1. Identification

1.1. Product identifier

Code: 13581415
Product name: Micro 3, Micro 3 Beef

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

Intended use: For use in animal feed

1.3. Details of the supplier of the safety data sheet

Name: Trouw Nutrition USA, LLC
Full address: P.O. Box 219, 115 Executive Drive
District and Country: 62249 Highland, IL USA
Tel.: 618-654-2070
Fax: 618-654-6700

1.4. Emergency telephone number

For urgent inquiries refer to CHEMTREC day or night. Within the USA and Canada: 1 (800) 424-9300 Outside the USA and Canada: 1 (703) 527-3887 (collect calls accepted) NVIC within the Netherlands +31 30 274 888 (for healthcare professionals only)

2. Hazards identification

2.1. Classification of the substance or mixture

The product is classified as hazardous pursuant to the provisions set forth in OSHA Hazard Communication Standard (HCS) (29 CFR 1910.1200). The product thus requires a safety datasheet. Any additional information concerning the risks for health and/or the environment are given in sections 11 and 12 of this sheet.

Classification and Hazard Statement

Acute toxicity, category 4: Harmful if swallowed.
Acute toxicity, category 4: Harmful if inhaled.
Specific target organ toxicity - single exposure, category 2: May cause damage to organs.

Hazard pictograms:

Signal words: Danger

Hazard statements:

H302+H332: Harmful if swallowed or if inhaled.
H371: May cause damage to organs.

Precautionary statements:

Prevention:
P260: Do not breathe dust / fume / gas / mist / vapours / spray.
P270: Do not eat, drink or smoke when using this product.
P271: Use only outdoors or in a well-ventilated area.
P264: Wash hands thoroughly after handling.

Response:
P308+P311: IF exposed or concerned: Call a POISON CENTER / doctor / . . .
P312: Call a POISON CENTER / doctor / . . . / if you feel unwell.
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
2. Hazards identification

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P330</td>
<td>Rinse mouth,</td>
</tr>
<tr>
<td>P301+P312</td>
<td>IF SWALLOWED: Call a POISON CENTER / doctor / . . . / if you feel unwell.</td>
</tr>
</tbody>
</table>

**Storage:**
- P405  Store locked up.
- P501  Dispose of contents/container to an approved waste disposal facility.

2.2. Other hazards

Information not available

3. Composition/information on ingredients

3.2. Mixtures

Contains:

- **Identification**
- **Classification:**
  - Manganese Hydroxychloride  Specific target organ toxicity - single exposure, category 2 H371
  - DICOPPER CHLORIDE TRIHYDROXIDE  Acute toxicity, category 4 H302, Acute toxicity, category 4 H332,

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>CAS Number</th>
<th>EC Number</th>
<th>Percent of Total Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc Hydroxychloride</td>
<td>12137-79-2</td>
<td>Not Applicable</td>
<td>36 – 46%</td>
</tr>
<tr>
<td>Manganese Hydroxychloride</td>
<td>39438-40-9</td>
<td>24 - 34</td>
<td></td>
</tr>
<tr>
<td>Basic Copper Chloride</td>
<td>1332-65-6</td>
<td>215-572-9</td>
<td>11 – 16</td>
</tr>
<tr>
<td>Calcium Carbonate</td>
<td>513-79-1</td>
<td>7542-09-8</td>
<td>3.1 – 4.1</td>
</tr>
<tr>
<td>Mineral Oil</td>
<td>0.8 – 1.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The full wording of hazard (H) phrases is given in section 16 of the sheet.

4. First-aid measures

4.1. Description of first aid measures

- **EYES:** Remove contact lenses, if present. Wash immediately with plenty of water for at least 15 minutes, opening the eyelids fully. If problem persists, seek medical advice.
- **SKIN:** Remove contaminated clothing. Rinse skin with a shower immediately. Get medical advice/attention immediately. Wash contaminated clothing before using it again.
- **INHALATION:** Remove to open air. If the subject stops breathing, administer artificial respiration. Get medical advice/attention immediately.
- **INGESTION:** Get medical advice/attention immediately. Do not induce vomiting. Do not administer anything not explicitly authorised by a doctor.

4.2. Most important symptoms and effects, both acute and delayed

Specific information on symptoms and effects caused by the product are unknown.

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

Information not available

5. Fire-fighting measures
5.1. Extinguishing media

SUITABLE EXTINGUISHING EQUIPMENT
The extinguishing equipment should be of the conventional kind: carbon dioxide, foam, powder and water spray.

UNSUITABLE EXTINGUISHING EQUIPMENT
None in particular.

5.2. Special hazards arising from the substance or mixture

HAZARDS CAUSED BY EXPOSURE IN THE EVENT OF FIRE
Do not breathe combustion products. The product is combustible and, when the powder is released into the air in sufficient concentrations and in the presence of a source of ignition, it can create explosive mixtures with air. Fires may start or get worse by leakage of the solid product from the container, when it reaches high temperatures or through contact with sources of ignition.
5. Fire-fighting measures

5.3. Advice for firefighters

**GENERAL INFORMATION**

Use jets of water to cool the containers to prevent product decomposition and the development of substances potentially hazardous for health. Always wear full fire prevention gear. Collect extinguishing water to prevent it from draining into the sewer system. Dispose of contaminated water used for extinction and the remains of the fire according to applicable regulations.

**SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS**

Normal fire fighting clothing i.e. fire kit (BS EN 469), gloves (BS EN 659) and boots (HO specification A29 and A30) in combination with self-contained open circuit positive pressure compressed air breathing apparatus (BS EN 137).

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

If there are no contraindications, spray powder with water to prevent the formation of dust. Wear suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing. These indications apply for both processing staff and those involved in emergency procedures.

6.2. Environmental precautions

The product must not penetrate into the sewer system or come into contact with surface water or ground water.

6.3. Methods and material for containment and cleaning up

Collect the leaked product and place it in containers for recovery or disposal. If there are no contraindications, use jets of water to eliminate product residues.

Make sure the leakage site is well aired. Evaluate the compatibility of the container to be used, by checking section 10. Contaminated material should be disposed of in compliance with the provisions set forth in point 13.

6.4. Reference to other sections

Any information on personal protection and disposal is given in sections 8 and 13.

7. Handling and storage

7.1. Precautions for safe handling

Before handling the product, consult all the other sections of this material safety data sheet. Avoid leakage of the product into the environment. Do not eat, drink or smoke during use. Remove any contaminated clothes and personal protective equipment before entering places in which people eat.

7.2. Conditions for safe storage, including any incompatibilities

Store only in the original container. Store the containers sealed, in a well ventilated place, away from direct sunlight. Keep containers away from any incompatible materials, see section 10 for details.

7.3. Specific end use(s)

Information not available

8. Exposure controls/personal protection

8.1. Control parameters

During the risk assessment process, it is essential to take into consideration the ACGIH occupational exposure levels for inert particulate not otherwise classified (PNOC respirable fraction: 3 mg/m³; PNOC inhalable fraction: 10 mg/m³). For values above these limits, use a P type filter, whose class (1, 2 or 3) must be chosen according to the outcome of risk assessment.

8.2. Exposure controls

As the use of adequate technical equipment must always take priority over personal protective equipment, make sure that the workplace is well aired through effective local aspiration. Personal protective equipment must comply with current regulations.

**HAND PROTECTION**

In the case of prolonged contact with the product, protect the hands with penetration-resistant work gloves (OSHA 29 CFR 1910.138). Work glove material must be chosen according to the use process and the products that may form. Latex gloves may cause sensitivity reactions.
8. Exposure controls/personal protection

SKIN PROTECTION
Wear category I professional long-sleeved overalls and safety footwear. Wash body with soap and water after removing protective clothing.

EYE PROTECTION

RESPIRATORY PROTECTION
Use a NIOSH certified filtering facemask (NIOSH 42 CFR 84, OSHA 29 CFR 1910.134) or equivalent device, whose class and effective need, must be defined according to the outcome of risk assessment.

ENVIRONMENTAL EXPOSURE CONTROLS
The emissions generated by manufacturing processes, including those generated by ventilation equipment, should be checked to ensure compliance with environmental standards.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Properties</th>
<th>Value</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>powder</td>
<td></td>
</tr>
<tr>
<td>Colour</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Odour</td>
<td>characteristic</td>
<td></td>
</tr>
<tr>
<td>Odour threshold</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Melting point / freezing point</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Initial boiling point</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Boiling range</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Flammability of solids and gases</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Lower inflammability limit</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Upper inflammability limit</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Lower explosive limit</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Upper explosive limit</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Vapour density</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Relative density</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Solubility</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>Not available</td>
<td></td>
</tr>
</tbody>
</table>

9.2. Other information

Information not available

10. Stability and reactivity

10.1. Reactivity

There are no particular risks of reaction with other substances in normal conditions of use.

