MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION OF THE PRODUCT AND THE COMPANY

Product Name: Peptide Nucleic Acid (PNA)
Catalog Number: PN-CNxxx-xxx ; PN-CPxxx-xxx ; PN-TCxxx-xxx ; PN-TGxxx-xxx
Purpose: Research Use Only
Supplier: PANAGENE Inc.
54, Techno 10-ro, Yuseong-gu, Daejeon, 34027, Korea
Tel: +82-42-861-9296

2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Component</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peptide Nucleic Acid (PNA)</td>
<td>Hazardous components &lt; 1%</td>
<td>None</td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION

Prolonged or repeated contact with this product may cause slight irritation on the skin, eyes, gastrointestinal and respiratory systems.

4. FIRST AID MEASURES

Inhalation
Move to uncontaminated area. If not breathing, give artificial respiration. Get medical attention immediately.

Skin contact
Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eye contact
Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Ingestion
If swallowed, wash out mouth with water and get medical attention.

5. FIRE-FIGHTING MEASURES

Fire and explosion hazards
N/A.

Extinguishing media
CO2, extinguishing powder or water spray.

Fire fighting
Move the container from the fire area if it can be done without risk. Avoid inhalation of the gas of the combustion of the material or the by-products. Stay upwind of the fumes and keep out of the low areas.

Hazardous combustion products
Thermal decomposition products or combustion: oxides of carbon, oxides of sulfur

6. ACCIDENTAL RELEASE MEASURES

Sweep up the material and place in a closed bag or a container for disposal. Avoid raising dust. Ventilate the area and wash spill site after material pickup is completed.
7. HANDLING AND STORAGE

Storage
Store and handle in accordance with all current regulations and standards. Keep separated from incompatible substances.

Handling
User Exposure: Avoid inhalation. Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering control
Mechanical exhaust required. Safety shower and eye bath.

General hygiene measures
Wash thoroughly after handling.

Exposure limits
No occupational exposure limits established.

Personal protective equipments
Eyes: Wear chemical safety goggles.
Hands: Wear compatible chemical-resistant gloves.
Respiratory: Wear government approved respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Solid (Powder)

ODOR: None
BOILING POINT: N/A
MELTING POINT: N/A
VAPOR PRESSURE: N/A
VAPOR DENSITY: N/A
SPECIFIC GRAVITY: N/A
WATER SOLUBILITY: N/A
PH: N/A
VOLATILITY: N/A
ODOR THRESHOLD: N/A
EVAPORATION RATE: N/A
COEFFICIENT OF WATER/OIL DISTRIBUTION: N/A

10. STABILITY AND REACTIVITY

Reactivity
Stable at normal temperature and pressure.

Conditions to avoid
Avoid heat.

Incompatibilities
Strong acids, strong oxidizing materials.

Hazardous decomposition
Will not occur.

Polymerization
Will not occur.

11. TOXICOLOGICAL INFORMATION

Health effects
ADDITIONAL DATA: The toxicological properties have not been fully investigated.

Inhalation
ACUTE EXPOSURE: May cause irritation. CHRONIC EXPOSURE: No data available.

Skin contact
ACUTE EXPOSURE: May cause irritation. CHRONIC EXPOSURE: No data available.

Eye contact
ACUTE EXPOSURE: May cause irritation. CHRONIC EXPOSURE: No data available.

Ingestion
ACUTE EXPOSURE: May cause irritation CHRONIC EXPOSURE: No data available.

12. ECOLOGICAL INFORMATION

N/A
13. DISOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations.

14. TRANSPORT INFORMATION

| US Department of transportation: | No classification assigned. |
| LAND TRANSPORT ADR: | No classification assigned. |
| LAND TRANSPORT RID: | No classification assigned. |
| AIR TRANSPORT IATA: | No classification assigned. |
| AIR TRANSPORT ICAO: | No classification assigned. |
| MARITIME TRANSPORT IMDG. | No classification assigned. |

15. REGULATORY INFORMATION

**U.S. REGULATIONS:**
  - ACUTE: No
  - CHRONIC: No
  - FIRE: No
  - REACTIVE: No
  - SUDDEN RELEASE: No

**NATIONAL INVENTORY STATUS:**
- U.S. INVENTORY (TSCA): Not listed on inventory. For purposes of 40 CFR 720.36, this product is for Research and Development (R&D) Use Only.
- TSCA 12(b) EXPORT NOTIFICATION: Not listed.

16. OTHER INFORMATION

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide.