / Upper flammability limit | : | No data available                                             |
| Lower explosion limit / Lower flammability limit | : | No data available                                             |
| Vapor pressure                                   | : | No data available                                             |
| Relative vapor density                           | : | No data available                                             |
| Relative density                                 | : | No data available                                             |
| Solubility(ies)                                  |   |                                                               |
| Water solubility                                 | : | completely miscible                                           |
| Solubility in other solvents                     | : | No data available                                             |
| Partition coefficient: n-octanol/water           | : | No data available                                             |
| Autoignition temperature                         | : | No data available                                             |
| Decomposition temperature                        | : | No data available                                             |
| Viscosity                                        |   |                                                               |
| Viscosity, dynamic                               | : | No data available                                             |
| Viscosity, kinematic                             | : | No data available                                             |
| Explosive properties                             | : | Not explosive                                                 |
| Oxidizing properties                             | : | The substance or mixture is not classified as oxidizing.      |

***HF Buffer, 10x conc. without MgCl<sub>2</sub>***

|            |   |           |
|------------|---|-----------|
| Appearance | : | liquid    |
| Color      | : | colorless |

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|                                                  |   |                                                          |
|--------------------------------------------------|---|----------------------------------------------------------|
| Odor                                             | : | none                                                     |
| Odor Threshold                                   | : | No data available                                        |
| pH                                               | : | 8.9 (77 °F / 25 °C)                                      |
| Melting point/range                              | : | No data available                                        |
| Boiling point/boiling range                      | : | No data available                                        |
| Flash point                                      | : | does not flash                                           |
| Evaporation rate                                 | : | No data available                                        |
| Flammability (liquids)                           | : | Does not sustain combustion.                             |
| Self-ignition                                    | : | No data available                                        |
| Upper explosion limit / Upper flammability limit | : | No data available                                        |
| Lower explosion limit / Lower flammability limit | : | No data available                                        |
| Vapor pressure                                   | : | No data available                                        |
| Relative vapor density                           | : | No data available                                        |
| Relative density                                 | : | No data available                                        |
| Solubility(ies)                                  |   |                                                          |
| Water solubility                                 | : | completely miscible                                      |
| Solubility in other solvents                     | : | No data available                                        |
| Partition coefficient: n-octanol/water           | : | No data available                                        |
| Autoignition temperature                         | : | No data available                                        |
| Decomposition temperature                        | : | No data available                                        |
| Viscosity                                        |   |                                                          |
| Viscosity, dynamic                               | : | No data available                                        |
| Viscosity, kinematic                             | : | No data available                                        |
| Explosive properties                             | : | Not explosive                                            |
| Oxidizing properties                             | : | The substance or mixture is not classified as oxidizing. |

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|                                                  |                                                   |
|--------------------------------------------------|---------------------------------------------------|
| Appearance                                       | : liquid                                          |
| Color                                            | : clear, colorless                                |
| Odor                                             | : odorless                                        |
| Odor Threshold                                   | : No data available                               |
| pH                                               | : 8.25 - 8.45 (77 °F / 25 °C)                     |
| Melting point/range                              | : No data available                               |
| Boiling point/boiling range                      | : No data available                               |
| Flash point                                      | : does not flash                                  |
| Evaporation rate                                 | : No data available                               |
| Flammability (liquids)                           | : The product is not flammable.                   |
| Self-ignition                                    | : No data available                               |
| Upper explosion limit / Upper flammability limit | : No data available                               |
| Lower explosion limit / Lower flammability limit | : No data available                               |
| Vapor pressure                                   | : No data available                               |
| Relative vapor density                           | : No data available                               |
| Relative density                                 | : No data available                               |
| Density                                          | : 0.997 - 1.010 g/cm <sup>3</sup> (77 °F / 25 °C) |
| Solubility(ies)                                  |                                                   |
| Water solubility                                 | : completely miscible                             |
| Solubility in other solvents                     | : No data available                               |
| Partition coefficient: n-octanol/water           | : No data available                               |
| Autoignition temperature                         | : No data available                               |
| Decomposition temperature                        | : No data available                               |
| Viscosity                                        |                                                   |
| Viscosity, dynamic                               | : No data available                               |

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|                      |                                                            |
|----------------------|------------------------------------------------------------|
| Viscosity, kinematic | : No data available                                        |
| Explosive properties | : Not explosive                                            |
| Oxidizing properties | : The substance or mixture is not classified as oxidizing. |
| Conductivity         | : 4,500 - 6,000 $\mu\text{S/cm}$ (77 °F / 25 °C)           |

***Nucleotide Mix***

|                                                  |                                                                 |
|--------------------------------------------------|-----------------------------------------------------------------|
| Appearance                                       | : liquid                                                        |
| Color                                            | : clear, colorless                                              |
| Odor                                             | : odorless                                                      |
| Odor Threshold                                   | : No data available                                             |
| pH                                               | : 8.1 - 8.5                                                     |
| Melting point/range                              | : No data available                                             |
| Boiling point/boiling range                      | : No data available                                             |
| Flash point                                      | : does not flash                                                |
| Evaporation rate                                 | : No data available                                             |
| Flammability (liquids)                           | : Does not sustain combustion.<br>The product is not flammable. |
| Self-ignition                                    | : No data available                                             |
| Upper explosion limit / Upper flammability limit | : No data available                                             |
| Lower explosion limit / Lower flammability limit | : No data available                                             |
| Vapor pressure                                   | : No data available                                             |
| Relative vapor density                           | : No data available                                             |
| Relative density                                 | : No data available                                             |
| Solubility(ies)                                  |                                                                 |
| Water solubility                                 | : completely miscible                                           |
| Solubility in other solvents                     | : No data available                                             |

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|                                        |   |                                                          |
|----------------------------------------|---|----------------------------------------------------------|
| Partition coefficient: n-octanol/water | : | No data available                                        |
| Autoignition temperature               | : | No data available                                        |
| Decomposition temperature              | : | No data available                                        |
| Viscosity                              |   |                                                          |
| Viscosity, dynamic                     | : | No data available                                        |
| Viscosity, kinematic                   | : | No data available                                        |
| Explosive properties                   | : | Not explosive                                            |
| Oxidizing properties                   | : | The substance or mixture is not classified as oxidizing. |

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**SECTION 10. STABILITY AND REACTIVITY**

|                                    |   |                                                                                                                                                      |
|------------------------------------|---|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reactivity                         | : | No dangerous reaction known under conditions of normal use.                                                                                          |
| Chemical stability                 | : | Stable under normal conditions.                                                                                                                      |
| Possibility of hazardous reactions | : | No dangerous reaction known under conditions of normal use.<br>Stable under recommended storage conditions.<br>No hazards to be specially mentioned. |
| Conditions to avoid                | : | No data available                                                                                                                                    |
| Incompatible materials             | : | No data available                                                                                                                                    |
| Hazardous decomposition products   | : | No data available                                                                                                                                    |

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**SECTION 11. TOXICOLOGICAL INFORMATION*****Expand High Fidelity Enzyme mix*****Acute toxicity**

Not classified based on available information.

**Components:****1,2,3-Propanetriol:**

|                           |   |                                                                                                                                                                                |
|---------------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Acute oral toxicity       | : | LC50 (Mouse): 11,500 mg/kg                                                                                                                                                     |
| Acute inhalation toxicity | : | LC50 (Rat, male): 275000 mg/m3<br>Exposure time: 7 h<br>Test atmosphere: vapor<br>GLP: no<br>Assessment: The component/mixture is minimally toxic after short term inhalation. |
| Acute dermal toxicity     | : | LD50 (Guinea pig, male and female): 56,750 mg/kg                                                                                                                               |

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GLP: no

**Taq DNA Polymerase:**

Acute oral toxicity : Acute toxicity estimate: > 5,001 mg/kg  
Method: Expert judgment

Acute inhalation toxicity : Acute toxicity estimate: > 30 mg/l  
Test atmosphere: dust/mist  
Method: Expert judgment

Acute dermal toxicity : Acute toxicity estimate: > 5,001 mg/kg  
Method: Expert judgment

**Skin corrosion/irritation**

Not classified based on available information.

**Components:****1,2,3-Propanetriol:**

Species : Rabbit  
Exposure time : 24 h  
Result : No skin irritation  
GLP : no

**Serious eye damage/eye irritation**

Not classified based on available information.

**Components:****1,2,3-Propanetriol:**

Species : Rabbit  
Result : No eye irritation  
Exposure time : 7 d  
GLP : no

**Respiratory or skin sensitization****Skin sensitization**

Not classified based on available information.

**Respiratory sensitization**

Not classified based on available information.

**Components:****1,2,3-Propanetriol:**

Assessment : Mild eye irritant, Mild respiratory irritant, No skin irritation

**Germ cell mutagenicity**

Not classified based on available information.

**Components:****1,2,3-Propanetriol:**

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Genotoxicity in vitro : Test Type: Microbial mutagenesis assay (Ames test)  
Test system: Salmonella typhimurium  
Metabolic activation: with and without metabolic activation  
Result: negative  
GLP: No information available.

Test Type: In vitro mammalian cell gene mutation test  
Test system: Chinese hamster ovary cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: negative  
GLP: No information available.

**Carcinogenicity**

Not classified based on available information.

**Components:****1,2,3-Propanetriol:**

Species : Rat, male and female  
Application Route : Oral  
Exposure time : 2 Years  
GLP : No information available.  
Remarks : 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.

**IARC** 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.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** 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.

**Reproductive toxicity**

Not classified based on available information.

**Components:****1,2,3-Propanetriol:**

Effects on fertility : Test Type: Two-generation study  
Species: Rat, male and female  
Application Route: Oral  
Dose: 2000 mg/kg bw/day  
Fertility: NOAEL: 2,000 mg/kg body weight  
GLP: no

Effects on fetal development : Species: Rabbit, female  
Application Route: Oral  
Dose: 11.8, 54.8, 254.5, 1180 mg/kg bw/day  
Duration of Single Treatment: 29 d  
Developmental Toxicity: NOAEL: 1,180 mg/kg bw/day  
GLP: no

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Not classified based on available information.

**Components:****Taq DNA Polymerase:**

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

**DNA-dependent DNA polymerase:**

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

**STOT-repeated exposure**

Not classified based on available information.

**Components:****Taq DNA Polymerase:**

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

**DNA-dependent DNA polymerase:**

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

**Repeated dose toxicity****Components:****1,2,3-Propanetriol:**

Species : Rat, male and female  
NOAEL : 4580 mg/kg  
NOAEL : 4,580 mg/kg  
Application Route : Oral  
Exposure time : 90 d  
Number of exposures : daily  
Dose : 4580 - 25,800 mg/kg/day  
GLP : no

Species : Rat, male and female  
Application Route : Inhalation  
Test atmosphere : dust/mist  
Exposure time : 13 Weeks  
Number of exposures : 6 hours/day, 5 days/week  
Dose : 33, 165 and 660 mg/m3  
GLP : No information available.

Species : Rat  
NOAEL : 5040 mg/kg  
NOAEL : 5,040 mg/kg  
Application Route : Dermal

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Exposure time : 45 Weeks  
Number of exposures : 8 hours/day, 5 days/week  
Dose : 0.5-4.0 ml/kg  
GLP : no

Repeated dose toxicity - Assessment : Mild eye irritant, Mild respiratory irritant, No skin irritation

**Aspiration toxicity**

Not classified based on available information.

***HF Buffer, 10x conc. with MgCl<sub>2</sub>*****Acute toxicity**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Acute oral toxicity : LD50 (Rat, female): > 5,000 mg/kg  
Method: OECD Test Guideline 425  
GLP: yes

**Skin corrosion/irritation**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Species : human keratinocytes  
Exposure time : 42 min  
Method : OECD Test Guideline 439  
Result : No skin irritation  
GLP : yes

**Serious eye damage/eye irritation**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Species : Bovine cornea  
Result : No eye irritation  
Exposure time : 240 min  
Method : OECD Test Guideline 437  
GLP : yes

**Respiratory or skin sensitization****Skin sensitization**

Not classified based on available information.

**Respiratory sensitization**

Not classified based on available information.

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**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Test Type : Maximization Test  
Species : Guinea pig  
Assessment : Does not cause skin sensitization.  
Method : OECD Test Guideline 406  
GLP : yes

**Germ cell mutagenicity**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Genotoxicity in vitro : Test Type: Microbial mutagenesis assay (Ames test)  
Test system: Salmonella typhimurium  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative  
GLP: yes

Test Type: Microbial mutagenesis assay (Ames test)  
Test system: Escherichia coli  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative  
GLP: yes

Test Type: In vitro mammalian cell gene mutation test  
Test system: Chinese hamster ovary cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: negative  
GLP: yes

Test Type: Chromosome aberration test in vitro  
Test system: Chinese hamster lung cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 473  
Result: negative  
GLP: yes

**Carcinogenicity**

Not classified based on available information.

**IARC** 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.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** 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.

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**Reproductive toxicity**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Effects on fertility : Species: Rat, male and female  
Application Route: Oral  
Dose: 100, 300, 1000 mg/kg bw/day  
Duration of Single Treatment: 54 d  
General Toxicity F1: NOAEL: > 1,000 mg/kg body weight  
Method: OECD Test Guideline 421  
Result: No effects on fertility.  
GLP: yes

**STOT-single exposure**

Not classified based on available information.

**STOT-repeated exposure**

Not classified based on available information.

**Repeated dose toxicity****Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Species : Rat, male and female  
NOAEL : > 1000 mg/kg  
Application Route : Oral  
Exposure time : 54 d  
Dose : 100, 300, 1000 mg/kg bw/day  
Method : OECD Test Guideline 421  
GLP : yes

**Aspiration toxicity**

Not classified based on available information.

***HF Buffer, 10x conc. without MgCl<sub>2</sub>*****Acute toxicity**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Acute oral toxicity : LD50 (Rat, female): > 5,000 mg/kg  
Method: OECD Test Guideline 425  
GLP: yes

**Skin corrosion/irritation**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

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Species : human keratinocytes  
Exposure time : 42 min  
Method : OECD Test Guideline 439  
Result : No skin irritation  
GLP : yes

**Serious eye damage/eye irritation**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Species : Bovine cornea  
Result : No eye irritation  
Exposure time : 240 min  
Method : OECD Test Guideline 437  
GLP : yes

**Respiratory or skin sensitization****Skin sensitization**

Not classified based on available information.

**Respiratory sensitization**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Test Type : Maximization Test  
Species : Guinea pig  
Assessment : Does not cause skin sensitization.  
Method : OECD Test Guideline 406  
GLP : yes

**Germ cell mutagenicity**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Genotoxicity in vitro : Test Type: Microbial mutagenesis assay (Ames test)  
Test system: Salmonella typhimurium  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative  
GLP: yes

Test Type: Microbial mutagenesis assay (Ames test)  
Test system: Escherichia coli  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative  
GLP: yes

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Test Type: In vitro mammalian cell gene mutation test  
Test system: Chinese hamster ovary cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: negative  
GLP: yes

Test Type: Chromosome aberration test in vitro  
Test system: Chinese hamster lung cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 473  
Result: negative  
GLP: yes

**Carcinogenicity**

Not classified based on available information.

**IARC** 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.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** 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.

**Reproductive toxicity**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Effects on fertility : Species: Rat, male and female  
Application Route: Oral  
Dose: 100, 300, 1000 mg/kg bw/day  
Duration of Single Treatment: 54 d  
General Toxicity F1: NOAEL: > 1,000 mg/kg body weight  
Method: OECD Test Guideline 421  
Result: No effects on fertility.  
GLP: yes

**STOT-single exposure**

Not classified based on available information.

**STOT-repeated exposure**

Not classified based on available information.

**Repeated dose toxicity****Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Species : Rat, male and female  
NOAEL : > 1000 mg/kg  
Application Route : Oral

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Exposure time : 54 d  
Dose : 100, 300, 1000 mg/kg bw/day  
Method : OECD Test Guideline 421  
GLP : yes

**Aspiration toxicity**

Not classified based on available information.

***MgCl<sub>2</sub> Solution, 25mM*****Acute toxicity**

Not classified based on available information.

**Skin corrosion/irritation**

Not classified based on available information.

**Serious eye damage/eye irritation**

Not classified based on available information.

**Respiratory or skin sensitization****Skin sensitization**

Not classified based on available information.

**Respiratory sensitization**

Not classified based on available information.

**Germ cell mutagenicity**

Not classified based on available information.

**Carcinogenicity**

Not classified based on available information.

**IARC** 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.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** 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.

**Reproductive toxicity**

Not classified based on available information.

**STOT-single exposure**

Not classified based on available information.

**STOT-repeated exposure**

Not classified based on available information.

**Aspiration toxicity**

Not classified based on available information.

***Nucleotide Mix***

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**Acute toxicity**

Not classified based on available information.

**Skin corrosion/irritation**

Not classified based on available information.

**Serious eye damage/eye irritation**

Not classified based on available information.

