SAFETY DATA SHEET
Netobimin (5%) Formulation

Version 2.1  Revision Date: 12.05.2020  SDS Number: 5840511-00002  Date of last issue: 04.05.2020
Date of first issue: 04.05.2020

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Netobimin (5%) Formulation

Manufacturer or supplier’s details
Company: MSD
Address: 50 Tuas West Drive
Singapore - Singapore 638408
Telephone: +1-908-740-4000
Emergency telephone number: 65 6697 2111 (24/7/365)
E-mail address: EHSDATASTEWARD@msd.com

Recommended use of the chemical and restrictions on use
Recommended use: Veterinary product

2. HAZARDS IDENTIFICATION

GHS Classification
Acute toxicity (Inhalation): Category 4
Reproductive toxicity: Category 2
Specific target organ toxicity - repeated exposure (Oral): Category 2 (Testis, Liver, Skin, Gastrointestinal tract)

GHS label elements
Hazard pictograms:
Signal word: Warning
Hazard statements:
H332 Harmful if inhaled.
H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.
H373 May cause damage to organs (Testis, Liver, Skin, Gastrointestinal tract) through prolonged or repeated exposure if swallowed.

Precautionary statements:
Prevention:
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe mist or vapours.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ protective clothing/ eye protec-
tion/ face protection.

Response:
P304 + P340 + P312 IF INHALED: Remove person to fresh air
and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.

Storage:
P405 Store locked up.

Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards which do not result in classification
None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netobimin</td>
<td>88255-01-0</td>
<td>&gt;= 3 -&lt; 10</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

General advice : In the case of accident or if you feel unwell, seek medical ad-
vice immediately.
When symptoms persist or in all cases of doubt seek medical advice.

If inhaled : If inhaled, remove to fresh air.
If not breathing, give artificial respiration.
If breathing is difficult, give oxygen.
Get medical attention.

In case of skin contact : In case of contact, immediately flush skin with soap and plenty
of water.
Remove contaminated clothing and shoes.
Get medical attention.
Wash clothing before reuse.
Thoroughly clean shoes before reuse.

In case of eye contact : Flush eyes with water as a precaution.
Get medical attention if irritation develops and persists.

If swallowed : If swallowed, DO NOT induce vomiting.
Get medical attention.
Rinse mouth thoroughly with water.

Most important symptoms and effects, both acute and
delayed : Harmful if inhaled.
Suspected of damaging fertility. Suspected of damaging the unborn child.
May cause damage to organs through prolonged or repeated
Protection of first-aiders: First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists (see section 8).

Notes to physician: Treat symptomatically and supportively.

5. FIREFIGHTING MEASURES

Suitable extinguishing media:
- Water spray
- Alcohol-resistant foam
- Carbon dioxide (CO2)
- Dry chemical

Unsuitable extinguishing media: None known.

Specific hazards during firefighting:
- Exposure to combustion products may be a hazard to health.

Hazardous combustion products:
- Carbon oxides
- Nitrogen oxides (NOx)
- Sulphur compounds

Specific extinguishing methods:
- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Use water spray to cool unopened containers.
- Remove undamaged containers from fire area if it is safe to do so.
- Evacuate area.

Special protective equipment for firefighters:
- In the event of fire, wear self-contained breathing apparatus.
- Use personal protective equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:
- Use personal protective equipment.
- Follow safe handling advice and personal protective equipment recommendations.

Environmental precautions:
- Discharge into the environment must be avoided.
- Prevent further leakage or spillage if safe to do so.
- Prevent spreading over a wide area (e.g. by containment or oil barriers).
- Retain and dispose of contaminated wash water.
- Local authorities should be advised if significant spills cannot be contained.

Methods and materials for containment and cleaning up:
- Soak up with inert absorbent material.
- For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, store recovered material in appropriate container.
- Clean up remaining materials from spill with suitable absorbent.
- Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.
- Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.
7. HANDLING AND STORAGE

Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

Local/Total ventilation : If sufficient ventilation is unavailable, use with local exhaust ventilation.

Advice on safe handling : Do not breathe vapours or spray mist.
                        Do not swallow.
                        Avoid contact with eyes.
                        Avoid prolonged or repeated contact with skin.
                        Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment
                        Keep container tightly closed.
                        Take care to prevent spills, waste and minimize release to the environment.

Conditions for safe storage : Keep in properly labelled containers.
                             Store locked up.
                             Keep tightly closed.
                             Keep in a cool, well-ventilated place.
                             Store in accordance with the particular national regulations.