10.2. Chemical stability

The product is stable in normal conditions of use and storage.

10.3. Possibility of hazardous reactions

The powders are potentially explosive when mixed with air.

10.4. Conditions to avoid

Avoid environmental dust build-up.

10.5. Incompatible materials

Information not available
10. Stability and reactivity  ...

10.6. Hazardous decomposition products

Information not available

11. Toxicological information

In the absence of experimental data for the product itself, health hazards are evaluated according to the properties of the substances it contains, using the criteria specified in the applicable regulation for classification. It is therefore necessary to take into account the concentration of the individual hazardous substances indicated in section 3, to evaluate the toxicological effects of exposure to the product.

11.1. Information on toxicological effects

Metabolism, toxicokinetics, mechanism of action and other information

Information not available

Information on likely routes of exposure

Information not available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Information not available

Interactive effects

Information not available

ACUTE TOXICITY

Acute toxicity, category 4. Harmful if swallowed or if inhaled.

SKIN CORROSION / IRRITATION

Does not meet the classification criteria for this hazard class

SERIOUS EYE DAMAGE / IRRITATION

Does not meet the classification criteria for this hazard class

RESPIRATORY OR SKIN SENSITISATION

Does not meet the classification criteria for this hazard class

GERM CELL MUTAGENICITY

Does not meet the classification criteria for this hazard class

CARCINOGENICITY

Does not meet the classification criteria for this hazard class

REPRODUCTIVE TOXICITY

Does not meet the classification criteria for this hazard class

STOT - SINGLE EXPOSURE

May cause damage to organs

STOT - REPEATED EXPOSURE

Does not meet the classification criteria for this hazard class

ASPIRATION HAZARD

Does not meet the classification criteria for this hazard class
12. Ecological information

No specific data are available for this product. Handle it according to good working practices. Avoid littering. Do not contaminate soil and waterways. Inform the competent authorities, should the product reach waterways or contaminate soil or vegetation. Please take all the proper measures to reduce harmful effects on aquifers.

12.1. Toxicity

Information not available

12.2. Persistence and degradability

Information not available

12.3. Bioaccumulative potential

Information not available

12.4. Mobility in soil

Information not available

12.5. Results of PBT and vPvB assessment

On the basis of available data, the product does not contain any PBT or vPvB in percentage greater than 0.1%.

12.6. Other adverse effects

Information not available

13. Disposal considerations

13.1. Waste treatment methods

Reuse, when possible. Neat product residues should be considered special non-hazardous waste. Disposal must be performed through an authorised waste management firm, in compliance with national and local regulations.

CONTAMINATED PACKAGING

Contaminated packaging must be recovered or disposed of in compliance with national waste management regulations.

14. Transport information

The product is not dangerous under current provisions of the Code of International Carriage of Dangerous Goods by Road (ADR) and by Rail (RID), of the International Maritime Dangerous Goods Code (IMDG), and of the International Air Transport Association (IATA) regulations.

14.1. UN number

Not applicable

14.2. UN proper shipping name

Not applicable

14.3. Transport hazard class(es)

Not applicable

14.4. Packing group

Not applicable
14. Transport information ...

14.5. Environmental hazards

Not applicable

14.6. Special precautions for user

Not applicable

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Information not relevant

15. Regulatory information

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

U.S. Federal Regulations

Clean Air Act Section 112(b):
No component(s) listed.

Clean Air Act Section 602 Class I Substances:
No component(s) listed.

Clean Air Act Section 602 Class II Substances:
No component(s) listed.

Clean Water Act – Priority Pollutants:
No component(s) listed.

Clean Water Act – Toxic Pollutants:
No component(s) listed.

DEA List I Chemicals (Precursor Chemicals):
No component(s) listed.

DEA List II Chemicals (Essential Chemicals):
No component(s) listed.

EPA List of Lists:
313 Category Code:
No component(s) listed.

EPCRA 302 EHS TQ:
No component(s) listed.

EPCRA 304 EHS RQ:
No component(s) listed.

CERCLA RQ:
No component(s) listed.

EPCRA 313 TRI:
No component(s) listed.

RCRA Code:
No component(s) listed.

CAA 112 (r) RMP TQ:
No component(s) listed.

State Regulations

Massachusetts:
1317-65-3 LIMESTONE
15. Regulatory information

Minnesota:
1317-65-3 LIMESTONE

New Jersey:
1317-65-3 LIMESTONE

New York:
No component(s) listed.