**Respiratory or skin sensitization****Skin sensitization**

Not classified based on available information.

**Respiratory sensitization**

Not classified based on available information.

**Germ cell mutagenicity**

Not classified based on available information.

**Carcinogenicity**

Not classified based on available information.

**IARC** 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.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** 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.

**Reproductive toxicity**

Not classified based on available information.

**STOT-single exposure**

Not classified based on available information.

**STOT-repeated exposure**

Not classified based on available information.

**Aspiration toxicity**

Not classified based on available information.

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**SECTION 12. ECOLOGICAL INFORMATION*****Expand High Fidelity Enzyme mix*****Ecotoxicity****Components:****1,2,3-Propanetriol:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 54,000 mg/l  
End point: mortality  
Exposure time: 96 h  
Test Type: static test

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GLP: no

Toxicity to daphnia and other aquatic invertebrates : LC50 (*Daphnia magna* (Water flea)): 1,955 mg/l  
End point: mortality  
Exposure time: 48 h  
Test Type: static test  
Analytical monitoring: no  
GLP: no

Toxicity to algae/aquatic plants : (*Scenedesmus quadricauda* (Green algae)): > 10,000 mg/l  
End point: Growth rate  
Exposure time: 8 d  
Test Type: static test  
GLP: no

Toxicity to microorganisms : EC50 (*Pseudomonas putida*): > 10,000 mg/l  
End point: Growth rate  
Exposure time: 16 h  
Test Type: static test  
GLP: No information available.

**Ecotoxicology Assessment**

Acute aquatic toxicity : This product has no known ecotoxicological effects.

Chronic aquatic toxicity : This product has no known ecotoxicological effects.

Toxicity Data on Soil : Not expected to adsorb on soil.

Other organisms relevant to the environment : No data available

**Taq DNA Polymerase:**

Toxicity to fish : LC50: > 100 mg/l  
Exposure time: 96 h

**Ecotoxicology Assessment**

Acute aquatic toxicity : This product has no known ecotoxicological effects.

Chronic aquatic toxicity : This product has no known ecotoxicological effects.

Toxicity Data on Soil : Not expected to adsorb on soil.

Other organisms relevant to the environment : No data available

**DNA-dependent DNA polymerase:****Ecotoxicology Assessment**

Toxicity Data on Soil : Not expected to adsorb on soil.

Other organisms relevant to the environment : No data available

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Biodegradability : aerobic  
Inoculum: activated sludge  
Concentration: 226 mg/l  
Result: Readily biodegradable.  
Biodegradation: 94 %  
Exposure time: 24 h  
GLP: no

**Bioaccumulative potential****Components:****1,2,3-Propanetriol:**

Partition coefficient: n- : log Pow: -1.75 (77 °F / 25 °C)  
octanol/water pH: 7.4  
Method: OECD Test Guideline 107  
GLP: no

**Taq DNA Polymerase:**

Partition coefficient: n- : Remarks: No data available  
octanol/water

**DNA-dependent DNA polymerase:**

Partition coefficient: n- : Remarks: No data available  
octanol/water

**Mobility in soil**

No data available

**Other adverse effects*****HF Buffer, 10x conc. with MgCl<sub>2</sub>*****Ecotoxicity****Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 460 mg/l  
End point: mortality  
Exposure time: 96 h  
Test Type: static test  
Analytical monitoring: no  
Method: OECD Test Guideline 203  
GLP: No information available.

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): > 117 mg/l  
aquatic invertebrates End point: Immobilization

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Exposure time: 48 h  
Test Type: static test  
Analytical monitoring: yes  
Method: OECD Test Guideline 202  
GLP: yes

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 397 mg/l

Exposure time: 72 h  
Test Type: static test  
Analytical monitoring: no  
Method: OECD Test Guideline 201  
GLP: No information available.

Toxicity to microorganisms : EC50 (activated sludge): > 1,000 mg/l

Exposure time: 3 h  
Test Type: static test  
Analytical monitoring: no  
Method: OECD Test Guideline 209  
GLP: yes

**Ecotoxicology Assessment**

Acute aquatic toxicity : This product has no known ecotoxicological effects.

Chronic aquatic toxicity : This product has no known ecotoxicological effects.

Toxicity Data on Soil : Not expected to adsorb on soil.

Other organisms relevant to the environment : No data available

**Persistence and degradability****Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Biodegradability : aerobic  
Inoculum: activated sludge, non-adapted  
Concentration: 30 mg/l  
Result: Readily biodegradable.  
Biodegradation: 97.1 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F  
GLP: yes

**Bioaccumulative potential****Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Bioaccumulation : Remarks: Due to the distribution coefficient n-octanol/water, accumulation in organisms is not expected.

Partition coefficient: n- : log Pow: -3.6 (68 °F / 20 °C)

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octanol/water

pH: 5 - 7  
Method: OECD Test Guideline 107  
GLP: no

### Mobility in soil

No data available

### Other adverse effects

## HF Buffer, 10x conc. without MgCl<sub>2</sub>

### Ecotoxicity

#### Components:

#### **1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 460 mg/l  
End point: mortality  
Exposure time: 96 h  
Test Type: static test  
Analytical monitoring: no  
Method: OECD Test Guideline 203  
GLP: No information available.

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 117 mg/l  
End point: Immobilization  
Exposure time: 48 h  
Test Type: static test  
Analytical monitoring: yes  
Method: OECD Test Guideline 202  
GLP: yes

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 397 mg/l  
Exposure time: 72 h  
Test Type: static test  
Analytical monitoring: no  
Method: OECD Test Guideline 201  
GLP: No information available.

Toxicity to microorganisms : EC50 (activated sludge): > 1,000 mg/l  
Exposure time: 3 h  
Test Type: static test  
Analytical monitoring: no  
Method: OECD Test Guideline 209  
GLP: yes

### Ecotoxicology Assessment

Acute aquatic toxicity : This product has no known ecotoxicological effects.

Chronic aquatic toxicity : This product has no known ecotoxicological effects.

Toxicity Data on Soil : Not expected to adsorb on soil.

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Other organisms relevant to the environment : No data available

**Persistence and degradability****Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Biodegradability : aerobic  
Inoculum: activated sludge, non-adapted  
Concentration: 30 mg/l  
Result: Readily biodegradable.  
Biodegradation: 97.1 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F  
GLP: yes

**Bioaccumulative potential****Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Bioaccumulation : Remarks: Due to the distribution coefficient n-octanol/water, accumulation in organisms is not expected.

Partition coefficient: n-octanol/water : log Pow: -3.6 (68 °F / 20 °C)  
pH: 5 - 7  
Method: OECD Test Guideline 107  
GLP: no

**Mobility in soil**

No data available

**Other adverse effects*****MgCl<sub>2</sub> Solution, 25mM*****Ecotoxicity**

No data available

**Persistence and degradability**

No data available

**Bioaccumulative potential**

No data available

**Mobility in soil**

No data available

**Other adverse effects*****Nucleotide Mix***

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**Ecotoxicity**

No data available

**Persistence and degradability**

No data available

**Bioaccumulative potential**

No data available

**Mobility in soil**

No data available

**Other adverse effects**

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**SECTION 13. DISPOSAL CONSIDERATIONS****Disposal methods**

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.  
Do not re-use empty containers.

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**SECTION 14. TRANSPORT INFORMATION****International Regulations****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**

Not applicable

**Domestic regulation****49 CFR**

Not regulated as a dangerous good

**Special precautions for user**

Remarks : Not dangerous goods in the meaning of ADR/RID, ADN, IMDG-Code, ICAO/IATA-DGR

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**SECTION 15. REGULATORY INFORMATION*****Expand High Fidelity Enzyme mix***

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This material does not contain any components with a CERCLA RQ.

**SARA 304 Extremely Hazardous Substances Reportable Quantity**

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

**SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : No SARA Hazards

**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.

**Clean Air Act**

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).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

|                    |         |                |
|--------------------|---------|----------------|
| 1,2,3-Propanetriol | 56-81-5 | >= 30 - < 50 % |
|--------------------|---------|----------------|

**Clean Water Act**

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

**US State Regulations****Massachusetts Right To Know**

|                    |         |
|--------------------|---------|
| 1,2,3-Propanetriol | 56-81-5 |
|--------------------|---------|

**Pennsylvania Right To Know**

|                    |           |
|--------------------|-----------|
| 1,2,3-Propanetriol | 56-81-5   |
| Water              | 7732-18-5 |

**Maine Chemicals of High Concern**

Product does not contain any listed chemicals

**Vermont Chemicals of High Concern**

Product does not contain any listed chemicals

**Washington Chemicals of High Concern**

Product does not contain any listed chemicals

**California Permissible Exposure Limits for Chemical Contaminants**

|                    |         |
|--------------------|---------|
| 1,2,3-Propanetriol | 56-81-5 |
|--------------------|---------|

The ingredients of this product are reported in the following inventories:

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|       |                                                                                                                                                           |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| AIIC  | : Not in compliance with the inventory                                                                                                                    |
| DSL   | : This product contains the following components that are not on the Canadian DSL nor NDSL.<br><br>Taq DNA Polymerase<br><br>DNA-dependent DNA polymerase |
| NZIoC | : Not in compliance with the inventory                                                                                                                    |
| ENCS  | : Not in compliance with the inventory                                                                                                                    |
| ISHL  | : Not in compliance with the inventory                                                                                                                    |
| KECI  | : Not in compliance with the inventory                                                                                                                    |
| PICCS | : Not in compliance with the inventory                                                                                                                    |
| IECSC | : Not in compliance with the inventory                                                                                                                    |
| TCSI  | : Not in compliance with the inventory                                                                                                                    |
| TSCA  | : Product contains substance(s) not listed on TSCA inventory.                                                                                             |
| TECI  | : Not in compliance with the inventory                                                                                                                    |

**TSCA list**

The following substance(s) is/are subject to a Significant New Use Rule:  
Poly(oxy-1,2-ethanediyl), .alpha.-(nonylphenyl)-.omega.-hydroxy- 9016-45-9

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

***HF Buffer, 10x conc. with MgCl2*****CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

**SARA 304 Extremely Hazardous Substances Reportable Quantity**

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

**SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : No SARA Hazards

**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.

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### Clean Air Act

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).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).

### Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

### US State Regulations

#### Massachusetts Right To Know

|                                   |           |
|-----------------------------------|-----------|
| Sulfuric acid ammonium salt (1:2) | 7783-20-2 |
|-----------------------------------|-----------|

#### Pennsylvania Right To Know

|                                                                  |           |
|------------------------------------------------------------------|-----------|
| Water                                                            | 7732-18-5 |
| 1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1) | 1185-53-1 |
| Sulfuric acid ammonium salt (1:2)                                | 7783-20-2 |

#### Maine Chemicals of High Concern

Product does not contain any listed chemicals

#### Vermont Chemicals of High Concern

Product does not contain any listed chemicals

#### Washington Chemicals of High Concern

Product does not contain any listed chemicals

### The ingredients of this product are reported in the following inventories:

|       |                                                          |
|-------|----------------------------------------------------------|
| AIIC  | : On the inventory, or in compliance with the inventory  |
| DSL   | : All components of this product are on the Canadian DSL |
| NZIoC | : On the inventory, or in compliance with the inventory  |
| ENCS  | : On the inventory, or in compliance with the inventory  |
| ISHL  | : On the inventory, or in compliance with the inventory  |
| KECI  | : On the inventory, or in compliance with the inventory  |
| PICCS | : On the inventory, or in compliance with the inventory  |
| IECSC | : On the inventory, or in compliance with the inventory  |
| TCSI  | : On the inventory, or in compliance with the inventory  |

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TSCA : All substances listed as active on the TSCA inventory

TECI : Not in compliance with the inventory

**TSCA list**

No substances are subject to a Significant New Use Rule.

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

**HF Buffer, 10x conc. without MgCl<sub>2</sub>****CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

**SARA 304 Extremely Hazardous Substances Reportable Quantity**

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

**SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : No SARA Hazards**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.**Clean Air Act**

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).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).

**Clean Water Act**

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

**US State Regulations****Massachusetts Right To Know**

Sulfuric acid ammonium salt (1:2) 7783-20-2

**Pennsylvania Right To Know**

Water 7732-18-5

1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride 1185-53-1

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(1:1)

Sulfuric acid ammonium salt (1:2)

7783-20-2

**Maine Chemicals of High Concern**

Product does not contain any listed chemicals

**Vermont Chemicals of High Concern**

Product does not contain any listed chemicals

**Washington Chemicals of High Concern**

Product does not contain any listed chemicals

**The ingredients of this product are reported in the following inventories:**

|       |                                                          |
|-------|----------------------------------------------------------|
| AIIC  | : On the inventory, or in compliance with the inventory  |
| DSL   | : All components of this product are on the Canadian DSL |
| NZIoC | : On the inventory, or in compliance with the inventory  |
| ENCS  | : On the inventory, or in compliance with the inventory  |
| ISHL  | : On the inventory, or in compliance with the inventory  |
| KECI  | : On the inventory, or in compliance with the inventory  |
| PICCS | : On the inventory, or in compliance with the inventory  |
| IECSC | : On the inventory, or in compliance with the inventory  |
| TCSI  | : On the inventory, or in compliance with the inventory  |
| TSCA  | : All substances listed as active on the TSCA inventory  |
| TECI  | : Not in compliance with the inventory                   |

**TSCA list**

No substances are subject to a Significant New Use Rule.

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

***MgCl<sub>2</sub> Solution, 25mM*****CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

**SARA 304 Extremely Hazardous Substances Reportable Quantity**

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

**SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : No SARA Hazards

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**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.

**Clean Air Act**

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).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).

**Clean Water Act**

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

**US State Regulations****Massachusetts Right To Know**

No components are subject to the Massachusetts Right to Know Act.

**Pennsylvania Right To Know**

Water

7732-18-5

**Maine Chemicals of High Concern**

Product does not contain any listed chemicals

**Vermont Chemicals of High Concern**

Product does not contain any listed chemicals

**Washington Chemicals of High Concern**

Product does not contain any listed chemicals

**The ingredients of this product are reported in the following inventories:**

|       |                                                          |
|-------|----------------------------------------------------------|
| AIIC  | : On the inventory, or in compliance with the inventory  |
| DSL   | : All components of this product are on the Canadian DSL |
| NZIoC | : On the inventory, or in compliance with the inventory  |
| ENCS  | : On the inventory, or in compliance with the inventory  |
| ISHL  | : On the inventory, or in compliance with the inventory  |
| KECI  | : On the inventory, or in compliance with the inventory  |
| PICCS | : On the inventory, or in compliance with the inventory  |
| IECSC | : On the inventory, or in compliance with the inventory  |

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TCSI : On the inventory, or in compliance with the inventory  
TSCA : All substances listed as active on the TSCA inventory  
TECI : On the inventory, or in compliance with the inventory

**TSCA list**

No substances are subject to a Significant New Use Rule.

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

**Nucleotide Mix****CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

**SARA 304 Extremely Hazardous Substances Reportable Quantity**

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

**SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : No SARA Hazards

**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.

**Clean Air Act**

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).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).

**Clean Water Act**

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

**US State Regulations****Massachusetts Right To Know**

No components are subject to the Massachusetts Right to Know Act.

**Pennsylvania Right To Know**

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Water

7732-18-5

**Maine Chemicals of High Concern**

Product does not contain any listed chemicals

**Vermont Chemicals of High Concern**

Product does not contain any listed chemicals

**Washington Chemicals of High Concern**

Product does not contain any listed chemicals

**The ingredients of this product are reported in the following inventories:**

|       |                                                                                                                                                                                                                                                                                                                                         |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AIIC  | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |
| DSL   | : This product contains the following components that are not on the Canadian DSL nor NDSL.<br><br>2'-Deoxyguanosine 5'-triphosphate trisodium salt<br><br>2'-Deoxythymidine-5'-triphosphate-trisodium salt<br><br>2'-Deoxyadenosine 5'-(disodium dihydrogen triphosphate) (dATP)<br><br>2'-Deoxycytidine 5'-triphosphate disodium salt |
| NZIoC | : On the inventory, or in compliance with the inventory                                                                                                                                                                                                                                                                                 |
| ENCS  | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |
| ISHL  | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |
| KECI  | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |
| PICCS | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |
| IECSC | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |
| TCSI  | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |
| TSCA  | : Product contains substance(s) not listed on TSCA inventory.                                                                                                                                                                                                                                                                           |
| TECI  | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |

**TSCA list**

No substances are subject to a Significant New Use Rule.

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

**Expand High Fidelity Enzyme mix****GHS label elements**

Not a hazardous substance or mixture.

**HF Buffer, 10x conc. with MgCl<sub>2</sub>**

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### GHS label elements

Not a hazardous substance or mixture.

### ***HF Buffer, 10x conc. without MgCl<sub>2</sub>***

### GHS label elements

Not a hazardous substance or mixture.

### ***MgCl<sub>2</sub> Solution, 25mM***

### GHS label elements

Not a hazardous substance or mixture.