Materials to avoid : Do not store with the following product types:
                    Strong oxidizing agents

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netobimin</td>
<td>88255-01-0</td>
<td>TWA</td>
<td>20 ug/m3 (OEB 3)</td>
<td>Internal</td>
</tr>
</tbody>
</table>

Further information: Skin

Wipe limit 200 ug/100cm³ Internal

Engineering measures : Use appropriate engineering controls and manufacturing technologies to control airborne concentrations (e.g., dripless quick connections).
                        All engineering controls should be implemented by facility design and operated in accordance with GMP principles to protect products, workers, and the environment.
                        Containment technologies suitable for controlling compounds are required to control at source and to prevent migration of the compound to uncontrolled areas (e.g., open-face containment devices).
                        Minimize open handling.

Personal protective equipment

Respiratory protection : If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommended guidelines, use respiratory protection.
                      Filter type Particulates type
Hand protection

Material: Chemical-resistant gloves

Remarks: Consider double gloving.

Eye protection: Wear safety glasses with side shields or goggles. If the work environment or activity involves dusty conditions, mists or aerosols, wear the appropriate goggles. Wear a faceshield or other full face protection if there is a potential for direct contact to the face with dusts, mists, or aerosols.

Skin and body protection: Work uniform or laboratory coat. Additional body garments should be used based upon the task being performed (e.g., sleevelets, apron, gauntlets, disposable suits) to avoid exposed skin surfaces. Use appropriate degowning techniques to remove potentially contaminated clothing.

Hygiene measures: If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place. When using do not eat, drink or smoke. Wash contaminated clothing before re-use. The effective operation of a facility should include review of engineering controls, proper personal protective equipment, appropriate degowning and decontamination procedures, industrial hygiene monitoring, medical surveillance and the use of administrative controls.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: suspension

Colour: yellow

Odour: No data available

Odour Threshold: No data available

pH: 4.5 - 6.5

Melting point/freezing point: No data available

Initial boiling point and boiling range: No data available

Flash point: No data available

Evaporation rate: No data available

Flammability (solid, gas): Not applicable

Flammability (liquids): No data available

Upper explosion limit / Upper flammability limit: No data available
10. STABILITY AND REACTIVITY

Reactivity: Not classified as a reactivity hazard.
Chemical stability: Stable under normal conditions.
Possibility of hazardous reactions: Can react with strong oxidizing agents.
Conditions to avoid: None known.
Incompatible materials: Oxidizing agents
Hazardous decomposition products: No hazardous decomposition products are known.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:
- Inhalation
- Skin contact
- Ingestion
- Eye contact

Acute toxicity:
Harmful if inhaled.

Product:
Acute inhalation toxicity: Acute toxicity estimate: 3.8 mg/l
   Exposure time: 4 h
   Test atmosphere: dust/mist
   Method: Calculation method

Components:
Netobimin:
Acute oral toxicity: LD50 (Rat): > 2,000 mg/kg
Acute inhalation toxicity: LCLo (Rat): 0.19 mg/l
   Test atmosphere: dust/mist

Skin corrosion/irritation
Not classified based on available information.

Components:
Netobimin:
Species: Rabbit
Method: Draize Test
Result: Mild skin irritation

Serious eye damage/eye irritation
Not classified based on available information.

Components:
Netobimin:
Species: Rabbit
Result: Mild eye irritation
Method: Draize Test

Respiratory or skin sensitisation

Skin sensitisation
Not classified based on available information.

Respiratory sensitisation
Not classified based on available information.

Germ cell mutagenicity
Not classified based on available information.

Components:
Netobimin:
Genotoxicity in vitro: Test Type: Bacterial reverse mutation assay (AMES)
   Result: negative
   Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)
   Result: negative
**SAFETY DATA SHEET**

**Netobimin (5%) Formulation**

<table>
<thead>
<tr>
<th>Component</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Test Type:</strong> In vitro mammalian cell gene mutation test&lt;br&gt;&lt;br&gt;<strong>Test system:</strong> mouse lymphoma cells&lt;br&gt;&lt;br&gt;<strong>Result:</strong> negative</td>
<td></td>
</tr>
<tr>
<td><strong>Genotoxicity in vivo:</strong>&lt;br&gt;&lt;br&gt;<strong>Test Type:</strong> Micronucleus test&lt;br&gt;&lt;br&gt;<strong>Species:</strong> Mouse&lt;br&gt;&lt;br&gt;<strong>Cell type:</strong> Bone marrow&lt;br&gt;&lt;br&gt;<strong>Result:</strong> positive</td>
<td></td>
</tr>
</tbody>
</table>

**Carcinogenicity**<br><br>**Not classified based on available information.**

**Components:**

**Netobimin:**<br><br>**Species:** Rat<br><br>**Application Route:** Oral<br><br>**Exposure time:** 1 Years<br><br>**Remarks:** No significant adverse effects were reported

**Reproductive toxicity**<br><br>**Suspected of damaging fertility. Suspected of damaging the unborn child.**

**Components:**

**Netobimin:**

**Effects on fertility:**<br><br>**Test Type:** Two-generation study<br><br>**Species:** Rat<br><br>**Application Route:** Oral<br><br>**General Toxicity F1:** NOAEL: 15 mg/kg body weight<br><br>**Result:** Maternal effects

