# SAFETY DATA SHEET

**Compliant with 29 CFR §1910.1200 HCS 2012**

**Revision date:** 01/23/2015 **Version No:** 3

## 1. PRODUCT AND COMPANY IDENTIFICATION

| | |
|---|---|
| **Product Name** | **Micro-Zyme AML** |
| **Chemical Name** | Enzyme preparation |
| **Declared activity** | Alpha-amylase |
| **Use of the substance/preparation** | Novozymes' enzyme preparations are biocatalysts used in a variety of industrial processes and in certain consumer products |
| **Contact Manufacturer** | Anderson Chemical Company<br>325 South Davis Avenue<br>Litchfield, MN 55355<br>www.accomn.com |
| **Emergency Telephone Number** | 1-800-424-9300 (Chemtrec) 24 hours every day |

## 2. HAZARD(S) IDENTIFICATION

**Classification** Classification of the chemical in accordance with 29CFR §1910.1200

| | |
|---|---|
| Respiratory sensitization | Category 1 |

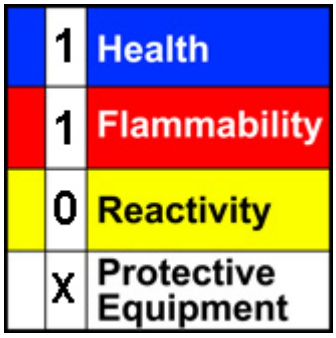
**Label elements**

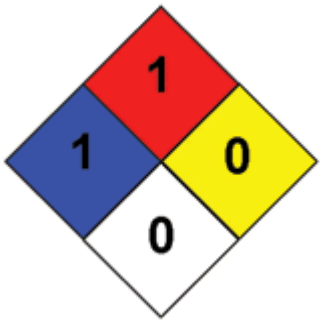
**Danger**

**Hazard Statements**
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled

**Precautionary Statements - Prevention**
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray
P285 - In case of inadequate ventilation wear respiratory protection
**Precautionary Statements - Response**
P304 + P341 - IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing
P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTRE or doctor/physician

**Hazards not otherwise classified (HNOC)**




## 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Hazardous Components**

| Chemical Name | CAS-No | IUB No. | Weight %* |
|---|---|---|---|
| Alpha-amylase (aep) | 9000-90-2 | 3.2.1.1 | 1 - 5 |

aep (active enzyme protein) contributes to the GHS classification.
* The exact percentage (concentration) of composition has been withheld as a trade secret

## 4. FIRST AID MEASURES

In case of unintended overexposure, the following measures apply

**Inhalation**

| | |
|---|---|
| **Effects** | May cause allergic respiratory reaction |
| **Symptoms** | Shortness of breath, wheezing and coughing<br>The effect of inhalation may be delayed |
| **First Aid** | Remove person to fresh air. If signs/symptoms continue, get medical attention<br>Show this safety data sheet to the doctor in attendance |

**Skin Contact**

| | |
|---|---|
| **Effects** | May cause slight irritation. |
| **Symptoms** | Slight irritation. |
| **First Aid** | Remove and wash contaminated clothing before re-use. Wash off immediately with plenty of water. If symptoms persist, call a doctor. Show this safety data sheet to the doctor in attendance. |

**Eye Contact**

| | |
|---|---|
| **Effects** | May cause slight irritation. |
| **Symptoms** | Slight irritation |
| **First Aid** | Hold eye open and rinse slowly and gently with water for 15-20 min. Remove contact lenses, if present, after the first five minutes, then continue rinsing eye. If symptoms persist, call a doctor. Show this safety data sheet to the doctor in attendance |

**Ingestion**

| | |
|---|---|
| **Effects** | Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. |
| **Symptoms** | Irritation |
| **First Aid** | Rinse mouth with water and drink plenty of water. If symptoms persist, call a doctor. Show this safety data sheet to the doctor in attendance. |