### ***Nucleotide Mix***

### GHS label elements

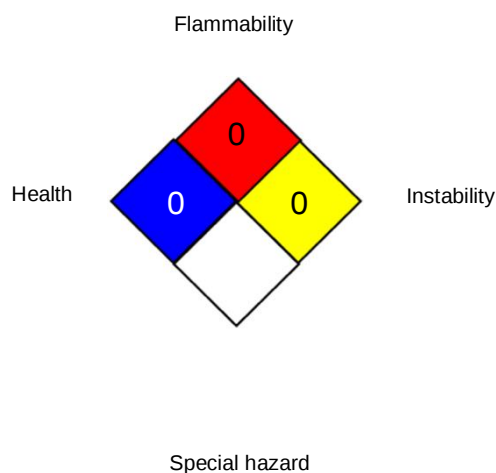
Not a hazardous substance or mixture.

## SECTION 16. OTHER INFORMATION

### Further information

### ***Expand High Fidelity Enzyme mix***

#### NFPA 704:



#### HMIS® IV:

|                 |   |   |
|-----------------|---|---|
| HEALTH          | / | 0 |
| FLAMMABILITY    |   | 0 |
| PHYSICAL HAZARD |   | 0 |

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

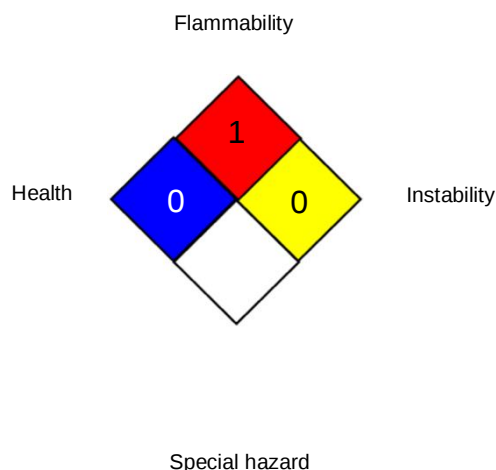
### ***HF Buffer, 10x conc. with MgCl<sub>2</sub>***

**Expand HiFi PCR System dNTPack, 100 U**

 Version  
1.11

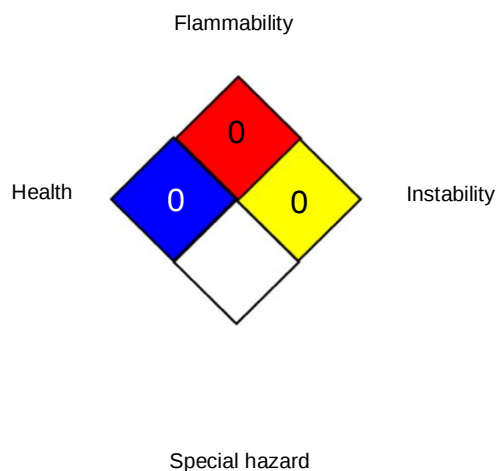
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**NFPA 704:**

**HMIS® IV:**

|                 |   |   |
|-----------------|---|---|
| HEALTH          | / | 0 |
| FLAMMABILITY    |   | 0 |
| PHYSICAL HAZARD |   | 0 |

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

**HF Buffer, 10x conc. without MgCl<sub>2</sub>**
**NFPA 704:**

**HMIS® IV:**

|                 |   |   |
|-----------------|---|---|
| HEALTH          | / | 0 |
| FLAMMABILITY    |   | 0 |
| PHYSICAL HAZARD |   | 0 |

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

**MgCl<sub>2</sub> Solution, 25mM**

# SAFETY DATA SHEET



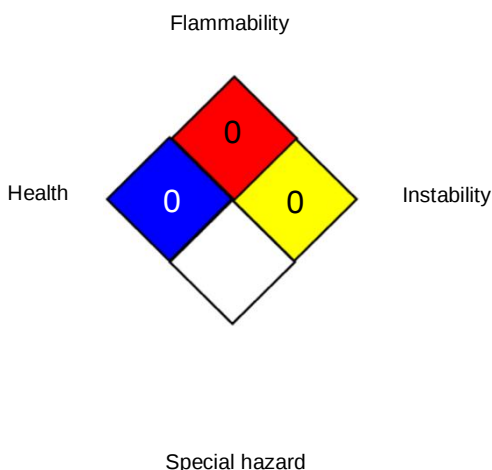
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### NFPA 704:



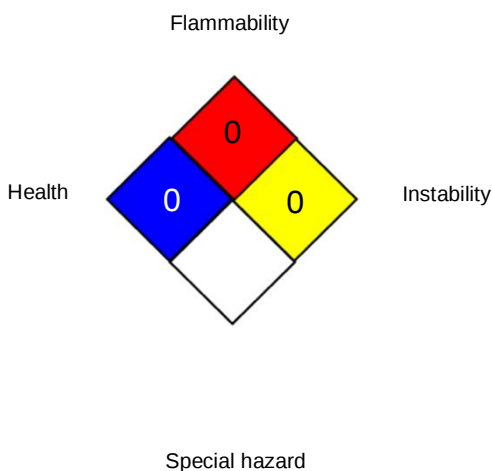
### HMIS® IV:

|                 |   |   |
|-----------------|---|---|
| HEALTH          | / | 0 |
| FLAMMABILITY    |   | 0 |
| PHYSICAL HAZARD |   | 0 |

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

## Nucleotide Mix

### NFPA 704:



### HMIS® IV:

|                 |   |   |
|-----------------|---|---|
| HEALTH          | / | 0 |
| FLAMMABILITY    |   | 0 |
| PHYSICAL HAZARD |   | 0 |

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

### Distributor

MilliporeSigma  
3050 Spruce Street  
SAINT LOUIS  
MO 63103 USA

### Full text of other abbreviations

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Haz-

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ardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

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The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

US / Z8 / 2204

**Expand HiFi PCR System dNTPack, 500 U**Version  
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Product name : Expand HiFi PCR System dNTPack, 500 U

Product code : 04738268001

**Manufacturer or supplier's details**

Company name of supplier : Roche Diagnostics Deutschland GmbH

Address : 116 Sandhoferstrasse  
Mannheim, 68305  
Germany

Telephone : +496217590

Telefax : +496217592890

E-mail address : info.dia-sds@roche.com

Emergency telephone

In case of emergencies: : CHEMTREC +1 703-741-5970 /  
1-800-424-9300**Recommended use of the chemical and restrictions on use**

Restrictions on use : For professional users only.

---

**SECTION 2. HAZARDS IDENTIFICATION****GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)****GHS label elements**

Not a hazardous substance or mixture.

**Other hazards**

None known.

---

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS*****Expand High Fidelity Enzyme mix*****GHS Classification**

Not a hazardous substance or mixture.

**Components**

| Chemical name                | CAS-No.     | Concentration (% w/w) |
|------------------------------|-------------|-----------------------|
| 1,2,3-Propanetriol           | 56-81-5     | >= 30 - < 50          |
| Taq DNA Polymerase           | 123340-12-5 | < 0.1                 |
| DNA-dependent DNA polymerase | 9012-90-2   | < 0.1                 |

Actual concentration is withheld as a trade secret

***HF Buffer, 10x conc. with MgCl<sub>2</sub>***

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Not a hazardous substance or mixture.

**Components**

| Chemical name                                                    | CAS-No.   | Concentration (% w/w) |
|------------------------------------------------------------------|-----------|-----------------------|
| 1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1) | 1185-53-1 | $\geq 5 - < 10$       |

Actual concentration is withheld as a trade secret

**HF Buffer, 10x conc. without MgCl<sub>2</sub>****GHS Classification**

Not a hazardous substance or mixture.

**Components**

| Chemical name                                                    | CAS-No.   | Concentration (% w/w) |
|------------------------------------------------------------------|-----------|-----------------------|
| 1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1) | 1185-53-1 | $\geq 5 - < 10$       |

Actual concentration is withheld as a trade secret

**MgCl<sub>2</sub> Solution, 25mM****GHS Classification**

Not a hazardous substance or mixture.

**Components**

No hazardous ingredients

**Nucleotide Mix****GHS Classification**

Not a hazardous substance or mixture.

**Components**

No hazardous ingredients

---

**SECTION 4. FIRST AID MEASURES**

- General advice : Do not leave the victim unattended.
- If inhaled : Move to fresh air.  
If unconscious, place in recovery position and seek medical advice.  
If symptoms persist, call a physician.
- In case of skin contact : If on skin, rinse well with water.
- In case of eye contact : Immediately flush eye(s) with plenty of water.

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- Remove contact lenses.  
Protect unharmed eye.  
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.  
Do not give milk or alcoholic beverages.  
Never give anything by mouth to an unconscious person.  
If symptoms persist, call a physician.  
Rinse mouth with water.
- Most important symptoms and effects, both acute and delayed : No information available.
- Notes to physician : The first aid procedure should be established in consultation with the doctor responsible for industrial medicine.

---

**SECTION 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 : Do not allow run-off from fire fighting to enter drains or water courses.
- Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.  
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
- Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.

---

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

- Personal precautions, protective equipment and emergency procedures : Refer to protective measures listed in sections 7 and 8.
- Environmental precautions : Prevent product from entering drains.
- Methods and materials for containment and cleaning up : Wipe up with absorbent material (e.g. cloth, fleece).  
Keep in suitable, closed containers for disposal.

---

**SECTION 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.
- Conditions for safe storage : Containers which are opened must be carefully resealed and

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kept upright to prevent leakage.  
Electrical installations / working materials must comply with the technological safety standards.

Further information on storage conditions : See label, package insert or internal guidelines

Materials to avoid : No materials to be especially mentioned.

Further information on storage stability : No decomposition if stored and applied as directed.

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Expand High Fidelity Enzyme mix

##### Ingredients with workplace control parameters

| Components                   | CAS-No.     | Value type (Form of exposure)    | Control parameters / Permissible concentration | Basis                                     |
|------------------------------|-------------|----------------------------------|------------------------------------------------|-------------------------------------------|
| 1,2,3-Propanetriol           | 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 (Mist - total dust)          | 10 mg/m <sup>3</sup>                           | OSHA P0                                   |
|                              |             | TWA (Mist - respirable fraction) | 5 mg/m <sup>3</sup>                            | OSHA P0                                   |
| Taq DNA Polymerase           | 123340-12-5 | IOEL                             | 0.00006 mg/m <sup>3</sup>                      | Roche Industrial Hygiene Committee (RIHC) |
| DNA-dependent DNA polymerase | 9012-90-2   | IOEL                             | 0.00006 mg/m <sup>3</sup>                      | Roche Industrial Hygiene Committee (RIHC) |

#### HF Buffer, 10x conc. with MgCl<sub>2</sub>

##### Ingredients with workplace control parameters

Contains no substances with occupational exposure limit values.

#### HF Buffer, 10x conc. without MgCl<sub>2</sub>

##### Ingredients with workplace control parameters

Contains no substances with occupational exposure limit values.

#### MgCl<sub>2</sub> Solution, 25mM

##### Ingredients with workplace control parameters

Contains no substances with occupational exposure limit values.

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Contains no substances with occupational exposure limit values.

**Engineering measures** : No data available**Personal protective equipment**

Respiratory protection : No personal respiratory protective equipment normally required.

Hand protection

In case of contact through splashing:

Material : Nitrile rubber  
Break through time : > 30 min  
Glove thickness : > 0.11 mm

In case of full contact:

Material : butyl-rubber  
Break through time : > 480 min  
Glove thickness : > 0.4 mm

Remarks : Wear appropriate protective gloves to prevent skin contact.  
Replace torn or punctured gloves promptly.

Eye protection : Safety glasses

Skin and body protection : Protective suit

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.

---

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES*****Expand High Fidelity Enzyme mix***

Appearance : liquid

Color : clear, colorless

Odor : none

Odor Threshold : No data available

pH : 8.0 (39 °F / 4 °C)

Melting point/range : No data available

Boiling point/boiling range : No data available

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|                                                  |   |                                                               |
|--------------------------------------------------|---|---------------------------------------------------------------|
| Flash point                                      | : | does not flash                                                |
| Evaporation rate                                 | : | No data available                                             |
| Flammability (liquids)                           | : | The product is not flammable.<br>Does not sustain combustion. |
| Self-ignition                                    | : | No data available                                             |
| Upper explosion limit / Upper flammability limit | : | No data available                                             |
| Lower explosion limit / Lower flammability limit | : | No data available                                             |
| Vapor pressure                                   | : | No data available                                             |
| Relative vapor density                           | : | No data available                                             |
| Relative density                                 | : | No data available                                             |
| Solubility(ies)                                  |   |                                                               |
| Water solubility                                 | : | completely miscible                                           |
| Solubility in other solvents                     | : | No data available                                             |
| Partition coefficient: n-octanol/water           | : | No data available                                             |
| Autoignition temperature                         | : | No data available                                             |
| Decomposition temperature                        | : | No data available                                             |
| Viscosity                                        |   |                                                               |
| Viscosity, dynamic                               | : | No data available                                             |
| Viscosity, kinematic                             | : | No data available                                             |
| Oxidizing properties                             | : | The substance or mixture is not classified as oxidizing.      |

***HF Buffer, 10x conc. with MgCl<sub>2</sub>***

|                |   |                     |
|----------------|---|---------------------|
| Appearance     | : | liquid              |
| Color          | : | clear, colorless    |
| Odor           | : | none                |
| Odor Threshold | : | No data available   |
| pH             | : | 8.9 (77 °F / 25 °C) |

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|                                                  |   |                                                               |
|--------------------------------------------------|---|---------------------------------------------------------------|
| Melting point/range                              | : | No data available                                             |
| Boiling point/boiling range                      | : | No data available                                             |
| Flash point                                      | : | No data available                                             |
| Evaporation rate                                 | : | No data available                                             |
| Flammability (liquids)                           | : | Does not sustain combustion.<br>The product is not flammable. |
| Self-ignition                                    | : | No data available                                             |
| Upper explosion limit / Upper flammability limit | : | No data available                                             |
| Lower explosion limit / Lower flammability limit | : | No data available                                             |
| Vapor pressure                                   | : | No data available                                             |
| Relative vapor density                           | : | No data available                                             |
| Relative density                                 | : | No data available                                             |
| Solubility(ies)                                  |   |                                                               |
| Water solubility                                 | : | completely miscible                                           |
| Solubility in other solvents                     | : | No data available                                             |
| Partition coefficient: n-octanol/water           | : | No data available                                             |
| Autoignition temperature                         | : | No data available                                             |
| Decomposition temperature                        | : | No data available                                             |
| Viscosity                                        |   |                                                               |
| Viscosity, dynamic                               | : | No data available                                             |
| Viscosity, kinematic                             | : | No data available                                             |
| Explosive properties                             | : | Not explosive                                                 |
| Oxidizing properties                             | : | The substance or mixture is not classified as oxidizing.      |

***HF Buffer, 10x conc. without MgCl<sub>2</sub>***

|            |   |           |
|------------|---|-----------|
| Appearance | : | liquid    |
| Color      | : | colorless |

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|                                                  |   |                                                          |
|--------------------------------------------------|---|----------------------------------------------------------|
| Odor                                             | : | none                                                     |
| Odor Threshold                                   | : | No data available                                        |
| pH                                               | : | 8.9 (77 °F / 25 °C)                                      |
| Melting point/range                              | : | No data available                                        |
| Boiling point/boiling range                      | : | No data available                                        |
| Flash point                                      | : | does not flash                                           |
| Evaporation rate                                 | : | No data available                                        |
| Flammability (liquids)                           | : | Does not sustain combustion.                             |
| Self-ignition                                    | : | No data available                                        |
| Upper explosion limit / Upper flammability limit | : | No data available                                        |
| Lower explosion limit / Lower flammability limit | : | No data available                                        |
| Vapor pressure                                   | : | No data available                                        |
| Relative vapor density                           | : | No data available                                        |
| Relative density                                 | : | No data available                                        |
| Solubility(ies)                                  |   |                                                          |
| Water solubility                                 | : | completely miscible                                      |
| Solubility in other solvents                     | : | No data available                                        |
| Partition coefficient: n-octanol/water           | : | No data available                                        |
| Autoignition temperature                         | : | No data available                                        |
| Decomposition temperature                        | : | No data available                                        |
| Viscosity                                        |   |                                                          |
| Viscosity, dynamic                               | : | No data available                                        |
| Viscosity, kinematic                             | : | No data available                                        |
| Explosive properties                             | : | Not explosive                                            |
| Oxidizing properties                             | : | The substance or mixture is not classified as oxidizing. |

