SAFETY DATA SHEET
According to Regulation (EC) No 453/2010

AMG® 300 L

Revision date: 04/10/2015

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product name
AMG® 300 L

Chemical Name
Enzyme preparation

Declared activity
Glucoamylase (glucan 1,4-alpha-glucosidase)

1.2 Relevant identified uses of the substance or mixture and uses advised against
Novozymes' enzyme preparations are biocatalysts used in a variety of industrial processes within food manufacturing.

1.3 Details of the supplier of the safety data sheet
Novozymes A/S
Krogshoejvej 36
2880 Bagsvaerd
Denmark
Tel.: +45 44460000
Fax.: +45 44469999
E-mail: SafetyDataSheet@novozymes.com
www.novozymes.com

1.4 Emergency telephone number
+45 44462223 (24/7)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

REGULATION (EC) No 1272/2008

| Respiratory sensitization | Category 1 |

Classification according to EU Directives 64/548/EEC or 1999/45/EC see section 16.
2.2 Label elements

**Signal Word**
Danger

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

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

Contains Glucoamylase (glucan 1,4-alpha-glucosidase)

2.3 Other information

**Human health 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.
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

**Effects of overexposure**
See Section 4

The mixture does not meet the criteria for PBT or vPvB.

See Section 11 and 12 for additional Toxicological information

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

**Hazardous Components**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Weight %</th>
<th>CAS-No</th>
<th>EC No.</th>
<th>EU Classification (67/548/EEC)</th>
<th>CLP Classification (No 1272/2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glucoamylase (glucan 1,4-alpha-glucosidase) (aep)</td>
<td>20 - 30</td>
<td>9032-08-0</td>
<td>232-877-2</td>
<td>R42</td>
<td>Resp. Sens. 1; H334</td>
</tr>
</tbody>
</table>
Active enzyme protein (aep) is the part of the enzyme concentrate contributing to the classification of the mixture.

**Regulatory information** *

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Weight %</th>
<th>IUB No.</th>
<th>REACH Registration No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glucoamylase (glucan 1,4-alpha-glucosidase)</td>
<td>30 - 50</td>
<td>3.2.1.3</td>
<td>01-2119480439-28</td>
</tr>
</tbody>
</table>

*: In the scope of REACH registration enzymes are defined as enzyme concentrate (dry matter basis)

For the full text of the R/H phrases mentioned in this Section, see Section 16

### 4. FIRST AID MEASURES

#### 4.1 Description of first-aid measures

**Inhalation**

- **Effects**: May cause allergic respiratory reaction
- **Symptoms**: Shortness of breath, wheezing and coughing. The effect of inhalation may be delayed.
- **First Aid**: Move to fresh air. If symptoms persist, call a physician. 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 physician. 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 minutes. Remove contact lenses, if present, after the first five minutes, then continue rinsing eye. If symptoms persist, call a physician. Show this safety data sheet to the doctor in attendance.

**Ingestion**

- **Effects**: Ingestion may cause gastrointestinal irritation.
- **Symptoms**: Irritation.
- **First Aid**: Rinse mouth with water. If symptoms persist, call a physician. Show this safety data sheet to the doctor in attendance.

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

See section 4.1
4.3 Indication of any immediate medical attention and special treatment needed  
Notes to physician  Treat symptomatically

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media  
Suitable extinguishing media  Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide

Unsuitable Extinguishing Media  none

Hazardous combustion products  None

5.2 Special hazards arising from the substance or mixture  
May cause allergic respiratory reaction

5.3 Advice for firefighters  
Self-contained breathing apparatus

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures  
For personal protection see section 8

6.2 Environmental precautions  
Collect spillage.

6.3 Methods and materials for containment and 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 high efficiency filter. Flush remainder carefully with plenty of water. Avoid splashing and high pressure washing (avoid formation of aerosols). Ensure sufficient ventilation. Wash contaminated clothing.