**Effects on foetal development:**<br><br>**Test Type:** Development<br><br>**Species:** Rat<br><br>**Application Route:** Oral<br><br>**Developmental Toxicity:** NOAEL: 91 mg/kg body weight

**Test Type:** Development<br><br>**Application Route:** Oral<br><br>**Developmental Toxicity:** LOAEL: 228 mg/kg body weight<br><br>**Result:** Teratogenic effects, Maternal toxicity observed., Feto-toxicity

**Test Type:** Development<br><br>**Application Route:** Oral<br><br>**Developmental Toxicity:** NOAEL: 22 mg/kg body weight

**Test Type:** Development<br><br>**Application Route:** Oral<br><br>**Developmental Toxicity:** LOAEL: 60 mg/kg body weight<br><br>**Target Organs:** Testes<br><br>**Result:** Feto-toxicity
**Netobimin (5%) Formulation**

<table>
<thead>
<tr>
<th>Test Type: Development</th>
<th>Species: Rabbit</th>
<th>Application Route: Oral</th>
<th>Developmental Toxicity: NOAEL: 15 mg/kg body weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Type: Development</td>
<td>Species: Rabbit</td>
<td>Application Route: Oral</td>
<td>Developmental Toxicity: LOAEL: 25 mg/kg body weight</td>
</tr>
<tr>
<td>Result: Fetotoxicity, Maternal toxicity observed, Teratogenic effects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test Type: Development</td>
<td>Species: Rabbit</td>
<td>Application Route: Oral</td>
<td>Developmental Toxicity: NOAEL: 5 mg/kg body weight</td>
</tr>
<tr>
<td>Result: Teratogenicity and developmental toxicity</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Reproductive toxicity - Assessment**: Suspected of damaging fertility. Suspected of damaging the unborn child.

**STOT - single exposure**
Not classified based on available information.

**STOT - repeated exposure**
May cause damage to organs (Testis, Liver, Skin, Gastrointestinal tract) through prolonged or repeated exposure if swallowed.

**Components:**

**Netobimin:**

- **Exposure routes**: Oral
- **Target Organs**: Testis, Liver, Skin, Gastrointestinal tract
- **Assessment**: Shown to produce significant health effects in animals at concentrations of 10 mg/kg bw or less.

**Repeated dose toxicity**

**Components:**

**Netobimin:**

- **Species**: Rat
- **NOAEL**: 60 mg/kg
- **Application Route**: Oral
- **Exposure time**: 1 yr
- **Target Organs**: Testis
- **Symptoms**: male reproductive effects

- **Species**: Rat
- **LOAEL**: 15 mg/kg
- **Application Route**: Oral
- **Exposure time**: 1 yr
- **Target Organs**: Liver
- **Symptoms**: Irregularities
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Date of last issue: 04.05.2020
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Species: Rat
NOAEL: 7 mg/kg
Application Route: Oral
Exposure time: 1 yr
Target Organs: Skin
Symptoms: Irregularities
Remarks: Based on data from similar materials

Species: Rat
LOAEL: 38 mg/kg
Application Route: Oral
Exposure time: 90 d
Target Organs: Skin, Testis
Symptoms: Irregularities, male reproductive effects

Species: Dog
Application Route: Oral
Exposure time: 90 d
Target Organs: Gastrointestinal tract
Symptoms: Diarrhoea, Vomiting

Aspiration toxicity
Not classified based on available information.

Experience with human exposure

Components:
Netobimin:
Ingestion: Symptoms: The most common side effects are: Dizziness, Headache, Abdominal pain, Gastrointestinal discomfort, Vomiting

12. ECOLOGICAL INFORMATION

Ecotoxicity
No data available
Persistence and degradability
No data available
Bioaccumulative potential
No data available
Mobility in soil
No data available
Other adverse effects
No data available

13. DISPOSAL CONSIDERATIONS

Disposal methods
Waste from residues: Dispose of in accordance with local regulations.
Contaminated packaging: Empty containers should be taken to an approved waste han-
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 for product as supplied.

15. REGULATORY INFORMATION

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

Workplace Safety and Health Act and Workplace Safety and Health (General Provisions) Regulations: This product is subjected to the SDS, labelling, PEL and other requirements in the Act/Regulations.

Environmental Protection and Management Act and Environmental Protection and Management (Hazardous Substances) Regulations : Not applicable

Fire Safety (Petroleum and Flammable Materials) Regulations : Not applicable

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

AICS : not determined
DSL : not determined
IECSC : not determined

16. OTHER INFORMATION

Further information


Date format : dd.mm.yyyy
Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; 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; GLP - Good Laboratory Practice; 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; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; 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; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; 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; WHMIS - Workplace Hazardous Materials Information System

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 is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user’s end product, if applicable.

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