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|                                                  |                                                   |
|--------------------------------------------------|---------------------------------------------------|
| Appearance                                       | : liquid                                          |
| Color                                            | : clear, colorless                                |
| Odor                                             | : odorless                                        |
| Odor Threshold                                   | : No data available                               |
| pH                                               | : 8.25 - 8.45 (77 °F / 25 °C)                     |
| Melting point/range                              | : No data available                               |
| Boiling point/boiling range                      | : No data available                               |
| Flash point                                      | : does not flash                                  |
| Evaporation rate                                 | : No data available                               |
| Flammability (liquids)                           | : The product is not flammable.                   |
| Self-ignition                                    | : No data available                               |
| Upper explosion limit / Upper flammability limit | : No data available                               |
| Lower explosion limit / Lower flammability limit | : No data available                               |
| Vapor pressure                                   | : No data available                               |
| Relative vapor density                           | : No data available                               |
| Relative density                                 | : No data available                               |
| Density                                          | : 0.997 - 1.010 g/cm <sup>3</sup> (77 °F / 25 °C) |
| Solubility(ies)                                  |                                                   |
| Water solubility                                 | : completely miscible                             |
| Solubility in other solvents                     | : No data available                               |
| Partition coefficient: n-octanol/water           | : No data available                               |
| Autoignition temperature                         | : No data available                               |
| Decomposition temperature                        | : No data available                               |
| Viscosity                                        |                                                   |
| Viscosity, dynamic                               | : No data available                               |

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|                      |                                                            |
|----------------------|------------------------------------------------------------|
| Viscosity, kinematic | : No data available                                        |
| Explosive properties | : Not explosive                                            |
| Oxidizing properties | : The substance or mixture is not classified as oxidizing. |
| Conductivity         | : 4,500 - 6,000 $\mu\text{S}/\text{cm}$ (77 °F / 25 °C)    |

***Nucleotide Mix***

|                                                  |                                                                 |
|--------------------------------------------------|-----------------------------------------------------------------|
| Appearance                                       | : liquid                                                        |
| Color                                            | : clear, colorless                                              |
| Odor                                             | : odorless                                                      |
| Odor Threshold                                   | : No data available                                             |
| pH                                               | : 8.1 - 8.5                                                     |
| Melting point/range                              | : No data available                                             |
| Boiling point/boiling range                      | : No data available                                             |
| Flash point                                      | : does not flash                                                |
| Evaporation rate                                 | : No data available                                             |
| Flammability (liquids)                           | : Does not sustain combustion.<br>The product is not flammable. |
| Self-ignition                                    | : No data available                                             |
| Upper explosion limit / Upper flammability limit | : No data available                                             |
| Lower explosion limit / Lower flammability limit | : No data available                                             |
| Vapor pressure                                   | : No data available                                             |
| Relative vapor density                           | : No data available                                             |
| Relative density                                 | : No data available                                             |
| Solubility(ies)                                  |                                                                 |
| Water solubility                                 | : completely miscible                                           |
| Solubility in other solvents                     | : No data available                                             |

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|                                        |   |                                                          |
|----------------------------------------|---|----------------------------------------------------------|
| Partition coefficient: n-octanol/water | : | No data available                                        |
| Autoignition temperature               | : | No data available                                        |
| Decomposition temperature              | : | No data available                                        |
| Viscosity                              |   |                                                          |
| Viscosity, dynamic                     | : | No data available                                        |
| Viscosity, kinematic                   | : | No data available                                        |
| Explosive properties                   | : | Not explosive                                            |
| Oxidizing properties                   | : | The substance or mixture is not classified as oxidizing. |

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**SECTION 10. STABILITY AND REACTIVITY**

|                                    |   |                                                                                                                                                      |
|------------------------------------|---|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reactivity                         | : | No dangerous reaction known under conditions of normal use.                                                                                          |
| Chemical stability                 | : | Stable under normal conditions.                                                                                                                      |
| Possibility of hazardous reactions | : | No dangerous reaction known under conditions of normal use.<br>Stable under recommended storage conditions.<br>No hazards to be specially mentioned. |
| Conditions to avoid                | : | No data available                                                                                                                                    |
| Incompatible materials             | : | No data available                                                                                                                                    |
| Hazardous decomposition products   | : | No data available                                                                                                                                    |

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**SECTION 11. TOXICOLOGICAL INFORMATION*****Expand High Fidelity Enzyme mix*****Acute toxicity**

Not classified based on available information.

**Components:****1,2,3-Propanetriol:**

|                           |   |                                                                                                                                                                                |
|---------------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Acute oral toxicity       | : | LC50 (Mouse): 11,500 mg/kg                                                                                                                                                     |
| Acute inhalation toxicity | : | LC50 (Rat, male): 275000 mg/m3<br>Exposure time: 7 h<br>Test atmosphere: vapor<br>GLP: no<br>Assessment: The component/mixture is minimally toxic after short term inhalation. |
| Acute dermal toxicity     | : | LD50 (Guinea pig, male and female): 56,750 mg/kg                                                                                                                               |

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GLP: no

**Taq DNA Polymerase:**Acute oral toxicity : Acute toxicity estimate: > 5,001 mg/kg  
Method: Expert judgmentAcute inhalation toxicity : Acute toxicity estimate: > 30 mg/l  
Test atmosphere: dust/mist  
Method: Expert judgmentAcute dermal toxicity : Acute toxicity estimate: > 5,001 mg/kg  
Method: Expert judgment**Skin corrosion/irritation**

Not classified based on available information.

**Components:****1,2,3-Propanetriol:**Species : Rabbit  
Exposure time : 24 h  
Result : No skin irritation  
GLP : no**Serious eye damage/eye irritation**

Not classified based on available information.

**Components:****1,2,3-Propanetriol:**Species : Rabbit  
Result : No eye irritation  
Exposure time : 7 d  
GLP : no**Respiratory or skin sensitization****Skin sensitization**

Not classified based on available information.

**Respiratory sensitization**

Not classified based on available information.

**Components:****1,2,3-Propanetriol:**

Assessment : Mild eye irritant, Mild respiratory irritant, No skin irritation

**Germ cell mutagenicity**

Not classified based on available information.

**Components:****1,2,3-Propanetriol:**

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Genotoxicity in vitro : Test Type: Microbial mutagenesis assay (Ames test)  
Test system: Salmonella typhimurium  
Metabolic activation: with and without metabolic activation  
Result: negative  
GLP: No information available.

Test Type: In vitro mammalian cell gene mutation test  
Test system: Chinese hamster ovary cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: negative  
GLP: No information available.

**Carcinogenicity**

Not classified based on available information.

**Components:****1,2,3-Propanetriol:**

Species : Rat, male and female  
Application Route : Oral  
Exposure time : 2 Years  
GLP : No information available.  
Remarks : 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.

**IARC** 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.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** 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.

**Reproductive toxicity**

Not classified based on available information.

**Components:****1,2,3-Propanetriol:**

Effects on fertility : Test Type: Two-generation study  
Species: Rat, male and female  
Application Route: Oral  
Dose: 2000 mg/kg bw/day  
Fertility: NOAEL: 2,000 mg/kg body weight  
GLP: no

Effects on fetal development : Species: Rabbit, female  
Application Route: Oral  
Dose: 11.8, 54.8, 254.5, 1180 mg/kg bw/day  
Duration of Single Treatment: 29 d  
Developmental Toxicity: NOAEL: 1,180 mg/kg bw/day  
GLP: no

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**STOT-single exposure**

Not classified based on available information.

**Components:****Taq DNA Polymerase:**

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

**DNA-dependent DNA polymerase:**

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

**STOT-repeated exposure**

Not classified based on available information.

**Components:****Taq DNA Polymerase:**

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

**DNA-dependent DNA polymerase:**

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

**Repeated dose toxicity****Components:****1,2,3-Propanetriol:**

Species : Rat, male and female  
NOAEL : 4580 mg/kg  
NOAEL : 4,580 mg/kg  
Application Route : Oral  
Exposure time : 90 d  
Number of exposures : daily  
Dose : 4580 - 25,800 mg/kg/day  
GLP : no

Species : Rat, male and female  
Application Route : Inhalation  
Test atmosphere : dust/mist  
Exposure time : 13 Weeks  
Number of exposures : 6 hours/day, 5 days/week  
Dose : 33, 165 and 660 mg/m3  
GLP : No information available.

Species : Rat  
NOAEL : 5040 mg/kg  
NOAEL : 5,040 mg/kg  
Application Route : Dermal

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Exposure time : 45 Weeks  
Number of exposures : 8 hours/day, 5 days/week  
Dose : 0.5-4.0 ml/kg  
GLP : no

Repeated dose toxicity - Assessment : Mild eye irritant, Mild respiratory irritant, No skin irritation

**Aspiration toxicity**

Not classified based on available information.

***HF Buffer, 10x conc. with MgCl<sub>2</sub>*****Acute toxicity**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Acute oral toxicity : LD50 (Rat, female): > 5,000 mg/kg  
Method: OECD Test Guideline 425  
GLP: yes

**Skin corrosion/irritation**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Species : human keratinocytes  
Exposure time : 42 min  
Method : OECD Test Guideline 439  
Result : No skin irritation  
GLP : yes

**Serious eye damage/eye irritation**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Species : Bovine cornea  
Result : No eye irritation  
Exposure time : 240 min  
Method : OECD Test Guideline 437  
GLP : yes

**Respiratory or skin sensitization****Skin sensitization**

Not classified based on available information.

**Respiratory sensitization**

Not classified based on available information.

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**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Test Type : Maximization Test  
Species : Guinea pig  
Assessment : Does not cause skin sensitization.  
Method : OECD Test Guideline 406  
GLP : yes

**Germ cell mutagenicity**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Genotoxicity in vitro : Test Type: Microbial mutagenesis assay (Ames test)  
Test system: Salmonella typhimurium  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative  
GLP: yes

Test Type: Microbial mutagenesis assay (Ames test)  
Test system: Escherichia coli  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative  
GLP: yes

Test Type: In vitro mammalian cell gene mutation test  
Test system: Chinese hamster ovary cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: negative  
GLP: yes

Test Type: Chromosome aberration test in vitro  
Test system: Chinese hamster lung cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 473  
Result: negative  
GLP: yes

**Carcinogenicity**

Not classified based on available information.

**IARC** 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.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** 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.

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**Reproductive toxicity**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Effects on fertility : Species: Rat, male and female  
Application Route: Oral  
Dose: 100, 300, 1000 mg/kg bw/day  
Duration of Single Treatment: 54 d  
General Toxicity F1: NOAEL: > 1,000 mg/kg body weight  
Method: OECD Test Guideline 421  
Result: No effects on fertility.  
GLP: yes

**STOT-single exposure**

Not classified based on available information.

**STOT-repeated exposure**

Not classified based on available information.

**Repeated dose toxicity****Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Species : Rat, male and female  
NOAEL : > 1000 mg/kg  
Application Route : Oral  
Exposure time : 54 d  
Dose : 100, 300, 1000 mg/kg bw/day  
Method : OECD Test Guideline 421  
GLP : yes

**Aspiration toxicity**

Not classified based on available information.

***HF Buffer, 10x conc. without MgCl2*****Acute toxicity**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Acute oral toxicity : LD50 (Rat, female): > 5,000 mg/kg  
Method: OECD Test Guideline 425  
GLP: yes

**Skin corrosion/irritation**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

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Species : human keratinocytes  
Exposure time : 42 min  
Method : OECD Test Guideline 439  
Result : No skin irritation  
GLP : yes

**Serious eye damage/eye irritation**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Species : Bovine cornea  
Result : No eye irritation  
Exposure time : 240 min  
Method : OECD Test Guideline 437  
GLP : yes

**Respiratory or skin sensitization****Skin sensitization**

Not classified based on available information.

**Respiratory sensitization**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Test Type : Maximization Test  
Species : Guinea pig  
Assessment : Does not cause skin sensitization.  
Method : OECD Test Guideline 406  
GLP : yes

**Germ cell mutagenicity**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Genotoxicity in vitro : Test Type: Microbial mutagenesis assay (Ames test)  
Test system: Salmonella typhimurium  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative  
GLP: yes

Test Type: Microbial mutagenesis assay (Ames test)  
Test system: Escherichia coli  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative  
GLP: yes

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Test Type: In vitro mammalian cell gene mutation test  
Test system: Chinese hamster ovary cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: negative  
GLP: yes

Test Type: Chromosome aberration test in vitro  
Test system: Chinese hamster lung cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 473  
Result: negative  
GLP: yes

**Carcinogenicity**

Not classified based on available information.

**IARC** 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.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** 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.

**Reproductive toxicity**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Effects on fertility : Species: Rat, male and female  
Application Route: Oral  
Dose: 100, 300, 1000 mg/kg bw/day  
Duration of Single Treatment: 54 d  
General Toxicity F1: NOAEL: > 1,000 mg/kg body weight  
Method: OECD Test Guideline 421  
Result: No effects on fertility.  
GLP: yes

**STOT-single exposure**

Not classified based on available information.

**STOT-repeated exposure**

Not classified based on available information.

**Repeated dose toxicity****Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Species : Rat, male and female  
NOAEL : > 1000 mg/kg  
Application Route : Oral

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Exposure time : 54 d  
Dose : 100, 300, 1000 mg/kg bw/day  
Method : OECD Test Guideline 421  
GLP : yes

**Aspiration toxicity**

Not classified based on available information.

***MgCl<sub>2</sub> Solution, 25mM*****Acute toxicity**

Not classified based on available information.

**Skin corrosion/irritation**

Not classified based on available information.

**Serious eye damage/eye irritation**

Not classified based on available information.

**Respiratory or skin sensitization****Skin sensitization**

Not classified based on available information.

**Respiratory sensitization**

Not classified based on available information.

**Germ cell mutagenicity**

Not classified based on available information.

**Carcinogenicity**

Not classified based on available information.

**IARC** 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.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** 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.

**Reproductive toxicity**

Not classified based on available information.

**STOT-single exposure**

Not classified based on available information.

**STOT-repeated exposure**

Not classified based on available information.

**Aspiration toxicity**

Not classified based on available information.

***Nucleotide Mix***

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**Acute toxicity**

Not classified based on available information.

**Skin corrosion/irritation**

Not classified based on available information.

**Serious eye damage/eye irritation**

Not classified based on available information.

**Respiratory or skin sensitization****Skin sensitization**

Not classified based on available information.

**Respiratory sensitization**

Not classified based on available information.

**Germ cell mutagenicity**

Not classified based on available information.

**Carcinogenicity**

Not classified based on available information.

**IARC** 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.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** 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.

**Reproductive toxicity**

Not classified based on available information.

**STOT-single exposure**

Not classified based on available information.

**STOT-repeated exposure**

Not classified based on available information.

**Aspiration toxicity**

Not classified based on available information.

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**SECTION 12. ECOLOGICAL INFORMATION*****Expand High Fidelity Enzyme mix*****Ecotoxicity****Components:****1,2,3-Propanetriol:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 54,000 mg/l  
End point: mortality  
Exposure time: 96 h  
Test Type: static test

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GLP: no

Toxicity to daphnia and other aquatic invertebrates : LC50 (*Daphnia magna* (Water flea)): 1,955 mg/l  
End point: mortality  
Exposure time: 48 h  
Test Type: static test  
Analytical monitoring: no  
GLP: no

Toxicity to algae/aquatic plants : (*Scenedesmus quadricauda* (Green algae)): > 10,000 mg/l  
End point: Growth rate  
Exposure time: 8 d  
Test Type: static test  
GLP: no

Toxicity to microorganisms : EC50 (*Pseudomonas putida*): > 10,000 mg/l  
End point: Growth rate  
Exposure time: 16 h  
Test Type: static test  
GLP: No information available.

**Ecotoxicology Assessment**

Acute aquatic toxicity : This product has no known ecotoxicological effects.

Chronic aquatic toxicity : This product has no known ecotoxicological effects.

Toxicity Data on Soil : Not expected to adsorb on soil.

Other organisms relevant to the environment : No data available

**Taq DNA Polymerase:**

Toxicity to fish : LC50: > 100 mg/l  
Exposure time: 96 h

**Ecotoxicology Assessment**

Acute aquatic toxicity : This product has no known ecotoxicological effects.

Chronic aquatic toxicity : This product has no known ecotoxicological effects.

Toxicity Data on Soil : Not expected to adsorb on soil.

Other organisms relevant to the environment : No data available

**DNA-dependent DNA polymerase:****Ecotoxicology Assessment**

Toxicity Data on Soil : Not expected to adsorb on soil.

Other organisms relevant to the environment : No data available

**Expand HiFi PCR System dNTPack, 500 U**Version  
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05-08-2023Date of last issue: 03-18-2022  
Date of first issue: 11-20-2015**Persistence and degradability****Components:****1,2,3-Propanetriol:**

Biodegradability : aerobic  
Inoculum: activated sludge  
Concentration: 226 mg/l  
Result: Readily biodegradable.  
Biodegradation: 94 %  
Exposure time: 24 h  
GLP: no

**Bioaccumulative potential****Components:****1,2,3-Propanetriol:**

Partition coefficient: n- : log Pow: -1.75 (77 °F / 25 °C)  
octanol/water pH: 7.4  
Method: OECD Test Guideline 107  
GLP: no

**Taq DNA Polymerase:**

Partition coefficient: n- : Remarks: No data available  
octanol/water

**DNA-dependent DNA polymerase:**

Partition coefficient: n- : Remarks: No data available  
octanol/water

**Mobility in soil**

No data available

**Other adverse effects*****HF Buffer, 10x conc. with MgCl<sub>2</sub>*****Ecotoxicity****Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 460 mg/l  
End point: mortality  
Exposure time: 96 h  
Test Type: static test  
Analytical monitoring: no  
Method: OECD Test Guideline 203  
GLP: No information available.