6.4 Reference to other sections  
For personal protection see section 8

7. HANDLING AND STORAGE

7.1 Precautions for safe 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.

7.2 Conditions for safe storage, including any incompatibilities  
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.
7. HANDLING AND STORAGE

Temperature 0-10 °C (32-50 °F)

7.3 Specific end uses
Handle in accordance with good industrial hygiene and safety practice

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

DNEL/DMEL/PNEC

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>DNEL Dermal Acute Local (Workers)</th>
<th>DMEL Inhalation Long term Local (Workers)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glucoamylase (glucan 1,4-alpha-glucosidase) (aep)</td>
<td>-</td>
<td>DMEL = 60 ng/m³</td>
</tr>
</tbody>
</table>

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

8.2 Exposure controls
Ensure adequate ventilation, especially in confined areas

Personal Protective Equipment

Respiratory Protection In case of insufficient ventilation wear an approved mask with a particle filter type P3 used according to the manufactures instruction

Eye protection Safety glasses with side-shields

Skin Protection Long sleeved clothing

Hand Protection Skin should be washed after contact

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

Waste water should be discharged to sewage treatment plant

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties
Physical state liquid
Color Light to dark brown
Odor Slight fermentation odor
9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density (g/ml)</td>
<td>1.16</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td></td>
<td>Adjusted to the range where active enzyme is stable – typically pH 4 – 9</td>
</tr>
<tr>
<td>Solubility</td>
<td>none</td>
<td></td>
</tr>
</tbody>
</table>

9.2 Other information

No information available

10. STABILITY AND REACTIVITY

10.1 Reactivity

Not relevant

10.2 Chemical stability

Stable under recommended storage conditions

10.3 Possibility of hazardous reactions

None under normal processing

10.4 Conditions to Avoid

None

10.5 Incompatible Materials

None

10.6 Hazardous Decomposition Products

None

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Acute oral toxicity</th>
<th>Respiratory sensitization</th>
<th>Genetic toxicity</th>
<th>Skin corrosion/irritation</th>
<th>Serious eye damage/eye irritation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glucoamylase (glucan 1,4-alpha-glucosidase)</td>
<td>LD50: &gt; 2000 mg/kg bw (OECD TG 401, 420)</td>
<td>Sensitizer (Human experience)</td>
<td>No indication of mutagenic effects (OECD TG 471, 476, 487)</td>
<td>Not irritating (OECD TG 404)</td>
<td>Not irritating (OECD TG 405)</td>
</tr>
</tbody>
</table>

12. ECOLOGICAL INFORMATION

12.1 Toxicity

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Daphnia, acute</th>
<th>Acute fish toxicity</th>
<th>Algae, Acute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glucoamylase (glucan 1,4-alpha-glucosidase)</td>
<td>EC50 (48 hours): 31.7 - 457 mg aep/l (OECD TG 202)</td>
<td>LC50 (96 hours): 58.3 - 326.7 mg aep/l (OECD TG 203)</td>
<td>ErC50 (72 hours): &gt;= 5.2 mg aep/l (OECD TG 201)</td>
</tr>
</tbody>
</table>

12.2 Persistence and degradability

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Persistence and degradability</th>
<th>Partition coefficient (n-octanol/water)</th>
</tr>
</thead>
</table>
12.3 Bioaccumulative potential

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Bioaccumulative potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glucoamylase (glucan 1,4-alpha-glucosidase) (aep)</td>
<td>Does not bioaccumulate</td>
</tr>
</tbody>
</table>

12.4 Mobility in soil
Not relevant

12.5 Results of PBT and vPvB assessment
Components do not meet PBT or vPvB criteria according to REACH Annex XIII

12.6 Other adverse effects
No information available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Dispose of in accordance with local regulations
Waste water should be discharged to sewage treatment plant
Waste codes should be assigned by the user based on the application for which the product was used

14. TRANSPORT INFORMATION

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

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

14.5 Environmental hazards
Not applicable

14.6 Special precautions for user
Not applicable

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable
15. REGULATORY INFORMATION

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

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).

15.2 Chemical Safety Report

No chemical safety assessment has been carried out

16. OTHER INFORMATION

Text of R/H phrases mentioned in Section 2&3

R42 - May cause sensitization by inhalation

GHS-Classification

The GHS calculation method has been used for classification of this mixture.

Classification according to EU Directives 64/548/EEC or 1999/45/EC

Symbol(s)  Xn - Harmful
R-code(s)    R42

Further information

This SDS is in compliance with EU Regulation No. 453/2010

For further information please consult available product documentation including 'Product Application Guidelines' and/or 'Application Sheets', which are available on www.mynovozymes.com or from Novozymes sales representatives.

Training advice

Details on the safe handling of this product can be found in the “Handling enzymes” on www.novozymes.com

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

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