## 5. FIRE-FIGHTING MEASURES

| | |
|---|---|
| **Flammable Properties** | Slightly flammable according to HMIS criteria |
| **Suitable Extinguishing Media** | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide |
| **Unsuitable Extinguishing Media** | None |
| **Hazardous Combustion Products** | None |
| **Specific Hazards Arising from the Chemical** | May cause allergic respiratory reaction |

**Protective Equipment and Precautions for Firefighters** Self-contained breathing apparatus and standard turn-out apparel

## 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions** For personal protection see section 8

**Environmental Precautions** Collect spillage.

**Methods for cleaning up** Avoid formation of dust and aerosols
Spilled preparation should be removed immediately to avoid formation of dust from dried preparation. Take up by mechanical means preferably by a vacuum cleaner equipped with a HEPA (High Efficiency Particulate Air) filter. Flush remainder carefully with plenty of water. Avoid splashing, high pressure washing or compressed air cleaning to avoid formation of aerosols. Ensure sufficient ventilation. Wash contaminated clothing.

**For personal protection see section 8**

## 7. HANDLING AND STORAGE

**Handling** Avoid formation of dust and aerosols
Ensure adequate ventilation
Liquid enzyme preparations are dustfree preparations. However, inappropriate handling may cause formation of dust or aerosols.

**Storage** Keep tightly closed in a dry and cool place.Temperature 0-25 °C (32-77 °F)

**Storage Conditions** In unbroken packaging - dry and protect from the sun. The product has been formulated for optimal stability. Extended storage or adverse conditions such as higher temperatures or higher humidity may lead to a higher dosage requirement.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Chemical Name | DNEL Dermal Acute Local (Workers) | DMEL Inhalation Long term Local (Workers) |
|---|---|---|
| Alpha-amylase (aep) | - | DMEL = 60 ng/m³ |

| Chemical Name | DMEL Inhalation Long term Local (Professionals/Consumers) | DNEL Dermal Acute Local (Professional/Consumers) |
|---|---|---|
| Alpha-amylase (aep) | DMEL = 15 ng/m³ | - |
| Alpha-amylase | DMEL = 15 ng/m³ | - |

**Derived No Effect Level (DNEL)**
**Derived Minimal Effect Level (DMEL)**

When enzymes are used for spray products or hard surface cleaning, exposure of enzymes may exceed the safety level (15 ng/m³ DMEL). If you intend to develop such products, please contact Novozymes for further safety evaluation.

**Occupational exposure controls**

| | |
|---|---|
| **Engineering Controls** | Ensure adequate ventilation, especially in confined areas<br>Maintain good conditions of industrial hygiene. Some processes may require enclosures, local exhaust ventilation, or other engineering controls to control airborne levels. Additional handling and healthy/safety information is available upon request |

**Personal Protective Equipment**

| | |
|---|---|
| **Respiratory Protection** | In case of insufficient ventilation wear suitable respiratory equipment that meets HEPA/P100 specifications |
| **Eye Protection** | Safety glasses with side-shields |
| **Skin and body protection** | No special technical protective measures are necessary |
| **General Hygiene Considerations** | Handle in accordance with good industrial hygiene and safety practices |
| **Environmental exposure controls** | Local authorities should be advised if significant spillages cannot be contained |

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Information on basic physical and chemical properties**

| | |
|---|---|
| Physical State | Liquid |
| Color | Amber |
| Odor | Slight fermentation odor |
| Density (g/ml) | 1.14 |
| pH | Adjusted to the range where active enzyme is stable – typically pH 4 – 9 |
| Solubility | Active component is readily soluble in application-relevant solutions at all levels of concentration, temperature and pH which may occur in normal usage |

**Other information** No information available

## 10. STABILITY AND REACTIVITY

| | |
|---|---|
| **Reactivity** | Not relevant |
| **Chemical stability** | Stable under recommended storage conditions |
| **Possibility of Hazardous Reactions** | None under normal processing |
| **Conditions to Avoid** | None |
| **Incompatible materials** | None |
| **Hazardous Decomposition Products** | None |