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): > 117 mg/l  
aquatic invertebrates End point: Immobilization

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Exposure time: 48 h  
Test Type: static test  
Analytical monitoring: yes  
Method: OECD Test Guideline 202  
GLP: yes

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 397 mg/l

Exposure time: 72 h  
Test Type: static test  
Analytical monitoring: no  
Method: OECD Test Guideline 201  
GLP: No information available.

Toxicity to microorganisms : EC50 (activated sludge): > 1,000 mg/l

Exposure time: 3 h  
Test Type: static test  
Analytical monitoring: no  
Method: OECD Test Guideline 209  
GLP: yes

**Ecotoxicology Assessment**

Acute aquatic toxicity : This product has no known ecotoxicological effects.

Chronic aquatic toxicity : This product has no known ecotoxicological effects.

Toxicity Data on Soil : Not expected to adsorb on soil.

Other organisms relevant to the environment : No data available

**Persistence and degradability****Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Biodegradability : aerobic  
Inoculum: activated sludge, non-adapted  
Concentration: 30 mg/l  
Result: Readily biodegradable.  
Biodegradation: 97.1 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F  
GLP: yes

**Bioaccumulative potential****Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Bioaccumulation : Remarks: Due to the distribution coefficient n-octanol/water, accumulation in organisms is not expected.

Partition coefficient: n- : log Pow: -3.6 (68 °F / 20 °C)

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octanol/water

pH: 5 - 7  
Method: OECD Test Guideline 107  
GLP: no

**Mobility in soil**

No data available

**Other adverse effects*****HF Buffer, 10x conc. without MgCl<sub>2</sub>*****Ecotoxicity****Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

- Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 460 mg/l  
End point: mortality  
Exposure time: 96 h  
Test Type: static test  
Analytical monitoring: no  
Method: OECD Test Guideline 203  
GLP: No information available.
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 117 mg/l  
End point: Immobilization  
Exposure time: 48 h  
Test Type: static test  
Analytical monitoring: yes  
Method: OECD Test Guideline 202  
GLP: yes
- Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 397 mg/l  
Exposure time: 72 h  
Test Type: static test  
Analytical monitoring: no  
Method: OECD Test Guideline 201  
GLP: No information available.
- Toxicity to microorganisms : EC50 (activated sludge): > 1,000 mg/l  
Exposure time: 3 h  
Test Type: static test  
Analytical monitoring: no  
Method: OECD Test Guideline 209  
GLP: yes

**Ecotoxicology Assessment**

- Acute aquatic toxicity : This product has no known ecotoxicological effects.
- Chronic aquatic toxicity : This product has no known ecotoxicological effects.
- Toxicity Data on Soil : Not expected to adsorb on soil.

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Other organisms relevant to the environment : No data available

**Persistence and degradability****Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Biodegradability : aerobic  
Inoculum: activated sludge, non-adapted  
Concentration: 30 mg/l  
Result: Readily biodegradable.  
Biodegradation: 97.1 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F  
GLP: yes

**Bioaccumulative potential****Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Bioaccumulation : Remarks: Due to the distribution coefficient n-octanol/water, accumulation in organisms is not expected.

Partition coefficient: n-octanol/water : log Pow: -3.6 (68 °F / 20 °C)  
pH: 5 - 7  
Method: OECD Test Guideline 107  
GLP: no

**Mobility in soil**

No data available

**Other adverse effects*****MgCl<sub>2</sub> Solution, 25mM*****Ecotoxicity**

No data available

**Persistence and degradability**

No data available

**Bioaccumulative potential**

No data available

**Mobility in soil**

No data available

**Other adverse effects*****Nucleotide Mix***

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**Ecotoxicity**

No data available

**Persistence and degradability**

No data available

**Bioaccumulative potential**

No data available

**Mobility in soil**

No data available

**Other adverse effects**

---

**SECTION 13. DISPOSAL CONSIDERATIONS****Disposal methods**

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.  
Do not re-use empty containers.

---

**SECTION 14. TRANSPORT INFORMATION****International Regulations****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**

Not applicable

**Domestic regulation****49 CFR**

Not regulated as a dangerous good

**Special precautions for user**

Remarks : Not dangerous goods in the meaning of ADR/RID, ADN, IMDG-Code, ICAO/IATA-DGR

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**SECTION 15. REGULATORY INFORMATION*****Expand High Fidelity Enzyme mix***

**Expand HiFi PCR System dNTPack, 500 U**Version  
1.11Revision Date:  
05-08-2023Date of last issue: 03-18-2022  
Date of first issue: 11-20-2015**CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

**SARA 304 Extremely Hazardous Substances Reportable Quantity**

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

**SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : No SARA Hazards

**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.

**Clean Air Act**

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).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

|                    |         |                |
|--------------------|---------|----------------|
| 1,2,3-Propanetriol | 56-81-5 | >= 30 - < 50 % |
|--------------------|---------|----------------|

**Clean Water Act**

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

**US State Regulations****Massachusetts Right To Know**

|                    |         |
|--------------------|---------|
| 1,2,3-Propanetriol | 56-81-5 |
|--------------------|---------|

**Pennsylvania Right To Know**

|                    |           |
|--------------------|-----------|
| 1,2,3-Propanetriol | 56-81-5   |
| Water              | 7732-18-5 |

**Maine Chemicals of High Concern**

Product does not contain any listed chemicals

**Vermont Chemicals of High Concern**

Product does not contain any listed chemicals

**Washington Chemicals of High Concern**

Product does not contain any listed chemicals

**California Permissible Exposure Limits for Chemical Contaminants**

|                    |         |
|--------------------|---------|
| 1,2,3-Propanetriol | 56-81-5 |
|--------------------|---------|

The ingredients of this product are reported in the following inventories:

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|       |                                                                                                                                                           |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| AIIC  | : Not in compliance with the inventory                                                                                                                    |
| DSL   | : This product contains the following components that are not on the Canadian DSL nor NDSL.<br><br>Taq DNA Polymerase<br><br>DNA-dependent DNA polymerase |
| NZIoC | : Not in compliance with the inventory                                                                                                                    |
| ENCS  | : Not in compliance with the inventory                                                                                                                    |
| ISHL  | : Not in compliance with the inventory                                                                                                                    |
| KECI  | : Not in compliance with the inventory                                                                                                                    |
| PICCS | : Not in compliance with the inventory                                                                                                                    |
| IECSC | : Not in compliance with the inventory                                                                                                                    |
| TCSI  | : Not in compliance with the inventory                                                                                                                    |
| TSCA  | : Product contains substance(s) not listed on TSCA inventory.                                                                                             |
| TECI  | : Not in compliance with the inventory                                                                                                                    |

### TSCA list

The following substance(s) is/are subject to a Significant New Use Rule:  
Poly(oxy-1,2-ethanediyl), .alpha.-(nonylphenyl)-.omega.-hydroxy- 9016-45-9

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

### HF Buffer, 10x conc. with MgCl<sub>2</sub>

#### CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

#### SARA 304 Extremely Hazardous Substances Reportable Quantity

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

#### SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : No SARA Hazards

**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.

**Expand HiFi PCR System dNTPack, 500 U**Version  
1.11Revision Date:  
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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).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).

**Clean Water Act**

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

**US State Regulations****Massachusetts Right To Know**

|                                   |           |
|-----------------------------------|-----------|
| Sulfuric acid ammonium salt (1:2) | 7783-20-2 |
|-----------------------------------|-----------|

**Pennsylvania Right To Know**

|                                                                  |           |
|------------------------------------------------------------------|-----------|
| Water                                                            | 7732-18-5 |
| 1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1) | 1185-53-1 |
| Sulfuric acid ammonium salt (1:2)                                | 7783-20-2 |

**Maine Chemicals of High Concern**

Product does not contain any listed chemicals

**Vermont Chemicals of High Concern**

Product does not contain any listed chemicals

**Washington Chemicals of High Concern**

Product does not contain any listed chemicals

**The ingredients of this product are reported in the following inventories:**

|       |                                                          |
|-------|----------------------------------------------------------|
| AIIC  | : On the inventory, or in compliance with the inventory  |
| DSL   | : All components of this product are on the Canadian DSL |
| NZIoC | : On the inventory, or in compliance with the inventory  |
| ENCS  | : On the inventory, or in compliance with the inventory  |
| ISHL  | : On the inventory, or in compliance with the inventory  |
| KECI  | : On the inventory, or in compliance with the inventory  |
| PICCS | : On the inventory, or in compliance with the inventory  |
| IECSC | : On the inventory, or in compliance with the inventory  |
| TCSI  | : On the inventory, or in compliance with the inventory  |

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TSCA : All substances listed as active on the TSCA inventory

TECI : Not in compliance with the inventory

**TSCA list**

No substances are subject to a Significant New Use Rule.

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

**HF Buffer, 10x conc. without MgCl<sub>2</sub>****CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

**SARA 304 Extremely Hazardous Substances Reportable Quantity**

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

**SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : No SARA Hazards**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.**Clean Air Act**

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).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).

**Clean Water Act**

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

**US State Regulations****Massachusetts Right To Know**

Sulfuric acid ammonium salt (1:2) 7783-20-2

**Pennsylvania Right To Know**

Water 7732-18-5

1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride 1185-53-1

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(1:1)

Sulfuric acid ammonium salt (1:2)

7783-20-2

**Maine Chemicals of High Concern**

Product does not contain any listed chemicals

**Vermont Chemicals of High Concern**

Product does not contain any listed chemicals

**Washington Chemicals of High Concern**

Product does not contain any listed chemicals

**The ingredients of this product are reported in the following inventories:**

|       |                                                          |
|-------|----------------------------------------------------------|
| AIIC  | : On the inventory, or in compliance with the inventory  |
| DSL   | : All components of this product are on the Canadian DSL |
| NZIoC | : On the inventory, or in compliance with the inventory  |
| ENCS  | : On the inventory, or in compliance with the inventory  |
| ISHL  | : On the inventory, or in compliance with the inventory  |
| KECI  | : On the inventory, or in compliance with the inventory  |
| PICCS | : On the inventory, or in compliance with the inventory  |
| IECSC | : On the inventory, or in compliance with the inventory  |
| TCSI  | : On the inventory, or in compliance with the inventory  |
| TSCA  | : All substances listed as active on the TSCA inventory  |
| TECI  | : Not in compliance with the inventory                   |

**TSCA list**

No substances are subject to a Significant New Use Rule.

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

***MgCl<sub>2</sub> Solution, 25mM*****CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

**SARA 304 Extremely Hazardous Substances Reportable Quantity**

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

**SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : No SARA Hazards

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**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.

**Clean Air Act**

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).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).

**Clean Water Act**

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

**US State Regulations****Massachusetts Right To Know**

No components are subject to the Massachusetts Right to Know Act.

**Pennsylvania Right To Know**

Water

7732-18-5

**Maine Chemicals of High Concern**

Product does not contain any listed chemicals

**Vermont Chemicals of High Concern**

Product does not contain any listed chemicals

**Washington Chemicals of High Concern**

Product does not contain any listed chemicals

**The ingredients of this product are reported in the following inventories:**

|       |                                                          |
|-------|----------------------------------------------------------|
| AIIC  | : On the inventory, or in compliance with the inventory  |
| DSL   | : All components of this product are on the Canadian DSL |
| NZIoC | : On the inventory, or in compliance with the inventory  |
| ENCS  | : On the inventory, or in compliance with the inventory  |
| ISHL  | : On the inventory, or in compliance with the inventory  |
| KECI  | : On the inventory, or in compliance with the inventory  |
| PICCS | : On the inventory, or in compliance with the inventory  |
| IECSC | : On the inventory, or in compliance with the inventory  |

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TCSI : On the inventory, or in compliance with the inventory  
TSCA : All substances listed as active on the TSCA inventory  
TECI : On the inventory, or in compliance with the inventory

**TSCA list**

No substances are subject to a Significant New Use Rule.

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

***Nucleotide Mix*****CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

**SARA 304 Extremely Hazardous Substances Reportable Quantity**

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

**SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : No SARA Hazards

**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.

**Clean Air Act**

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).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).

**Clean Water Act**

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

**US State Regulations****Massachusetts Right To Know**

No components are subject to the Massachusetts Right to Know Act.

**Pennsylvania Right To Know**

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Water

7732-18-5

**Maine Chemicals of High Concern**

Product does not contain any listed chemicals

**Vermont Chemicals of High Concern**

Product does not contain any listed chemicals

**Washington Chemicals of High Concern**

Product does not contain any listed chemicals

**The ingredients of this product are reported in the following inventories:**

|       |                                                                                                                                                                                                                                                                                                                                         |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AIIC  | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |
| DSL   | : This product contains the following components that are not on the Canadian DSL nor NDSL.<br><br>2'-Deoxyguanosine 5'-triphosphate trisodium salt<br><br>2'-Deoxythymidine-5'-triphosphate-trisodium salt<br><br>2'-Deoxyadenosine 5'-(disodium dihydrogen triphosphate) (dATP)<br><br>2'-Deoxycytidine 5'-triphosphate disodium salt |
| NZIoC | : On the inventory, or in compliance with the inventory                                                                                                                                                                                                                                                                                 |
| ENCS  | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |
| ISHL  | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |
| KECI  | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |
| PICCS | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |
| IECSC | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |
| TCSI  | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |
| TSCA  | : Product contains substance(s) not listed on TSCA inventory.                                                                                                                                                                                                                                                                           |
| TECI  | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |

**TSCA list**

No substances are subject to a Significant New Use Rule.

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

**Expand High Fidelity Enzyme mix****GHS label elements**

Not a hazardous substance or mixture.

**HF Buffer, 10x conc. with MgCl<sub>2</sub>**

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### GHS label elements

Not a hazardous substance or mixture.

### ***HF Buffer, 10x conc. without MgCl<sub>2</sub>***

### GHS label elements

Not a hazardous substance or mixture.

### ***MgCl<sub>2</sub> Solution, 25mM***

### GHS label elements

Not a hazardous substance or mixture.

### ***Nucleotide Mix***

### GHS label elements

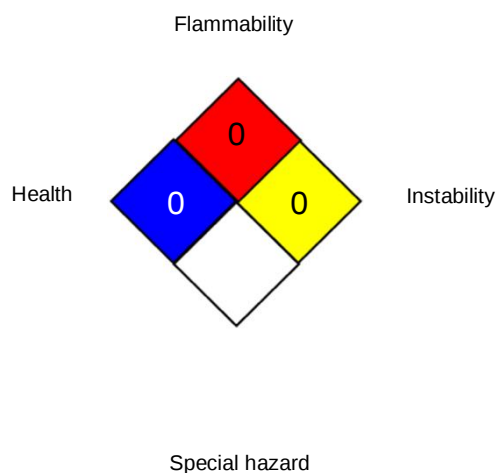
Not a hazardous substance or mixture.

