

**MATERIAL SAFETY DATA SHEET**

**VIVANTIS TECHNOLOGIES SDN BHD  
REVONGEN CORPORATION CENTER**

Document No.: MSDSrev05\_PL4201

Date prepared: 10<sup>th</sup> January 2023

Reviewed: 10<sup>th</sup> January 2023

**SECTION 1: CHEMICAL IDENTIFICATION**

Catalogue Number: PL4201; PL4202

Product Name: AtMax Taq DNA Polymerase

**Intended Use:**

For research use only. Not for use in diagnostic procedures.

**Company Headquarters:**

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**Company Manufacturing:**

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## SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name  | CAS No.  | %                     |
|--|--|-----------------------|
| <u>Taq DNA Polymerase</u><br>Glycerol  | 56-81-5  | ≤30                   |
| <u>10X ViBuffer A / 10X ViBuffer S</u><br>Magnesium Chloride<br>Potassium Chloride<br>Tris<br>Triton X-100 | 7791-18-6<br>7440-09-7<br>77-86-1<br>9002-93-1 | ≤1<br><10<br><1<br><1 |
| <u>50 mM MgCl<sub>2</sub></u><br>Magnesium Chloride  | 7791-18-6                                      | 0.1-1.0               |

## SECTION 3: HAZARDS IDENTIFICATION

### Classification of the substance or mixture

Not classified.

|  |   |
|--|---|
| <i>Taq DNA Polymerase</i>  | Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 30 - 60%  |
| 10X ViBuffer A / 10X ViBuffer S /<br>50mM MgCl <sub>2</sub><br>( <i>Taq</i> Polymerase Buffer) | Percentage of the mixture consisting of ingredient(s) of unknown dermal toxicity: 1-10%<br>Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 1-10%<br>Percentage of the mixture consisting of ingredient(s) of unknown oral toxicity: 1-10% |
| 10X ViBuffer A / 10X ViBuffer S /<br>50mM MgCl <sub>2</sub><br>( <i>Taq</i> Polymerase Buffer) | Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 1.6%   |

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## GHS label elements, including precautionary statements

Signal word:

|                              |                |
|------------------------------|----------------|
| <i>Taq</i> DNA Polymerase    | No signal word |
| <i>Taq</i> Polymerase Buffer | No signal word |

## Hazard statements

|                              |   |
|------------------------------|---|
| <i>Taq</i> DNA Polymerase    | No known significant effects or critical hazards. |
| <i>Taq</i> Polymerase Buffer | No known significant effects or critical hazards. |

## Precautionary statements

|  |                |
|--|----------------|
| <i>Taq</i> DNA Polymerase & <i>Taq</i> Polymerase Buffer |                |
| Prevention:  | Not applicable |
| Response:  | Not applicable |
| Storage:   | Not applicable |
| Disposal:  | Not applicable |
| Supplemental label elements:                             | Not applicable |

## SECTION 4: FIRST-AID MEASURES

In case of eye contact, immediately flush with copious amounts of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

In case of skin contact, immediately wash with copious amounts of water. Get medical attention if symptoms occur.

In case of inhalation, remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

In case of ingestion, wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Notes to physician:

|                           |   |
|---------------------------|---|
| <i>Taq</i> DNA Polymerase | Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. |
|---------------------------|---|

|                              |   |
|------------------------------|---|
| <i>Taq</i> Polymerase Buffer | In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. |
|------------------------------|---|

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Specific treatments:

*Taq* DNA Polymerase  
*Taq* Polymerase Buffer

No specific treatment.  
No specific treatment.

Protection of first-aiders:

*Taq* DNA Polymerase

No action shall be taken involving any personal risk or without suitable training.

*Taq* Polymerase Buffer

No action shall be taken involving any personal risk or without suitable training.

**SECTION 5: FIRE FIGHTING MEASURES**

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and fully protective gear.