## 11. TOXICOLOGICAL INFORMATION

**Information on toxicological effects**

| | |
|---|---|
| **Inhalation** | Repeated inhalaion of enzyme dust or aerosols resulting from improper handling may induce sensitization and may casue allergic type 1 reactions in sensitized individuals |
| **Skin contact** | Mild skin irritation |
| **Eye contact** | Mild eye irritation |

**Ingestion** Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea

| Chemical Name | Acute oral toxicity | Acute inhalation toxicity | Skin corrosion/irritation | Serious eye damage/eye irritation |
|---|---|---|---|---|
| Alpha-amylase (aep) | LD50: > 2000 mg/kg bw (OECD TG 401, 420) | | Not irritating (OECD TG 404) | Not irritating (OECD TG 405) |

| Chemical Name | Specific target organ toxicity – single exposure | Genetic toxicity | Skin sensitization | Respiratory sensitization |
|---|---|---|---|---|
| Alpha-amylase (aep) | | No indication of mutagenic effects (OECD TG 471, 476) | | Sensitizer (Human experience) |

## 12. ECOLOGICAL INFORMATION

**Toxicity**

| Chemical Name | Daphnia, acute | Algae, acute | Fish, acute |
|---|---|---|---|
| Alpha-amylase (aep) | EC50 (48 hours): 31.7 - 457 mg aep/l (OECD TG 202) | ErC50 (72 hours): >= 5.2 mg aep/l (OECD TG 201) | LC50 (96 hours): 58.3 - 326.7 mg aep/l (OECD TG 203) |

**Persistence/Degradability**

| Chemical Name | Persistence and degradability | Partition coefficient (n-octanol/water) | Bioaccumulative Potential |
|---|---|---|---|
| Alpha-amylase (aep) | Readily biodegradable (OECD 301) | LogPow: <0 | Does not bioaccumulate |

**Mobility in soil** Not relevant

**Other adverse effects** No information available

## 13. DISPOSAL CONSIDERATIONS

**Waste Disposal Method** Dispose of in accordance with local regulations

**Contaminated Packaging** Dispose of wastes in an approved waste disposal facility

## 14. TRANSPORT INFORMATION

**Transport Regulations**
No dangerous goods according to transport regulations
No special precautions required

**Transport hazard class(es)** not applicable

| | |
|---|---|
| **Packing group** | not applicable |
| **Environmental hazards** | not applicable |

## 15. REGULATORY INFORMATION

**USA, Federal Regulations**

| | |
|---|---|
| **TSCA Inventory** | The active ingredient and all components of the enzyme preparation are listed on the TSCA inventory |

**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and 40 CFR Part 372.

**SARA 311/312 Hazardous Categorization**

| | |
|---|---|
| Acute Health Hazard | No |
| Chronic Health Hazard | No |
| Fire Hazard | No |
| Sudden Release of Pressure Hazard | No |
| Reactive Hazard | No |

**USA, State Regulations**

| | |
|---|---|
| **California Proposition 65** | This product does not contain any Proposition 65 chemicals |

**Canada**

| | |
|---|---|
| **WHMIS Hazard Class** | Controlled product hazard class D2 A (respiratory sensitizer) |
| **WHMIS Statement** | This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all the information required by the CPR. |

## 16. OTHER INFORMATION

| | |
|---|---|
| **Training advice** | Details on the safe handling of this product are located in the Novozymes Customer Center Document Library on www.mynovozymes.com |
| **GHS-Classification** | The GHS calculation methode has been used for classification of this mixture. |
| **Disclaimer** | The information provided on this SDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text. Furthermore, as the conditions of use are beyond the control of Novozymes, it is the responsibility of the customer to determine the conditions of safe use of these products. |

***End of Safety Data Sheet***

**Version No:** 3 / ANSI / English / 01/23/2015