## SECTION 16. OTHER INFORMATION

### Further information

### ***Expand High Fidelity Enzyme mix***

#### NFPA 704:



#### HMIS® IV:

|                 |   |   |
|-----------------|---|---|
| HEALTH          | / | 0 |
| FLAMMABILITY    |   | 0 |
| PHYSICAL HAZARD |   | 0 |

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

### ***HF Buffer, 10x conc. with MgCl<sub>2</sub>***

# SAFETY DATA SHEET



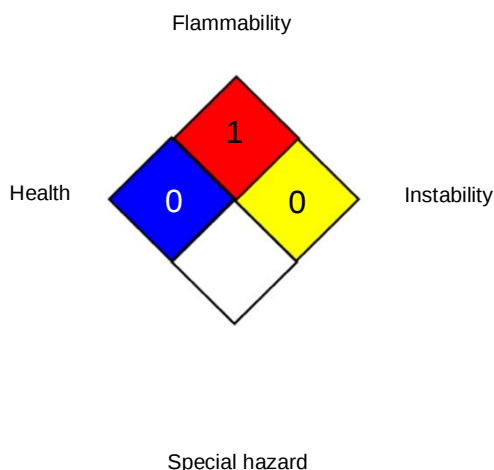
## Expand HiFi PCR System dNTPack, 500 U

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### NFPA 704:



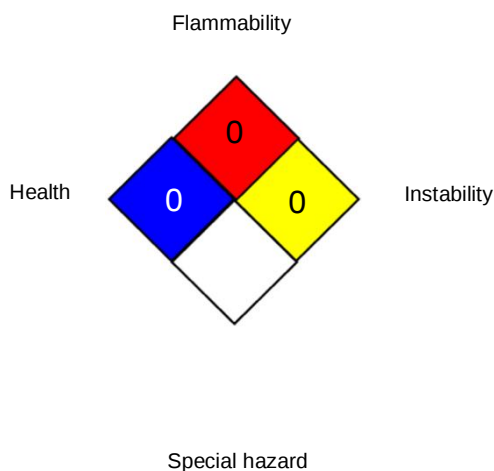
### HMIS® IV:

|                 |   |   |
|-----------------|---|---|
| HEALTH          | / | 0 |
| FLAMMABILITY    |   | 0 |
| PHYSICAL HAZARD |   | 0 |

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

## HF Buffer, 10x conc. without MgCl<sub>2</sub>

### NFPA 704:



### HMIS® IV:

|                 |   |   |
|-----------------|---|---|
| HEALTH          | / | 0 |
| FLAMMABILITY    |   | 0 |
| PHYSICAL HAZARD |   | 0 |

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

## MgCl<sub>2</sub> Solution, 25mM

# SAFETY DATA SHEET



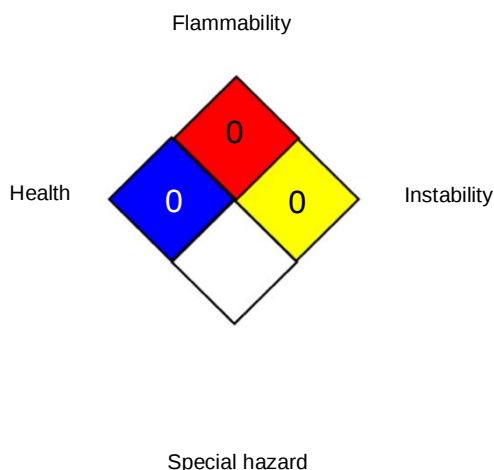
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### NFPA 704:



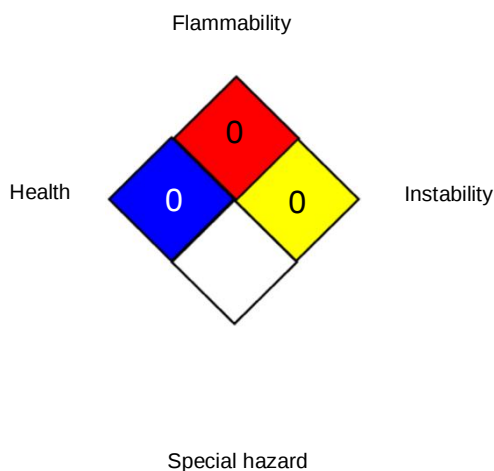
### HMIS® IV:

|                 |   |   |
|-----------------|---|---|
| HEALTH          | / | 0 |
| FLAMMABILITY    |   | 0 |
| PHYSICAL HAZARD |   | 0 |

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

## Nucleotide Mix

### NFPA 704:



### HMIS® IV:

|                 |   |   |
|-----------------|---|---|
| HEALTH          | / | 0 |
| FLAMMABILITY    |   | 0 |
| PHYSICAL HAZARD |   | 0 |

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

### Distributor

MilliporeSigma  
3050 Spruce Street  
SAINT LOUIS  
MO 63103 USA

### Full text of other abbreviations

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Haz-

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ardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

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The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

US / Z8 / 2204

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Product name : Expand HiFi PCR System dNTPack, 2500 U

Product code : 04738276001

**Manufacturer or supplier's details**

Company name of supplier : Roche Diagnostics Deutschland GmbH

Address : 116 Sandhoferstrasse  
Mannheim, 68305  
Germany

Telephone : +496217590

Telefax : +496217592890

E-mail address : info.dia-sds@roche.com

Emergency telephone

In case of emergencies: : CHEMTREC +1 703-741-5970 /  
1-800-424-9300**Recommended use of the chemical and restrictions on use**

Restrictions on use : For professional users only.

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**SECTION 2. HAZARDS IDENTIFICATION****GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)****GHS label elements**

Not a hazardous substance or mixture.

**Other hazards**

None known.

---

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS****Expand High Fidelity Enzyme mix****GHS Classification**

Not a hazardous substance or mixture.

**Components**

| Chemical name                | CAS-No.     | Concentration (% w/w) |
|------------------------------|-------------|-----------------------|
| 1,2,3-Propanetriol           | 56-81-5     | >= 30 - < 50          |
| Taq DNA Polymerase           | 123340-12-5 | < 0.1                 |
| DNA-dependent DNA polymerase | 9012-90-2   | < 0.1                 |

Actual concentration is withheld as a trade secret

**HF Buffer, 10x conc. with MgCl<sub>2</sub>**

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Not a hazardous substance or mixture.

**Components**

| Chemical name                                                    | CAS-No.   | Concentration (% w/w) |
|------------------------------------------------------------------|-----------|-----------------------|
| 1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1) | 1185-53-1 | $\geq 5 - < 10$       |

Actual concentration is withheld as a trade secret

**HF Buffer, 10x conc. without MgCl<sub>2</sub>****GHS Classification**

Not a hazardous substance or mixture.

**Components**

| Chemical name                                                    | CAS-No.   | Concentration (% w/w) |
|------------------------------------------------------------------|-----------|-----------------------|
| 1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1) | 1185-53-1 | $\geq 5 - < 10$       |

Actual concentration is withheld as a trade secret

**MgCl<sub>2</sub> Solution, 25mM****GHS Classification**

Not a hazardous substance or mixture.

**Components**

No hazardous ingredients

**Nucleotide Mix****GHS Classification**

Not a hazardous substance or mixture.

**Components**

No hazardous ingredients

---

**SECTION 4. FIRST AID MEASURES**

- General advice : Do not leave the victim unattended.
- If inhaled : Move to fresh air.  
If unconscious, place in recovery position and seek medical advice.  
If symptoms persist, call a physician.
- In case of skin contact : If on skin, rinse well with water.
- In case of eye contact : Immediately flush eye(s) with plenty of water.

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- Remove contact lenses.  
Protect unharmed eye.  
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.  
Do not give milk or alcoholic beverages.  
Never give anything by mouth to an unconscious person.  
If symptoms persist, call a physician.  
Rinse mouth with water.
- Most important symptoms and effects, both acute and delayed : No information available.
- Notes to physician : The first aid procedure should be established in consultation with the doctor responsible for industrial medicine.

---

**SECTION 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 : Do not allow run-off from fire fighting to enter drains or water courses.
- Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.  
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
- Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.

---

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

- Personal precautions, protective equipment and emergency procedures : Refer to protective measures listed in sections 7 and 8.
- Environmental precautions : Prevent product from entering drains.
- Methods and materials for containment and cleaning up : Wipe up with absorbent material (e.g. cloth, fleece).  
Keep in suitable, closed containers for disposal.

---

**SECTION 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.
- Conditions for safe storage : Containers which are opened must be carefully resealed and

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kept upright to prevent leakage.  
Electrical installations / working materials must comply with the technological safety standards.

Further information on storage conditions : See label, package insert or internal guidelines

Materials to avoid : No materials to be especially mentioned.

Further information on storage stability : No decomposition if stored and applied as directed.

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**
**Expand High Fidelity Enzyme mix**
**Ingredients with workplace control parameters**

| Components                   | CAS-No.     | Value type (Form of exposure)    | Control parameters / Permissible concentration | Basis                                     |
|------------------------------|-------------|----------------------------------|------------------------------------------------|-------------------------------------------|
| 1,2,3-Propanetriol           | 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 (Mist - total dust)          | 10 mg/m <sup>3</sup>                           | OSHA P0                                   |
|                              |             | TWA (Mist - respirable fraction) | 5 mg/m <sup>3</sup>                            | OSHA P0                                   |
| Taq DNA Polymerase           | 123340-12-5 | IOEL                             | 0.00006 mg/m <sup>3</sup>                      | Roche Industrial Hygiene Committee (RIHC) |
| DNA-dependent DNA polymerase | 9012-90-2   | IOEL                             | 0.00006 mg/m <sup>3</sup>                      | Roche Industrial Hygiene Committee (RIHC) |

**HF Buffer, 10x conc. with MgCl<sub>2</sub>**
**Ingredients with workplace control parameters**

Contains no substances with occupational exposure limit values.

**HF Buffer, 10x conc. without MgCl<sub>2</sub>**
**Ingredients with workplace control parameters**

Contains no substances with occupational exposure limit values.

**MgCl<sub>2</sub> Solution, 25mM**
**Ingredients with workplace control parameters**

Contains no substances with occupational exposure limit values.

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Contains no substances with occupational exposure limit values.

**Engineering measures** : No data available**Personal protective equipment**

Respiratory protection : No personal respiratory protective equipment normally required.

Hand protection

In case of contact through splashing:

Material : Nitrile rubber  
Break through time : > 30 min  
Glove thickness : > 0.11 mm

In case of full contact:

Material : butyl-rubber  
Break through time : > 480 min  
Glove thickness : > 0.4 mm

Remarks : Wear appropriate protective gloves to prevent skin contact.  
Replace torn or punctured gloves promptly.

Eye protection : Safety glasses

Skin and body protection : Protective suit

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.

---

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES*****Expand High Fidelity Enzyme mix***

Appearance : liquid

Color : clear, colorless

Odor : none

Odor Threshold : No data available

pH : 8.0 (39 °F / 4 °C)

Melting point/range : No data available

Boiling point/boiling range : No data available

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|                                                  |   |                                                               |
|--------------------------------------------------|---|---------------------------------------------------------------|
| Flash point                                      | : | does not flash                                                |
| Evaporation rate                                 | : | No data available                                             |
| Flammability (liquids)                           | : | The product is not flammable.<br>Does not sustain combustion. |
| Self-ignition                                    | : | No data available                                             |
| Upper explosion limit / Upper flammability limit | : | No data available                                             |
| Lower explosion limit / Lower flammability limit | : | No data available                                             |
| Vapor pressure                                   | : | No data available                                             |
| Relative vapor density                           | : | No data available                                             |
| Relative density                                 | : | No data available                                             |
| Solubility(ies)                                  |   |                                                               |
| Water solubility                                 | : | completely miscible                                           |
| Solubility in other solvents                     | : | No data available                                             |
| Partition coefficient: n-octanol/water           | : | No data available                                             |
| Autoignition temperature                         | : | No data available                                             |
| Decomposition temperature                        | : | No data available                                             |
| Viscosity                                        |   |                                                               |
| Viscosity, dynamic                               | : | No data available                                             |
| Viscosity, kinematic                             | : | No data available                                             |
| Oxidizing properties                             | : | The substance or mixture is not classified as oxidizing.      |

***HF Buffer, 10x conc. with MgCl<sub>2</sub>***

|                |   |                     |
|----------------|---|---------------------|
| Appearance     | : | liquid              |
| Color          | : | clear, colorless    |
| Odor           | : | none                |
| Odor Threshold | : | No data available   |
| pH             | : | 8.9 (77 °F / 25 °C) |

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|                                                  |   |                                                               |
|--------------------------------------------------|---|---------------------------------------------------------------|
| Melting point/range                              | : | No data available                                             |
| Boiling point/boiling range                      | : | No data available                                             |
| Flash point                                      | : | No data available                                             |
| Evaporation rate                                 | : | No data available                                             |
| Flammability (liquids)                           | : | Does not sustain combustion.<br>The product is not flammable. |
| Self-ignition                                    | : | No data available                                             |
| Upper explosion limit / Upper flammability limit | : | No data available                                             |
| Lower explosion limit / Lower flammability limit | : | No data available                                             |
| Vapor pressure                                   | : | No data available                                             |
| Relative vapor density                           | : | No data available                                             |
| Relative density                                 | : | No data available                                             |
| Solubility(ies)                                  |   |                                                               |
| Water solubility                                 | : | completely miscible                                           |
| Solubility in other solvents                     | : | No data available                                             |
| Partition coefficient: n-octanol/water           | : | No data available                                             |
| Autoignition temperature                         | : | No data available                                             |
| Decomposition temperature                        | : | No data available                                             |
| Viscosity                                        |   |                                                               |
| Viscosity, dynamic                               | : | No data available                                             |
| Viscosity, kinematic                             | : | No data available                                             |
| Explosive properties                             | : | Not explosive                                                 |
| Oxidizing properties                             | : | The substance or mixture is not classified as oxidizing.      |

***HF Buffer, 10x conc. without MgCl<sub>2</sub>***

|            |   |           |
|------------|---|-----------|
| Appearance | : | liquid    |
| Color      | : | colorless |

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|                                                  |   |                                                          |
|--------------------------------------------------|---|----------------------------------------------------------|
| Odor                                             | : | none                                                     |
| Odor Threshold                                   | : | No data available                                        |
| pH                                               | : | 8.9 (77 °F / 25 °C)                                      |
| Melting point/range                              | : | No data available                                        |
| Boiling point/boiling range                      | : | No data available                                        |
| Flash point                                      | : | does not flash                                           |
| Evaporation rate                                 | : | No data available                                        |
| Flammability (liquids)                           | : | Does not sustain combustion.                             |
| Self-ignition                                    | : | No data available                                        |
| Upper explosion limit / Upper flammability limit | : | No data available                                        |
| Lower explosion limit / Lower flammability limit | : | No data available                                        |
| Vapor pressure                                   | : | No data available                                        |
| Relative vapor density                           | : | No data available                                        |
| Relative density                                 | : | No data available                                        |
| Solubility(ies)                                  |   |                                                          |
| Water solubility                                 | : | completely miscible                                      |
| Solubility in other solvents                     | : | No data available                                        |
| Partition coefficient: n-octanol/water           | : | No data available                                        |
| Autoignition temperature                         | : | No data available                                        |
| Decomposition temperature                        | : | No data available                                        |
| Viscosity                                        |   |                                                          |
| Viscosity, dynamic                               | : | No data available                                        |
| Viscosity, kinematic                             | : | No data available                                        |
| Explosive properties                             | : | Not explosive                                            |
| Oxidizing properties                             | : | The substance or mixture is not classified as oxidizing. |

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|                                                  |                                                   |
|--------------------------------------------------|---------------------------------------------------|
| Appearance                                       | : liquid                                          |
| Color                                            | : clear, colorless                                |
| Odor                                             | : odorless                                        |
| Odor Threshold                                   | : No data available                               |
| pH                                               | : 8.25 - 8.45 (77 °F / 25 °C)                     |
| Melting point/range                              | : No data available                               |
| Boiling point/boiling range                      | : No data available                               |
| Flash point                                      | : does not flash                                  |
| Evaporation rate                                 | : No data available                               |
| Flammability (liquids)                           | : The product is not flammable.                   |
| Self-ignition                                    | : No data available                               |
| Upper explosion limit / Upper flammability limit | : No data available                               |
| Lower explosion limit / Lower flammability limit | : No data available                               |
| Vapor pressure                                   | : No data available                               |
| Relative vapor density                           | : No data available                               |
| Relative density                                 | : No data available                               |
| Density                                          | : 0.997 - 1.010 g/cm <sup>3</sup> (77 °F / 25 °C) |
| Solubility(ies)                                  |                                                   |
| Water solubility                                 | : completely miscible                             |
| Solubility in other solvents                     | : No data available                               |
| Partition coefficient: n-octanol/water           | : No data available                               |
| Autoignition temperature                         | : No data available                               |
| Decomposition temperature                        | : No data available                               |
| Viscosity                                        |                                                   |
| Viscosity, dynamic                               | : No data available                               |

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Viscosity, kinematic : No data available

Explosive properties : Not explosive

Oxidizing properties : The substance or mixture is not classified as oxidizing.

Conductivity : 4,500 - 6,000  $\mu\text{S/cm}$  (77 °F / 25 °C)

***Nucleotide Mix***

Appearance : liquid

Color : clear, colorless

Odor : odorless

Odor Threshold : No data available

pH : 8.1 - 8.5

Melting point/range : No data available

Boiling point/boiling range : No data available

Flash point : does not flash

Evaporation rate : No data available

Flammability (liquids) : Does not sustain combustion.  
The product is not flammable.