For special firefighting procedures, wear self-contained breathing apparatus for firefighting if necessary

Hazardous decomposition products formed under fire conditions:

*Taq* DNA Polymerase

Carbon dioxide, carbon monoxide.

*Taq* Polymerase Buffer

Carbon dioxide, carbon monoxide, nitrogen oxides, halogenated compounds, metal oxide/oxides.

Flash point:

No data available.

Explosion data – sensitivity to mechanical impact:

No data available.

Explosion data – sensitivity to static discharge:

No data available.

Specific hazards arising from the chemical:

*Taq* DNA Polymerase

In a fire or if heated, a pressure increase will occur, and the container may burst.

*Taq* Polymerase Buffer

In a fire or if heated, a pressure increase will occur, and the container may burst.

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### SECTION 6: ACCIDENTAL RELEASE MEASURES

For personal precautions, no action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment. For cleaning up, stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor. For environmental precautions, avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

### SECTION 7: HANDLING AND STORAGE

Handle in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials, food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

### SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

| Components                    | Country   | Control parameters                |
|-------------------------------|-----------|-----------------------------------|
| Taq DNA Polymerase (Glycerol) | Australia | TWA: 10 mg/m <sup>3</sup> 8 hours |

|                     |   |
|---------------------|---|
| Eye/Face protection | Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields. |
| Hand protection     | Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.   |
| Body protection     | Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.   |
| Skin protection     | Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.   |

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**Respiratory protection** Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Use engineering measures such as general ventilation to control worker exposure to airborne contaminants.

For environmental exposure controls, emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

|                                  |   |
|----------------------------------|---|
| Appearance:                      | Colorless                                   |
| Physical state:                  | Liquid                                      |
| Odor:                            | Not available                               |
| Odor threshold:                  | Not available                               |
| Density:                         | Not available                               |
| pH:                              | Not available                               |
| Melting point:                   | Not available                               |
| Freezing point:                  | Not available                               |
| Initial Boiling point:           | 100°C                                       |
| Boiling point:                   | Not available                               |
| Flash point:                     | >100°C                                      |
| Ignition temperature:            | 400°C                                       |
| Autoignition temperature:        | Product is not self-igniting                |
| Decomposition temperature:       | Not determined                              |
| Upper Flammability limit in air: | No data available                           |
| Lower Flammability limit in air: | No data available                           |
| Explosive properties:            | Below explosion properties.                 |
| Lower explosion limit:           | 0.9 Vol %                                   |
| Upper explosion limit:           | 0.0 Vol %                                   |
| Oxidizing properties:            | No information available                    |
| Solubility:                      | Not miscible or difficult to mix with water |

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|  |                   |
|--|-------------------|
| Partition coefficient (n-octanol/water): | No data available |
| Vapor pressure:                          | 0.1 hPa at 20°C   |
| Vapor density:                           | Not determined    |
| Evaporation rate:                        | Not determined    |
| Specific gravity:                        | No data available |
| Viscosity:                               | Not determined    |

## SECTION 10: STABILITY AND REACTIVITY

Stable under recommended storage conditions.

|                                   |  |
|-----------------------------------|--|
| Materials to avoid:               | May react or be incompatible with oxidizing materials.   |
| Hazardous decomposition products: | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |
| Hazardous polymerization:         | No data available.   |
| Conditions to avoid:              | No specific data.  |

## SECTION 11: TOXICOLOGICAL INFORMATION

### Acute toxicity

#### Taq DNA Polymerase (Glycerol)

|                                    |                                 |
|------------------------------------|---------------------------------|
| Oral LD50:                         | Rat – 12600 mg/kg               |
| Inhalation LC50:                   | No data available               |
| Dermal LD50:                       | No data available               |
| Skin irritation:                   | Rabbit – Mild – 500 mg – 24 hrs |
| Eye irritation:                    | Rabbit – Mild – 500 mg – 24 hrs |
| Respiratory or skin sensitization: | No data available               |
| Mutagenicity:                      | No data available               |
| Reproductive toxicity:             | No data available               |
| Teratogenicity:                    | No data available               |
| Aspiration hazard:                 | No data available               |
| Synergistic effects:               | No data available               |
| STOT – single exposure:            | No data available               |
| STOT – repeated exposure:          | No data available               |
| Carcinogenicity:                   | No data available               |
| Likely routes of exposure:         | Oral, dermal, inhalation.       |

