SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name              FUZEON(R) Lyophilized Vials (90 mg)
Product code             SAP-10063055
Synonyms                 FUZEON Lyophilized Vials

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use
- pharmaceutical active substance (virostatic)  
- This substance is the active ingredient in the formulated product, FUZEON. It inhibits fusion of HIV-1 to target cells by blocking the viral docking protein gp41.

1.3. Details of the supplier of the safety data sheet

Company information
Enquiries: Genentech, Inc.
1 DNA Way
South San Francisco
USA-CA 94080
United States of America

Phone          001-(650) 225-1000
E-Mail         info.sds@roche.com
US Chemtrec phone: (800)-424-9300

Local representation:

1.4. Emergency telephone number

Emergency telephone number US Chemtrec phone: (800)-424-9300

*1 referring to: Enfuvirtide
SECTION 2: Hazards identification

Classification of the substance or mixture / Label elements

GHS Classification
Health Hazards:
3.4 Skin sensitization (Category 1)
H317 May cause an allergic skin reaction.

Signalword: Warning
Label:

Precautionary statements:
- P280 Wear protective gloves/ protective clothing / eye protection / face protection.
- P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
- P312 Call a POISON CENTER or doctor/physician if you feel unwell.
- P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.

Other hazards

Note
- no further information available

SECTION 3: Composition/information on ingredients

Characterization
Enfuvirtide (INN) with other inactive ingredients

Ingredients
Concentration GHS-Classification (pure ingredient)

Enfuvirtide 159519-65-0 78.3 % - Skin sensitization (Category 1), H317

For the full text of the H-phrases mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

Eye contact
- rinse immediately with tap water for 10 minutes - open eyelids forcibly

Skin contact
- remove immediately contaminated clothes, wash affected skin with water and soap - do not use any solvents
- consult a physician if skin irritation persists

Inhalation
- remove the casualty to fresh air and keep him/her calm
- in the event of symptoms get medical treatment
4.2. Most important symptoms and effects, both acute and delayed

Note - no information available

4.3. Indication of any immediate medical attention and special treatment needed

Note to physician - treat symptomatically

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media - adapt extinguishing media to surrounding fire conditions

Flash point (liquid) not applicable

5.2. Special hazards arising from the substance or mixture

Specific hazards - formation of toxic and corrosive combustion gases (ammonia, nitrogen oxides) possible

5.3. Advice for firefighters

Protection of fire-fighters - precipitate gases/vapours/mists with water spray

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions - ensure adequate ventilation

6.2. Environmental precautions

Environmental protection - do not allow to enter drains or waterways

- if the substance reaches waters or the sewer system, inform the competent authority

6.3. Methods and material for containment and cleaning up

Methods for cleaning up - collect solids (avoid dust formation) and hand over to waste removal

- flush afterwards with plenty of water
### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

**Technical measures**
- processing in closed systems, if possible superposed by inert gas (e.g. nitrogen)
- take precautionary measures against electrostatic charging

**Note**
- Reconstituted solution should be stored under refrigeration at 2° to 8°C (36° to 46°F) and used within 24 hours.

#### 7.2. Conditions for safe storage, including any incompatibilities

**Storage conditions**
- 15 - 30 °C

**Validity**
- see expiry date on the label

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

**Threshold value (Roche) air**
- IOEL (Internal Occupational Exposure Limit): 1.5 mg/m³

#### 8.2. Exposure controls

**Respiratory protection**
- Respiratory protection is recommended as a precaution to minimize exposure. Effective engineering controls are considered to be the primary means to control worker exposure. Respiratory protection should not substitute for feasible engineering controls.
- in case of open handling or accidental release: particle mask or respirator with independent air supply

**Hand protection**
- protective gloves (eg made of neoprene, nitrile or butyl rubber)

**Eye protection**
- safety glasses

**Analytics**
- sampling on glass fibre filter and gravimetric or chemical determination

*1 referring to: Enfuvirtide

### SECTION 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

**Color**
- white to off-white

**Form**
- sterile, lyophilized powder
**FUZEON(R) Lyophilized Vials (90 mg)**

| Solubility | virtually insoluble, water (pH 4.8) | ¹ |
| ~ 90 mg/l, water (pH 5.9) | ¹ |
| ~ 228’000 mg/l, water (pH 6.4) | ¹ |
| ~ 252’000 mg/l, water (pH 8.6) | ¹ |
| < 100 mg/l, acetonitrile | ¹ |
| ~ 200 mg/l, ethanol | ¹ |
| ~ 11’900 mg/l, methanol | ¹ |
| > 2’130’000 mg/l, dimethyl formamide | ¹ |

| pH value | 8 to 9 (reconstituted solution) | ¹ |

| Melting temperature | ~ 189 °C (decomposition above) | ¹ |
| does not melt, decomposes | ¹ |

### 9.2. Other information

| Dissociation constant | pK₁ | ~ 4.8 (calculated) | ¹ |

*¹ referring to: Enfuvirtide

### SECTION 10: Stability and reactivity

#### 10.1. Reactivity

**Note** - no information available

#### 10.2. Chemical stability

**Stability** - stable under the conditions mentioned in chapter 7

#### 10.3. Possibility of hazardous reactions

**Note** - no information available

#### 10.4. Conditions to avoid

**Conditions to avoid** - high temperatures (denaturation)

#### 10.5. Incompatible materials

**Materials to avoid** - oxidizing agents, strong acids, strong bases (cleaving, denaturation, saponification and/or isomerization)