Self-ignition : No data available

Upper explosion limit / Upper flammability limit : No data available

Lower explosion limit / Lower flammability limit : No data available

Vapor pressure : No data available

Relative vapor density : No data available

Relative density : No data available

Solubility(ies)  
Water solubility : completely miscible

Solubility in other solvents : No data available

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|                                        |   |                                                          |
|----------------------------------------|---|----------------------------------------------------------|
| Partition coefficient: n-octanol/water | : | No data available                                        |
| Autoignition temperature               | : | No data available                                        |
| Decomposition temperature              | : | No data available                                        |
| Viscosity                              |   |                                                          |
| Viscosity, dynamic                     | : | No data available                                        |
| Viscosity, kinematic                   | : | No data available                                        |
| Explosive properties                   | : | Not explosive                                            |
| Oxidizing properties                   | : | The substance or mixture is not classified as oxidizing. |

---

**SECTION 10. STABILITY AND REACTIVITY**

|                                    |   |                                                                                                                                                      |
|------------------------------------|---|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reactivity                         | : | No dangerous reaction known under conditions of normal use.                                                                                          |
| Chemical stability                 | : | Stable under normal conditions.                                                                                                                      |
| Possibility of hazardous reactions | : | No dangerous reaction known under conditions of normal use.<br>Stable under recommended storage conditions.<br>No hazards to be specially mentioned. |
| Conditions to avoid                | : | No data available                                                                                                                                    |
| Incompatible materials             | : | No data available                                                                                                                                    |
| Hazardous decomposition products   | : | No data available                                                                                                                                    |

---

**SECTION 11. TOXICOLOGICAL INFORMATION*****Expand High Fidelity Enzyme mix*****Acute toxicity**

Not classified based on available information.

**Components:****1,2,3-Propanetriol:**

|                           |   |                                                                                                                                                                                |
|---------------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Acute oral toxicity       | : | LC50 (Mouse): 11,500 mg/kg                                                                                                                                                     |
| Acute inhalation toxicity | : | LC50 (Rat, male): 275000 mg/m3<br>Exposure time: 7 h<br>Test atmosphere: vapor<br>GLP: no<br>Assessment: The component/mixture is minimally toxic after short term inhalation. |
| Acute dermal toxicity     | : | LD50 (Guinea pig, male and female): 56,750 mg/kg                                                                                                                               |

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GLP: no

**Taq DNA Polymerase:**

Acute oral toxicity : Acute toxicity estimate: > 5,001 mg/kg  
Method: Expert judgment

Acute inhalation toxicity : Acute toxicity estimate: > 30 mg/l  
Test atmosphere: dust/mist  
Method: Expert judgment

Acute dermal toxicity : Acute toxicity estimate: > 5,001 mg/kg  
Method: Expert judgment

**Skin corrosion/irritation**

Not classified based on available information.

**Components:****1,2,3-Propanetriol:**

Species : Rabbit  
Exposure time : 24 h  
Result : No skin irritation  
GLP : no

**Serious eye damage/eye irritation**

Not classified based on available information.

**Components:****1,2,3-Propanetriol:**

Species : Rabbit  
Result : No eye irritation  
Exposure time : 7 d  
GLP : no

**Respiratory or skin sensitization****Skin sensitization**

Not classified based on available information.

**Respiratory sensitization**

Not classified based on available information.

**Components:****1,2,3-Propanetriol:**

Assessment : Mild eye irritant, Mild respiratory irritant, No skin irritation

**Germ cell mutagenicity**

Not classified based on available information.

**Components:****1,2,3-Propanetriol:**

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Genotoxicity in vitro : Test Type: Microbial mutagenesis assay (Ames test)  
Test system: Salmonella typhimurium  
Metabolic activation: with and without metabolic activation  
Result: negative  
GLP: No information available.

Test Type: In vitro mammalian cell gene mutation test  
Test system: Chinese hamster ovary cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: negative  
GLP: No information available.

**Carcinogenicity**

Not classified based on available information.

**Components:****1,2,3-Propanetriol:**

Species : Rat, male and female  
Application Route : Oral  
Exposure time : 2 Years  
GLP : No information available.  
Remarks : 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.

**IARC** 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.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** 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.

**Reproductive toxicity**

Not classified based on available information.

**Components:****1,2,3-Propanetriol:**

Effects on fertility : Test Type: Two-generation study  
Species: Rat, male and female  
Application Route: Oral  
Dose: 2000 mg/kg bw/day  
Fertility: NOAEL: 2,000 mg/kg body weight  
GLP: no

Effects on fetal development : Species: Rabbit, female  
Application Route: Oral  
Dose: 11.8, 54.8, 254.5, 1180 mg/kg bw/day  
Duration of Single Treatment: 29 d  
Developmental Toxicity: NOAEL: 1,180 mg/kg bw/day  
GLP: no

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Not classified based on available information.

**Components:****Taq DNA Polymerase:**

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

**DNA-dependent DNA polymerase:**

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

**STOT-repeated exposure**

Not classified based on available information.

**Components:****Taq DNA Polymerase:**

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

**DNA-dependent DNA polymerase:**

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

**Repeated dose toxicity****Components:****1,2,3-Propanetriol:**

Species : Rat, male and female  
NOAEL : 4580 mg/kg  
NOAEL : 4,580 mg/kg  
Application Route : Oral  
Exposure time : 90 d  
Number of exposures : daily  
Dose : 4580 - 25,800 mg/kg/day  
GLP : no

Species : Rat, male and female  
Application Route : Inhalation  
Test atmosphere : dust/mist  
Exposure time : 13 Weeks  
Number of exposures : 6 hours/day, 5 days/week  
Dose : 33, 165 and 660 mg/m<sup>3</sup>  
GLP : No information available.

Species : Rat  
NOAEL : 5040 mg/kg  
NOAEL : 5,040 mg/kg  
Application Route : Dermal

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Exposure time : 45 Weeks  
Number of exposures : 8 hours/day, 5 days/week  
Dose : 0.5-4.0 ml/kg  
GLP : no

Repeated dose toxicity - Assessment : Mild eye irritant, Mild respiratory irritant, No skin irritation

**Aspiration toxicity**

Not classified based on available information.

***HF Buffer, 10x conc. with MgCl2*****Acute toxicity**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Acute oral toxicity : LD50 (Rat, female): > 5,000 mg/kg  
Method: OECD Test Guideline 425  
GLP: yes

**Skin corrosion/irritation**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Species : human keratinocytes  
Exposure time : 42 min  
Method : OECD Test Guideline 439  
Result : No skin irritation  
GLP : yes

**Serious eye damage/eye irritation**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Species : Bovine cornea  
Result : No eye irritation  
Exposure time : 240 min  
Method : OECD Test Guideline 437  
GLP : yes

**Respiratory or skin sensitization****Skin sensitization**

Not classified based on available information.

**Respiratory sensitization**

Not classified based on available information.

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**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Test Type : Maximization Test  
Species : Guinea pig  
Assessment : Does not cause skin sensitization.  
Method : OECD Test Guideline 406  
GLP : yes

**Germ cell mutagenicity**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Genotoxicity in vitro : Test Type: Microbial mutagenesis assay (Ames test)  
Test system: Salmonella typhimurium  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative  
GLP: yes

Test Type: Microbial mutagenesis assay (Ames test)  
Test system: Escherichia coli  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative  
GLP: yes

Test Type: In vitro mammalian cell gene mutation test  
Test system: Chinese hamster ovary cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: negative  
GLP: yes

Test Type: Chromosome aberration test in vitro  
Test system: Chinese hamster lung cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 473  
Result: negative  
GLP: yes

**Carcinogenicity**

Not classified based on available information.

**IARC** 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.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** 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.

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**Reproductive toxicity**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Effects on fertility : Species: Rat, male and female  
Application Route: Oral  
Dose: 100, 300, 1000 mg/kg bw/day  
Duration of Single Treatment: 54 d  
General Toxicity F1: NOAEL: > 1,000 mg/kg body weight  
Method: OECD Test Guideline 421  
Result: No effects on fertility.  
GLP: yes

**STOT-single exposure**

Not classified based on available information.

**STOT-repeated exposure**

Not classified based on available information.

**Repeated dose toxicity****Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Species : Rat, male and female  
NOAEL : > 1000 mg/kg  
Application Route : Oral  
Exposure time : 54 d  
Dose : 100, 300, 1000 mg/kg bw/day  
Method : OECD Test Guideline 421  
GLP : yes

**Aspiration toxicity**

Not classified based on available information.

***HF Buffer, 10x conc. without MgCl2*****Acute toxicity**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Acute oral toxicity : LD50 (Rat, female): > 5,000 mg/kg  
Method: OECD Test Guideline 425  
GLP: yes

**Skin corrosion/irritation**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

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Species : human keratinocytes  
Exposure time : 42 min  
Method : OECD Test Guideline 439  
Result : No skin irritation  
GLP : yes

**Serious eye damage/eye irritation**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Species : Bovine cornea  
Result : No eye irritation  
Exposure time : 240 min  
Method : OECD Test Guideline 437  
GLP : yes

**Respiratory or skin sensitization****Skin sensitization**

Not classified based on available information.

**Respiratory sensitization**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Test Type : Maximization Test  
Species : Guinea pig  
Assessment : Does not cause skin sensitization.  
Method : OECD Test Guideline 406  
GLP : yes

**Germ cell mutagenicity**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Genotoxicity in vitro : Test Type: Microbial mutagenesis assay (Ames test)  
Test system: Salmonella typhimurium  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative  
GLP: yes

Test Type: Microbial mutagenesis assay (Ames test)  
Test system: Escherichia coli  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative  
GLP: yes

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Test Type: In vitro mammalian cell gene mutation test  
Test system: Chinese hamster ovary cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: negative  
GLP: yes

Test Type: Chromosome aberration test in vitro  
Test system: Chinese hamster lung cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 473  
Result: negative  
GLP: yes

**Carcinogenicity**

Not classified based on available information.

**IARC** 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.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** 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.

**Reproductive toxicity**

Not classified based on available information.

**Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Effects on fertility : Species: Rat, male and female  
Application Route: Oral  
Dose: 100, 300, 1000 mg/kg bw/day  
Duration of Single Treatment: 54 d  
General Toxicity F1: NOAEL: > 1,000 mg/kg body weight  
Method: OECD Test Guideline 421  
Result: No effects on fertility.  
GLP: yes

**STOT-single exposure**

Not classified based on available information.

**STOT-repeated exposure**

Not classified based on available information.

**Repeated dose toxicity****Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Species : Rat, male and female  
NOAEL : > 1000 mg/kg  
Application Route : Oral

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Exposure time : 54 d  
Dose : 100, 300, 1000 mg/kg bw/day  
Method : OECD Test Guideline 421  
GLP : yes

**Aspiration toxicity**

Not classified based on available information.

***MgCl<sub>2</sub> Solution, 25mM*****Acute toxicity**

Not classified based on available information.

**Skin corrosion/irritation**

Not classified based on available information.

**Serious eye damage/eye irritation**

Not classified based on available information.

**Respiratory or skin sensitization****Skin sensitization**

Not classified based on available information.

**Respiratory sensitization**

Not classified based on available information.

**Germ cell mutagenicity**

Not classified based on available information.

**Carcinogenicity**

Not classified based on available information.

**IARC** 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.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** 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.

**Reproductive toxicity**

Not classified based on available information.

**STOT-single exposure**

Not classified based on available information.

**STOT-repeated exposure**

Not classified based on available information.

**Aspiration toxicity**

Not classified based on available information.

***Nucleotide Mix***

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**Acute toxicity**

Not classified based on available information.

**Skin corrosion/irritation**

Not classified based on available information.

**Serious eye damage/eye irritation**

Not classified based on available information.

**Respiratory or skin sensitization****Skin sensitization**

Not classified based on available information.

**Respiratory sensitization**

Not classified based on available information.

**Germ cell mutagenicity**

Not classified based on available information.

**Carcinogenicity**

Not classified based on available information.

**IARC** 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.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** 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.

**Reproductive toxicity**

Not classified based on available information.

**STOT-single exposure**

Not classified based on available information.

**STOT-repeated exposure**

Not classified based on available information.

**Aspiration toxicity**

Not classified based on available information.

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**SECTION 12. ECOLOGICAL INFORMATION*****Expand High Fidelity Enzyme mix*****Ecotoxicity****Components:****1,2,3-Propanetriol:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 54,000 mg/l  
End point: mortality  
Exposure time: 96 h  
Test Type: static test

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GLP: no

Toxicity to daphnia and other aquatic invertebrates : LC50 (*Daphnia magna* (Water flea)): 1,955 mg/l  
End point: mortality  
Exposure time: 48 h  
Test Type: static test  
Analytical monitoring: no  
GLP: no

Toxicity to algae/aquatic plants : (*Scenedesmus quadricauda* (Green algae)): > 10,000 mg/l  
End point: Growth rate  
Exposure time: 8 d  
Test Type: static test  
GLP: no

Toxicity to microorganisms : EC50 (*Pseudomonas putida*): > 10,000 mg/l  
End point: Growth rate  
Exposure time: 16 h  
Test Type: static test  
GLP: No information available.

**Ecotoxicology Assessment**

Acute aquatic toxicity : This product has no known ecotoxicological effects.

Chronic aquatic toxicity : This product has no known ecotoxicological effects.

Toxicity Data on Soil : Not expected to adsorb on soil.

Other organisms relevant to the environment : No data available

**Taq DNA Polymerase:**

Toxicity to fish : LC50: > 100 mg/l  
Exposure time: 96 h

**Ecotoxicology Assessment**

Acute aquatic toxicity : This product has no known ecotoxicological effects.

Chronic aquatic toxicity : This product has no known ecotoxicological effects.

Toxicity Data on Soil : Not expected to adsorb on soil.

Other organisms relevant to the environment : No data available

**DNA-dependent DNA polymerase:****Ecotoxicology Assessment**

Toxicity Data on Soil : Not expected to adsorb on soil.

Other organisms relevant to the environment : No data available

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Biodegradability : aerobic  
Inoculum: activated sludge  
Concentration: 226 mg/l  
Result: Readily biodegradable.  
Biodegradation: 94 %  
Exposure time: 24 h  
GLP: no

**Bioaccumulative potential****Components:****1,2,3-Propanetriol:**

Partition coefficient: n- : log Pow: -1.75 (77 °F / 25 °C)  
octanol/water pH: 7.4  
Method: OECD Test Guideline 107  
GLP: no

**Taq DNA Polymerase:**

Partition coefficient: n- : Remarks: No data available  
octanol/water

**DNA-dependent DNA polymerase:**

Partition coefficient: n- : Remarks: No data available  
octanol/water

**Mobility in soil**

No data available

**Other adverse effects*****HF Buffer, 10x conc. with MgCl<sub>2</sub>*****Ecotoxicity****Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 460 mg/l  
End point: mortality  
Exposure time: 96 h  
Test Type: static test  
Analytical monitoring: no  
Method: OECD Test Guideline 203  
GLP: No information available.

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): > 117 mg/l  
aquatic invertebrates End point: Immobilization

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Exposure time: 48 h  
Test Type: static test  
Analytical monitoring: yes  
Method: OECD Test Guideline 202  
GLP: yes

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 397 mg/l

Exposure time: 72 h  
Test Type: static test  
Analytical monitoring: no  
Method: OECD Test Guideline 201  
GLP: No information available.

Toxicity to microorganisms : EC50 (activated sludge): > 1,000 mg/l

Exposure time: 3 h  
Test Type: static test  
Analytical monitoring: no  
Method: OECD Test Guideline 209  
GLP: yes

**Ecotoxicology Assessment**

Acute aquatic toxicity : This product has no known ecotoxicological effects.

Chronic aquatic toxicity : This product has no known ecotoxicological effects.

Toxicity Data on Soil : Not expected to adsorb on soil.

Other organisms relevant to the environment : No data available

**Persistence and degradability****Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Biodegradability : aerobic  
Inoculum: activated sludge, non-adapted  
Concentration: 30 mg/l  
Result: Readily biodegradable.  
Biodegradation: 97.1 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F  
GLP: yes

**Bioaccumulative potential****Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Bioaccumulation : Remarks: Due to the distribution coefficient n-octanol/water, accumulation in organisms is not expected.

Partition coefficient: n- : log Pow: -3.6 (68 °F / 20 °C)

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octanol/water

pH: 5 - 7  
Method: OECD Test Guideline 107  
GLP: no

### Mobility in soil

No data available

### Other adverse effects

## HF Buffer, 10x conc. without MgCl<sub>2</sub>

### Ecotoxicity

#### Components:

#### **1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 460 mg/l  
End point: mortality  
Exposure time: 96 h  
Test Type: static test  
Analytical monitoring: no  
Method: OECD Test Guideline 203  
GLP: No information available.

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 117 mg/l  
End point: Immobilization  
Exposure time: 48 h  
Test Type: static test  
Analytical monitoring: yes  
Method: OECD Test Guideline 202  
GLP: yes

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 397 mg/l  
Exposure time: 72 h  
Test Type: static test  
Analytical monitoring: no  
Method: OECD Test Guideline 201  
GLP: No information available.

Toxicity to microorganisms : EC50 (activated sludge): > 1,000 mg/l  
Exposure time: 3 h  
Test Type: static test  
Analytical monitoring: no  
Method: OECD Test Guideline 209  
GLP: yes

### Ecotoxicology Assessment

Acute aquatic toxicity : This product has no known ecotoxicological effects.

Chronic aquatic toxicity : This product has no known ecotoxicological effects.

Toxicity Data on Soil : Not expected to adsorb on soil.