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**Symptoms related to the physical, chemical and toxicological characteristics**

|              |                   |
|--------------|-------------------|
| Inhalation   | No specific data. |
| Skin contact | No specific data. |
| Eyes contact | No specific data. |
| Ingestion    | No specific data. |

**Chronic toxicity**

No known significant effects or critical hazards.

To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.

**SECTION 12: ECOLOGICAL INFORMATION**

**Ecotoxicity**

*Taq* DNA Polymerase (Glycerol)

LC50: Fish – *Oncorhynchus mykiss* – 54000 mg/L – 96 hrs

**Partition coefficient**

-1.76

**Unit**

Log P<sub>ow</sub>

Persistence and degradability:

Not available

Bioaccumulative potential:

Low

Mobility in soil:

Not available

Other adverse effects:

No known significant effects or critical hazards.

**SECTION 13: DISPOSAL CONSIDERATIONS**

Dispose waste material in accordance with federal, state and local environmental regulations.

Dispose of surplus and non-recyclable products via a licensed waste disposal contractor.

Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

For waste packaging, recycle otherwise landfill or incineration if recycling is not feasible.

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

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## **SECTION 14: TRANSPORT INFORMATION**

### **ADG**

Not regulated as Dangerous Goods according to the ADG code.

### **IMDG**

Not regulated as Dangerous Goods according to the ADG code.

### **IATA**

Not regulated as Dangerous Goods according to the ADG code.

### **Special precautions for user**

Transport within user's premises: Always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

### **Transport in bulk according to Annex II of Marpol and the IBC Code**

Not available

## **SECTION 15: REGULATORY INFORMATION**

### **Standard Uniform Schedule of medicine and Poisons**

Not regulated.

### **Model Work Health and Safety Regulations – Scheduled Substances**

No listed substance.

### **International regulations**

#### **Chemical Weapon Convention List Schedule I, II & III Chemicals**

Not listed.

#### **Montreal Protocol (Annexes A, B, C, E)**

Not listed.

#### **Stockholm Convention on Persistent Organic Pollutants**

Not listed.

#### **Rotterdam Convention on Prior Informed Consent (PIC)**

Not listed.

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## UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

### Inventory list

|                    |  |
|--------------------|--|
| Australia:         | All components are listed or exempted.   |
| Canada:            | All components are listed or exempted.   |
| China:             | All components are listed or exempted.   |
| Europe:            | All components are listed or exempted.   |
| Japan:             | Japan inventory (ENCS): Not determined.<br>Japan inventory (ISHL): Not determined. |
| Malaysia:          | Not determined.  |
| New Zealand:       | All components are listed or exempted.   |
| Philippines:       | All components are listed or exempted.   |
| Republic of Korea: | Not determined.  |
| Taiwan:            | All components are listed or exempted.   |
| Thailand:          | Not determined.  |
| Turkey:            | Not determined.  |
| United States:     | All components are listed or exempted.   |
| Viet Nam:          | Not determined.  |

## SECTION 16: OTHER INFORMATION

The information contained in this MSDS relates only to the material(s) designed and does not relate to use(s) in combination with any other material, process(es) and /or chemical reaction(s). Vivantis Technologies Sdn. Bhd. provides this information in good faith, from sources believed to be accurate; however, Vivantis assumes no liability for its accuracy or completeness, and thus shall not be held liable for any damage resulting from handling or from contact with the above product.

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