#### 10.6. Hazardous decomposition products

**Note** - no information available
**SECTION 11: Toxicological information**

**11.1. Information on toxicological effects**

**Acute toxicity**
- $LD_{50} > 2000\,\text{mg/kg}$ (oral, mouse) *(OECD No. 401)*
- $LD_0 \geq 100\,\text{mg/kg}$ (i.p., rat)
- $LD_0 = 50\,\text{mg/kg}$ (i.v., rat)
- $LD_{50} < 100\,\text{mg/kg}$ (i.v., rat); probably significant first pass effect in the lung associated with intravenous administration

**Subacute toxicity**
- $LD_0 = 10\,\text{mg/kg/d}$ (i.v., rat, 28 d)
- NOAEL $= 4\,\text{mg/kg/d}$ (i.v., Rhesus monkey, 28 d); substance administered as half dose twice daily

**Local effects**
- skin: non-irritant (rabbit; OECD No. 404)
- eye: slightly irritating (rabbit; OECD No. 405)

**Sensitization**
- non-sensitizing (mouse) *(OECD No. 429, LLNA (Local Lymph Node Assay))*
- sensitizing (guinea pig)

**Chronic toxicity**
- NOEL $30\,\text{mg/kg/d}$ (s.c., rat; 6 months); substance administered as half dose twice daily

**Mutagenicity**
- not mutagenic (various in vivo and in vitro test systems)

**Reproductive toxicity**
- no toxic reproductive effects (30 mg/kg/d; s.c., rat)

**Note**
- not cytotoxic below $1000\,\text{mg/l}$
- binds to HIV gp41 protein, blocking the docking and fusion process with the target cell
- side effect(s) during therapy: injection site inflammation, asthenia, diarrhea
- not bioavailable by oral uptake
- elimination half-life: ~3 h

**Potential Health Effects**
- Exposure: Inhalation, Ingestion, Skin contact, Eye contact
- Carcinogenicity: not listed by NTP, IARC or OSHA

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**SECTION 12: Ecological information**

**12.1. Toxicity**

**Ecotoxicity**
- barely toxic for algae (nominal concentration $= 100\,\text{mg/l}$), algal growth enhanced in parallel with substance concentration *(Selenastrum capricornutum)*
- $EC_{50} (72\,\text{h}) > 100\,\text{mg/l}$ (nominal concentration)
- $NOE_{rC} (72\,\text{h}) 100\,\text{mg/l}$ (nominal concentration)
- $NOE_{bC} (72\,\text{h}) 100\,\text{mg/l}$ (nominal concentration) *(OECD No. 201)*

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*1 referring to: Enfuvirtide
*2 referring to: T-20 Fusion Inhibitor Crude
- no adverse influence on substrate biodegradation (activated sludge)
  concentration (14 d) 100 mg/l
  (Manometric Respirometry Test, OECD No. 301 F)  \(^1\)

12.2. Persistence and degradability

<table>
<thead>
<tr>
<th>Ready biodegradability</th>
<th>readily biodegradable</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 %, 16 d</td>
<td></td>
</tr>
<tr>
<td>(Manometric Respirometry Test, OECD No. 301 F)</td>
<td>(^1)</td>
</tr>
</tbody>
</table>

12.3. Bioaccumulative potential

Note - no information available

12.4. Mobility in soil

Note - no information available

12.5. Results of PBT and vPvB assessment

Note - no information available

12.6. Other adverse effects

Note - BOD\textsubscript{5} = 1100 mg O\textsubscript{2}/g, ThOD = 1490 mg O\textsubscript{2}/g;
  BOD\textsubscript{5}/ThOD ratio = 0.74
  \(^1\)

\(^1\) referring to: Enfuvirtide

**SECTION 13: Disposal considerations**

13.1. Waste treatment methods

<table>
<thead>
<tr>
<th>Waste from residues</th>
<th>observe local/national regulations regarding waste disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>medicines should not be disposed of via wastewater</td>
</tr>
<tr>
<td></td>
<td>return to supplier or hand over to authorized disposal company</td>
</tr>
<tr>
<td></td>
<td>DO NOT FLUSH unused medications or POUR them down a sink or drain. If available in your area, use takeback programs run by household hazardous waste collection programs or community pharmacies to dispose of unused and expired medicines. If you don’t have access to a takeback program, dispose of these medicines in the household trash by removing them from their original containers and mixing them with an undesirable substance, such as used coffee grounds or kitty litter.</td>
</tr>
</tbody>
</table>

**SECTION 14: Transport information**

| Note | not classified by transport regulations, proper shipping name non-regulated |
## SECTION 15: Regulatory information

### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

**TSCA Status**
- FDA Exemption - not on inventory

**Reporting Requirements**
- The United States Environmental Protection Agency (USEPA) has not established a Reportable Quantity (RQ) for releases of this material.
- In New Jersey, report all releases which are likely to endanger the public health, harm the environment or cause a complaint to the NJDEPE Hotline (1-609-292-5560) and to local officials.
- State and local regulations vary and may impose additional reporting requirements.

## SECTION 16: Other information

**Full text of H-Statements referred to under section 3**
- H317 May cause an allergic skin reaction.

**Note**
- Please note this Safety Data Sheet for the bulk product does not apply for the finished, packaged medicinal product intended for the final user.

**Edition documentation**
- changes from previous version in sections 2, 3, 16

The information in this safety data sheet is based on current scientific knowledge. It should not be taken as expressing or implying any warranty concerning product characteristics.