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Other organisms relevant to the environment : No data available

**Persistence and degradability****Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Biodegradability : aerobic  
Inoculum: activated sludge, non-adapted  
Concentration: 30 mg/l  
Result: Readily biodegradable.  
Biodegradation: 97.1 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F  
GLP: yes

**Bioaccumulative potential****Components:****1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1):**

Bioaccumulation : Remarks: Due to the distribution coefficient n-octanol/water, accumulation in organisms is not expected.

Partition coefficient: n-octanol/water : log Pow: -3.6 (68 °F / 20 °C)  
pH: 5 - 7  
Method: OECD Test Guideline 107  
GLP: no

**Mobility in soil**

No data available

**Other adverse effects*****MgCl<sub>2</sub> Solution, 25mM*****Ecotoxicity**

No data available

**Persistence and degradability**

No data available

**Bioaccumulative potential**

No data available

**Mobility in soil**

No data available

**Other adverse effects*****Nucleotide Mix***

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**Ecotoxicity**

No data available

**Persistence and degradability**

No data available

**Bioaccumulative potential**

No data available

**Mobility in soil**

No data available

**Other adverse effects**

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**SECTION 13. DISPOSAL CONSIDERATIONS****Disposal methods**

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.  
Do not re-use empty containers.

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**SECTION 14. TRANSPORT INFORMATION****International Regulations****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**

Not applicable

**Domestic regulation****49 CFR**

Not regulated as a dangerous good

**Special precautions for user**

Remarks : Not dangerous goods in the meaning of ADR/RID, ADN, IMDG-Code, ICAO/IATA-DGR

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**SECTION 15. REGULATORY INFORMATION*****Expand High Fidelity Enzyme mix***

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This material does not contain any components with a CERCLA RQ.

**SARA 304 Extremely Hazardous Substances Reportable Quantity**

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

**SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : No SARA Hazards

**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.

**Clean Air Act**

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).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

|                    |         |                |
|--------------------|---------|----------------|
| 1,2,3-Propanetriol | 56-81-5 | >= 30 - < 50 % |
|--------------------|---------|----------------|

**Clean Water Act**

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

**US State Regulations****Massachusetts Right To Know**

|                    |         |
|--------------------|---------|
| 1,2,3-Propanetriol | 56-81-5 |
|--------------------|---------|

**Pennsylvania Right To Know**

|                    |           |
|--------------------|-----------|
| 1,2,3-Propanetriol | 56-81-5   |
| Water              | 7732-18-5 |

**Maine Chemicals of High Concern**

Product does not contain any listed chemicals

**Vermont Chemicals of High Concern**

Product does not contain any listed chemicals

**Washington Chemicals of High Concern**

Product does not contain any listed chemicals

**California Permissible Exposure Limits for Chemical Contaminants**

|                    |         |
|--------------------|---------|
| 1,2,3-Propanetriol | 56-81-5 |
|--------------------|---------|

The ingredients of this product are reported in the following inventories:

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|       |   |                                                                                                                                                         |
|-------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| AIIC  | : | Not in compliance with the inventory                                                                                                                    |
| DSL   | : | This product contains the following components that are not on the Canadian DSL nor NDSL.<br><br>Taq DNA Polymerase<br><br>DNA-dependent DNA polymerase |
| NZIoC | : | Not in compliance with the inventory                                                                                                                    |
| ENCS  | : | Not in compliance with the inventory                                                                                                                    |
| ISHL  | : | Not in compliance with the inventory                                                                                                                    |
| KECI  | : | Not in compliance with the inventory                                                                                                                    |
| PICCS | : | Not in compliance with the inventory                                                                                                                    |
| IECSC | : | Not in compliance with the inventory                                                                                                                    |
| TCSI  | : | Not in compliance with the inventory                                                                                                                    |
| TSCA  | : | Product contains substance(s) not listed on TSCA inventory.                                                                                             |
| TECI  | : | Not in compliance with the inventory                                                                                                                    |

**TSCA list**

The following substance(s) is/are subject to a Significant New Use Rule:  
Poly(oxy-1,2-ethanediyl), .alpha.-(nonylphenyl)-.omega.-hydroxy- 9016-45-9

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

**HF Buffer, 10x conc. with MgCl<sub>2</sub>**
**CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

**SARA 304 Extremely Hazardous Substances Reportable Quantity**

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

**SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : No SARA Hazards

**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.

**Expand HiFi PCR System dNTPack, 2500 U**Version  
1.11Revision Date:  
05-08-2023Date of last issue: 03-18-2022  
Date of first issue: 11-20-2015**Clean Air Act**

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).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).

**Clean Water Act**

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

**US State Regulations****Massachusetts Right To Know**

|                                   |           |
|-----------------------------------|-----------|
| Sulfuric acid ammonium salt (1:2) | 7783-20-2 |
|-----------------------------------|-----------|

**Pennsylvania Right To Know**

|                                                                  |           |
|------------------------------------------------------------------|-----------|
| Water                                                            | 7732-18-5 |
| 1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride (1:1) | 1185-53-1 |
| Sulfuric acid ammonium salt (1:2)                                | 7783-20-2 |

**Maine Chemicals of High Concern**

Product does not contain any listed chemicals

**Vermont Chemicals of High Concern**

Product does not contain any listed chemicals

**Washington Chemicals of High Concern**

Product does not contain any listed chemicals

**The ingredients of this product are reported in the following inventories:**

|       |                                                          |
|-------|----------------------------------------------------------|
| AIIC  | : On the inventory, or in compliance with the inventory  |
| DSL   | : All components of this product are on the Canadian DSL |
| NZIoC | : On the inventory, or in compliance with the inventory  |
| ENCS  | : On the inventory, or in compliance with the inventory  |
| ISHL  | : On the inventory, or in compliance with the inventory  |
| KECI  | : On the inventory, or in compliance with the inventory  |
| PICCS | : On the inventory, or in compliance with the inventory  |
| IECSC | : On the inventory, or in compliance with the inventory  |
| TCSI  | : On the inventory, or in compliance with the inventory  |

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TSCA : All substances listed as active on the TSCA inventory

TECI : Not in compliance with the inventory

**TSCA list**

No substances are subject to a Significant New Use Rule.

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

***HF Buffer, 10x conc. without MgCl<sub>2</sub>*****CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

**SARA 304 Extremely Hazardous Substances Reportable Quantity**

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

**SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : No SARA Hazards**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.**Clean Air Act**

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).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).

**Clean Water Act**

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

**US State Regulations****Massachusetts Right To Know**

Sulfuric acid ammonium salt (1:2) 7783-20-2

**Pennsylvania Right To Know**

Water 7732-18-5

1,3-Propanediol, 2-amino-2-(hydroxymethyl)-, hydrochloride 1185-53-1

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(1:1)

Sulfuric acid ammonium salt (1:2)

7783-20-2

**Maine Chemicals of High Concern**

Product does not contain any listed chemicals

**Vermont Chemicals of High Concern**

Product does not contain any listed chemicals

**Washington Chemicals of High Concern**

Product does not contain any listed chemicals

**The ingredients of this product are reported in the following inventories:**

|       |                                                          |
|-------|----------------------------------------------------------|
| AIIC  | : On the inventory, or in compliance with the inventory  |
| DSL   | : All components of this product are on the Canadian DSL |
| NZIoC | : On the inventory, or in compliance with the inventory  |
| ENCS  | : On the inventory, or in compliance with the inventory  |
| ISHL  | : On the inventory, or in compliance with the inventory  |
| KECI  | : On the inventory, or in compliance with the inventory  |
| PICCS | : On the inventory, or in compliance with the inventory  |
| IECSC | : On the inventory, or in compliance with the inventory  |
| TCSI  | : On the inventory, or in compliance with the inventory  |
| TSCA  | : All substances listed as active on the TSCA inventory  |
| TECI  | : Not in compliance with the inventory                   |

**TSCA list**

No substances are subject to a Significant New Use Rule.

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

***MgCl<sub>2</sub> Solution, 25mM*****CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

**SARA 304 Extremely Hazardous Substances Reportable Quantity**

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

**SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : No SARA Hazards

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**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.

**Clean Air Act**

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).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).

**Clean Water Act**

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

**US State Regulations****Massachusetts Right To Know**

No components are subject to the Massachusetts Right to Know Act.

**Pennsylvania Right To Know**

Water

7732-18-5

**Maine Chemicals of High Concern**

Product does not contain any listed chemicals

**Vermont Chemicals of High Concern**

Product does not contain any listed chemicals

**Washington Chemicals of High Concern**

Product does not contain any listed chemicals

**The ingredients of this product are reported in the following inventories:**

|       |                                                          |
|-------|----------------------------------------------------------|
| AIIC  | : On the inventory, or in compliance with the inventory  |
| DSL   | : All components of this product are on the Canadian DSL |
| NZIoC | : On the inventory, or in compliance with the inventory  |
| ENCS  | : On the inventory, or in compliance with the inventory  |
| ISHL  | : On the inventory, or in compliance with the inventory  |
| KECI  | : On the inventory, or in compliance with the inventory  |
| PICCS | : On the inventory, or in compliance with the inventory  |
| IECSC | : On the inventory, or in compliance with the inventory  |

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TCSI : On the inventory, or in compliance with the inventory

TSCA : All substances listed as active on the TSCA inventory

TECI : On the inventory, or in compliance with the inventory

**TSCA list**

No substances are subject to a Significant New Use Rule.

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

***Nucleotide Mix*****CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

**SARA 304 Extremely Hazardous Substances Reportable Quantity**

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

**SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : No SARA Hazards

**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.

**Clean Air Act**

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).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).

**Clean Water Act**

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

**US State Regulations****Massachusetts Right To Know**

No components are subject to the Massachusetts Right to Know Act.

**Pennsylvania Right To Know**

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Water

7732-18-5

**Maine Chemicals of High Concern**

Product does not contain any listed chemicals

**Vermont Chemicals of High Concern**

Product does not contain any listed chemicals

**Washington Chemicals of High Concern**

Product does not contain any listed chemicals

**The ingredients of this product are reported in the following inventories:**

|       |                                                                                                                                                                                                                                                                                                                                         |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AIIC  | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |
| DSL   | : This product contains the following components that are not on the Canadian DSL nor NDSL.<br><br>2'-Deoxyguanosine 5'-triphosphate trisodium salt<br><br>2'-Deoxythymidine-5'-triphosphate-trisodium salt<br><br>2'-Deoxyadenosine 5'-(disodium dihydrogen triphosphate) (dATP)<br><br>2'-Deoxycytidine 5'-triphosphate disodium salt |
| NZIoC | : On the inventory, or in compliance with the inventory                                                                                                                                                                                                                                                                                 |
| ENCS  | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |
| ISHL  | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |
| KECI  | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |
| PICCS | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |
| IECSC | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |
| TCSI  | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |
| TSCA  | : Product contains substance(s) not listed on TSCA inventory.                                                                                                                                                                                                                                                                           |
| TECI  | : Not in compliance with the inventory                                                                                                                                                                                                                                                                                                  |

**TSCA list**

No substances are subject to a Significant New Use Rule.

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

***Expand High Fidelity Enzyme mix*****GHS label elements**

Not a hazardous substance or mixture.

***HF Buffer, 10x conc. with MgCl2***

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### GHS label elements

Not a hazardous substance or mixture.

**HF Buffer, 10x conc. without MgCl<sub>2</sub>**

### GHS label elements

Not a hazardous substance or mixture.

**MgCl<sub>2</sub> Solution, 25mM**

### GHS label elements

Not a hazardous substance or mixture.

**Nucleotide Mix**

### GHS label elements

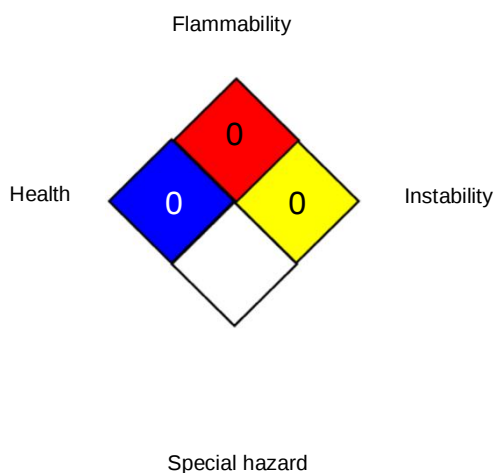
Not a hazardous substance or mixture.

## SECTION 16. OTHER INFORMATION

### Further information

**Expand High Fidelity Enzyme mix**

NFPA 704:



HMIS® IV:

|                 |   |   |
|-----------------|---|---|
| HEALTH          | / | 0 |
| FLAMMABILITY    |   | 0 |
| PHYSICAL HAZARD |   | 0 |

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

**HF Buffer, 10x conc. with MgCl<sub>2</sub>**

# SAFETY DATA SHEET



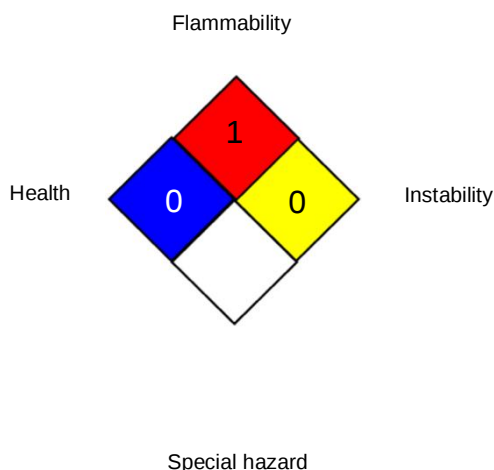
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### NFPA 704:



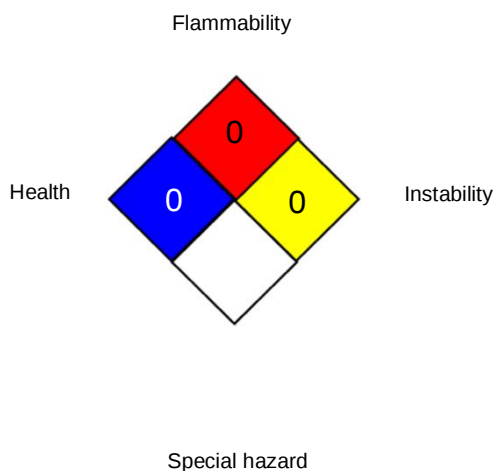
### HMIS® IV:

|                 |   |   |
|-----------------|---|---|
| HEALTH          | / | 0 |
| FLAMMABILITY    |   | 0 |
| PHYSICAL HAZARD |   | 0 |

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

## HF Buffer, 10x conc. without MgCl<sub>2</sub>

### NFPA 704:



### HMIS® IV:

|                 |   |   |
|-----------------|---|---|
| HEALTH          | / | 0 |
| FLAMMABILITY    |   | 0 |
| PHYSICAL HAZARD |   | 0 |

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

## MgCl<sub>2</sub> Solution, 25mM

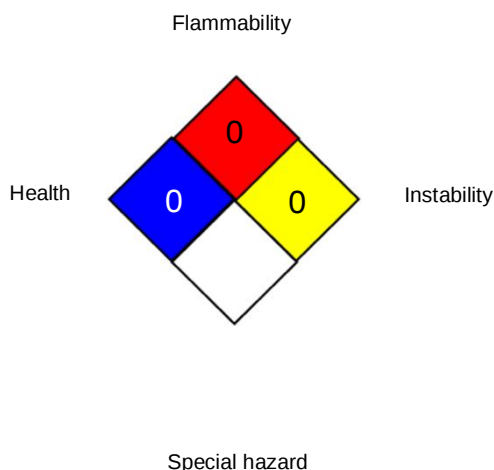
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### NFPA 704:



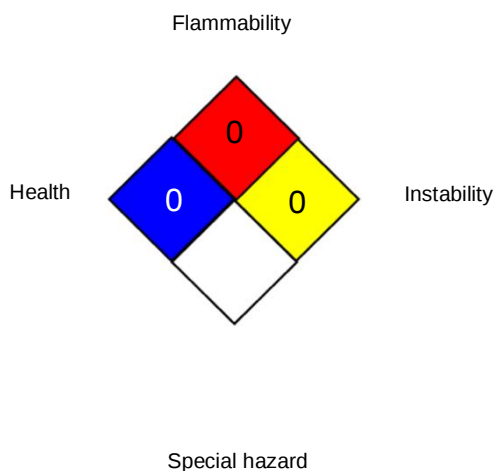
### HMIS® IV:

|                 |   |   |
|-----------------|---|---|
| HEALTH          | / | 0 |
| FLAMMABILITY    |   | 0 |
| PHYSICAL HAZARD |   | 0 |

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

### Nucleotide Mix

#### NFPA 704:



#### HMIS® IV:

|                 |   |   |
|-----------------|---|---|
| HEALTH          | / | 0 |
| FLAMMABILITY    |   | 0 |
| PHYSICAL HAZARD |   | 0 |

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

### Distributor

MilliporeSigma  
3050 Spruce Street  
SAINT LOUIS  
MO 63103 USA

### Full text of other abbreviations

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Haz-

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ardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

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The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

US / Z8 / 2204