

SAFETY DATA SHEET

Revision date: 2019/02/12

Version No: 3

Compliant with 29 CFR §1910.1200 HCS 2012

Compliant with HPR WHMIS 2015

# Attenuzyme® Pro

## 1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	Attenuzyme® Pro
Chemical Name	Enzyme preparation
Declared activity	Glucoamylase (glucan 1,4-alpha-glucosidase), Pullulanase

### Use of the substance/preparation

Novozymes' enzyme preparations are biocatalysts used in a variety of industrial processes within food manufacturing

### Supplier's details

Novozymes North America, Inc.  
77 Perry Chapel Church Rd., Box 576  
Franklinton, NC 27525  
E-mail: [SafetyDataSheet@novozymes.com](mailto:SafetyDataSheet@novozymes.com)  
[www.novozymes.com](http://www.novozymes.com)

### Information Telephone Number

1-919-494-3000, 8 am - 4:30 pm EST M-F

### Emergency Telephone Number

1-800-424-9300 (Chemtrec) 24 hours every day

---

# SAFETY DATA SHEET

Attenuzyme® Pro  
Version No: 3  
Revision date: 2019/02/12

## 2. HAZARD(S) IDENTIFICATION

### Classification

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

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

P284 - In case of inadequate ventilation wear respiratory protection

### Precautionary Statements - Response

P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing

P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTRE or doctor/physician



Hazards not otherwise classified (HNOC)

1	Health
1	Flammability
0	Reactivity
X	Protective Equipment



## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS No	IUB No.	Weight-%
Glucosylase (glucan 1,4-alpha-glucosidase) (aep)	9032-08-0	3.2.1.3	20 - 30
Pullulanase (aep)	9075-68-7	3.2.1.41	0.1- < 1

aep (active enzyme protein) contributes to the GHS classification.

## 4. FIRST AID MEASURES

Rethink Tomorrow

# SAFETY DATA SHEET

Attenuzyme® Pro  
Version No: 3  
Revision date: 2019/02/12

Page

3 / 7

In case of unintended overexposure, the following measures apply

## Inhalation

Effects

May cause allergic respiratory reaction.

Symptoms

Shortness of breath, wheezing and coughing.

The effect of inhalation may be delayed.

First Aid

Remove person to fresh air. If signs/symptoms continue, get medical attention.

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.

Other Information

For personal protection see section 8.

**Rethink Tomorrow**

**novozymes** 

# SAFETY DATA SHEET

Attenuzyme® Pro  
Version No: 3  
Revision date: 2019/02/12

## 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. The product can be transported at ambient temperature.  
Following delivery, the product should be stored as recommended. Temperature 0-10 °C (32-50 °F)

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Chemical name	DNEL Dermal Acute Local (Workers)	DMEL Inhalation Long term Local (Workers)
Glucoamylase (glucan 1,4-alpha-glucosidase) (aep)	-	DMEL = 60 ng/m <sup>3</sup>
Pullulanase (aep)	-	DMEL = 60 ng/m <sup>3</sup>

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

**Occupational exposure controls**  
**Engineering Controls** Ensure adequate ventilation, especially in confined areas  
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** Wear safety glasses with side shields (or goggles)  
**Skin and body protection** No special technical protective measures are necessary

**General Hygiene Considerations** Handle in accordance with good industrial hygiene and safety practice  
**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	Light to dark brown
Odor	Slight fermentation odor
pH	Adjusted to the range where active enzyme is stable – typically pH 4 – 9
Melting point / freezing point	No information available
Initial boiling point and boiling range	Not determined
Flash Point	Not determined
Evaporation rate	Not available
Flammability (solid, gas)	Not determined
Upper/lower flammability or explosive limits	Not available

# SAFETY DATA SHEET

Attenuzyme® Pro  
Version No: 3  
Revision date: 2019/02/12

Page

5 / 7

Vapor Pressure	No data available
Vapor density	Not available
Density (g/ml)	1.15
Solubility	Active component is readily soluble in application-relevant solutions at all levels of concentration, temperature and pH which may occur in normal usage
Partition Coefficient (n-octanol/water)	No data available
Autoignition temperature	Not available
Decomposition temperature	Not available
Viscosity	Not available
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

Repeated inhalation of enzyme dust or aerosols resulting from improper handling may induce sensitization and may cause allergic type 1 reactions in sensitized individuals

Mild skin irritation  
Mild eye irritation

Chemical name	Acute oral toxicity	Acute inhalation toxicity	Skin corrosion/irritation	Serious eye damage/eye irritation
Glucoamylase (glucan 1,4-alpha-glucosidase) (aep)	LD50: > 2000 mg/kg bw (OECD TG 401, 420)		Not irritating (OECD TG 404)	Not irritating (OECD TG 405)
Pullulanase (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
Glucoamylase (glucan 1,4-alpha-glucosidase) (aep)		No indication of mutagenic effects (OECD TG 471, 476, 487)		Sensitizer (Human experience)
Pullulanase (aep)		No indication of mutagenic effects (OECD TG 471, 476, 487)		Sensitizer (Human experience)

## 12. ECOLOGICAL INFORMATION

Toxicity

Chemical name	Daphnia, acute	Algae, acute	Fish, acute
---------------	----------------	--------------	-------------

Rethink Tomorrow

novozymes 

# SAFETY DATA SHEET

Attenuzyme® Pro  
Version No: 3  
Revision date: 2019/02/12

Page

6 / 7

Glucoamylase (glucan 1,4-alpha-glucosidase) (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)
Pullulanase (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)
Glucoamylase (glucan 1,4-alpha-glucosidase) (aep)	Readily biodegradable (OECD 301)	LogPow: <0
Pullulanase (aep)	Readily biodegradable (OECD 301)	LogPow: <0

Chemical name	Bioaccumulative Potential
Glucoamylase (glucan 1,4-alpha-glucosidase) (aep)	Does not bioaccumulate
Pullulanase (aep)	Does not bioaccumulate

Mobility in soil Not relevant

Other adverse effects No information available

## 13. DISPOSAL CONSIDERATIONS

Disposal of wastes 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

The product complies with the recommended purity specifications for food-grade enzymes given by the Joint FAO/WHO Expert Committee on Food Additives (JECFA) and the Food Chemical Codex (FCC).

### 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.