Pennsylvania:
1317-65-3 LIMESTONE

California:
No component(s) listed.

Proposition 65:
This product does not contain any substances known to the State of California to cause cancer, reproductive harm or birth defects.

International Regulations

Substances subject to exportation reporting pursuant to (EC) Reg. 649/2012:
None

Substances subject to the Rotterdam Convention:
None

Substances subject to the Stockholm Convention:
None

Canadian WHMIS
Information not available

16. Other information

Text of hazard (H) indications mentioned in section 2-3 of the sheet:

H302 Harmful if swallowed.
H302+H332 Harmful if swallowed or if inhaled.
H332 Harmful if inhaled.
H371 May cause damage to organs.
H413 May cause long lasting harmful effects to aquatic life.

LEGEND:
- 313 CATEGORY CODE: Emergency Planning and Community Right-to-Know Act Section 313 Category Code
- ADR: European Agreement concerning the carriage of Dangerous goods by Road
- CAA 112 ® RMP TQ: Risk Management Plan Threshold Quantity (Clean Air Act Section 112®)
- CAS NUMBER: Chemical Abstract Service Number
- CE50: Effective concentration (required to induce a 50% effect)
- CERCLA RQ: Reportable Quantity (Comprehensive Environment Response, Compensation, and Liability Act)
- GLP: EC Regulation 1272/2008
- DEA: Drug Enforcement Administration
- EmS: Emergency Schedule
- EPA: US Environmental Protection Agency
- EPCRA: Emergency Planning and Community Right-to-Know Act
- EPCRA 302 EHS TPQ: Extremely Hazardous Substance Threshold Planning Quantity (Section 302 Category Code)
- EPCRA 304 EHS RQ: Extremely Hazardous Substance Reportable Quantity (Section 304 Category Code)
- EPCRA 313 TRI: Toxics Release Inventory (Section 313 Category Code)
- GHS: Globally Harmonized System of classification and labeling of chemicals
- IATA DGR: International Air Transport Association Dangerous Goods Regulation
- IC50: Immobilization Concentration 50%
- IMDG: International Maritime Code for dangerous goods
- IMO: International Maritime Organization
- LC50: Lethal Concentration 50%
- LD50: Lethal dose 50%
- OEL: Occupational Exposure Level
- PEL: Predicted exposure level
- REL: Recommended exposure limit
- RID: Regulation concerning the international transport of dangerous goods by train
- TLV: Threshold Limit Value
16. Other information ...

- TLV CEILING: Concentration that should not be exceeded during any time of occupational exposure.
- TSCA: Toxic Substances Control Act
- TWA STEL: Short-term exposure limit
- TWA: Time-weighted average exposure limit
- VOC: Volatile organic compounds

GENERAL BIBLIOGRAPHY:
- GHS rev. 3
- The Merck Index, 10th Edition
- Handling Chemical Safety
- NiOSH - Registry of Toxic Effects of Chemical Substances
- INRS - Fiche Toxicologique (toxicological sheet)
- Patty - Industrial Hygiene and Toxicology
- ECHA website
- Database of SDS models for chemicals - Ministry of Health and ISS (Istituto Superiore di Sanità) - Italy
- 6 NYCRR part 597
- Cal/OSHA website
- California Safe Drinking Water and Toxic Enforcement Act
- EPA website
- IARC website
- List Of Lists EPA: Consolidated List of Chemicals Subject to EPCRA, CERCLA and Section 112® of the Clean Air Act
- Massachusetts 105 CMR Department of public health 670.000: “Right to Know”
- Minnesota Chapter 5206 Departemnt Of Labor and Industry Hazardous Substances, Employee “Right to Know”.
- New Jersey Worker and Community Right to know Act N.J.S.A.
- OSHA website
- Pennsylvania, Hazardous Substance List, Chapter 323

Note for users:
The information contained in the present sheet are based on our own knowledge on the date of the last version. Users must verify the suitability and thoroughness of provided information according to each specific use of the product.
This document must not be regarded as a guarantee on any specific product property.
The use of this product is not subject to our direct control; therefore, users must, under their own responsibility, comply with the current health and safety laws and regulations. The producer is relieved from any liability arising from improper uses.
Provide appointed staff with adequate training on how to use chemical products.

The data for evaluation of chemical-physical properties are reported in section 9.

Changes to previous review:
The following sections were modified:
01 / 02 / 03 / 11 / 12 / 14 / 16.