



## SAFETY DATA SHEET SHEARZYME PLUS

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1. Product identifier

Product name SHEARZYME PLUS

Product number 60243

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

Identified uses Biocatalyst  
Food industry  
Industrial application  
For further information, see attached Exposure Scenario.

#### 1.3. Details of the supplier of the safety data sheet

Supplier Univar Solutions UK Ltd  
Aquarius House  
6 Mid Point Business Park  
Bradford  
BD3 7AY  
+44 1274 267300  
+44 1274 267306  
SDS.EMEA@univarsolutions.com

#### 1.4. Emergency telephone number

Emergency telephone SGS - +32 (0)3 575 55 55 (24h)

Sds No. 60243

### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

##### Classification (EC 1272/2008)

Physical hazards Not Classified

Health hazards Resp. Sens. 1 - H334

Environmental hazards Not Classified

#### 2.2. Label elements

Hazard pictograms



Signal word Danger

Hazard statements H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

## SHEARZYME PLUS

**Precautionary statements**

P261 Avoid breathing vapour/ spray.  
P284 [In case of inadequate ventilation] wear respiratory protection.  
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER/ doctor.  
P501 Dispose of contents/ container in accordance with national regulations.

**Contains** CELLULASE, XYLANASE, ENDO-1,4-

### 2.3. Other hazards

This product does not contain any substances classified as PBT or vPvB.

## SECTION 3: Composition/information on ingredients

### 3.2. Mixtures

|                                               |                      |                                                  |                      |
|-----------------------------------------------|----------------------|--------------------------------------------------|----------------------|
| <b>CELLULASE</b>                              |                      |                                                  | <b>10 - &lt; 20%</b> |
| CAS number: 9012-54-8                         | EC number: 232-734-4 | REACH registration number: 01-2119949289-21-XXXX |                      |
| <b>Classification</b><br>Resp. Sens. 1 - H334 |                      |                                                  |                      |

|                                               |                      |                                                  |                      |
|-----------------------------------------------|----------------------|--------------------------------------------------|----------------------|
| <b>XYLANASE, ENDO-1,4-</b>                    |                      |                                                  | <b>0.1 - &lt; 1%</b> |
| CAS number: 9025-57-4                         | EC number: 232-800-2 | REACH registration number: 01-2120747946-38-XXXX |                      |
| <b>Classification</b><br>Resp. Sens. 1 - H334 |                      |                                                  |                      |

The full text for all hazard statements is displayed in Section 16.

**Composition comments** The data shown are in accordance with the latest EC Directives.

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

**General information** Show this Safety Data Sheet to the medical personnel.

**Inhalation** Remove person to fresh air and keep comfortable for breathing. Get medical attention if any discomfort continues.

**Ingestion** Immediately rinse mouth and drink plenty of water (200-300 ml). Get medical attention if any discomfort continues.

**Skin contact** Take off immediately all contaminated clothing and wash it before reuse. Rinse immediately with plenty of water. Get medical attention if any discomfort continues.

**Eye contact** Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes. Get medical attention if symptoms are severe or persist after washing.

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

**Inhalation** May cause allergy or asthma symptoms or breathing difficulties if inhaled. Coughing. Shortness of breath. Wheezing/breathing difficulties. Effects may be delayed.

**Ingestion** May cause irritation. Gastro-intestinal tract

**Skin contact** May be slightly irritating to skin.

## SHEARZYME PLUS

**Eye contact** May be slightly irritating to eyes.

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

**Notes for the doctor** Treat symptomatically. Effects may be delayed.

## **SECTION 5: Firefighting measures**

### **5.1. Extinguishing media**

**Suitable extinguishing media** Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog.

**Unsuitable extinguishing media** Do not use water jet as an extinguisher, as this will spread the fire.

### **5.2. Special hazards arising from the substance or mixture**

**Specific hazards** May cause allergy or asthma symptoms or breathing difficulties if inhaled.

**Hazardous combustion products** Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours.

### **5.3. Advice for firefighters**

**Protective actions during firefighting** Contain and collect extinguishing water. Avoid the spillage or runoff entering drains, sewers or watercourses.

**Special protective equipment for firefighters** Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

## **SECTION 6: Accidental release measures**

### **6.1. Personal precautions, protective equipment and emergency procedures**

**Personal precautions** Wear protective clothing as described in Section 8 of this safety data sheet. Provide adequate ventilation. Keep unnecessary and unprotected personnel away from the spillage. Avoid handling which leads to dust formation. Avoid the formation of mists.

### **6.2. Environmental precautions**

**Environmental precautions** Avoid the spillage or runoff entering drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses must be reported immediately to the Environmental Agency or other appropriate regulatory body.

### **6.3. Methods and material for containment and cleaning up**

**Methods for cleaning up** Remove spillage with vacuum cleaner or collect with a shovel and broom, or similar. Collect and place in suitable waste disposal containers and seal securely. Do not allow to dry out. Flush contaminated area with plenty of water. Clean contaminated objects and areas thoroughly, observing environmental regulations. Avoid discharge into drains or watercourses or onto the ground.

### **6.4. Reference to other sections**

**Reference to other sections** For personal protection, see Section 8. For waste disposal, see Section 13.

## **SECTION 7: Handling and storage**

### **7.1. Precautions for safe handling**

**Usage precautions** Provide adequate ventilation. Wear protective clothing as described in Section 8 of this safety data sheet. Avoid handling which leads to dust formation. Avoid the formation of mists. Avoid breathing vapour/spray. Do not allow to dry out.

**Advice on general occupational hygiene** When using do not eat, drink or smoke. Take off immediately all contaminated clothing and wash it before reuse. Wash after use and before eating, smoking and using the toilet. Remove contaminated clothing and protective equipment before entering eating areas.

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### 7.2. Conditions for safe storage, including any incompatibilities

**Storage precautions** Store in tightly-closed, original container in a dry and cool place. Store at temperatures between 0°C and 25°C.

### 7.3. Specific end use(s)

**Specific end use(s)** The identified uses for this product are detailed in Section 1.2.

## SECTION 8: Exposure controls/Personal protection

### 8.1. Control parameters

#### CELLULASE (CAS: 9012-54-8)

**DMEL**

Workers - Inhalation; Long term local effects: 60 ng/m<sup>3</sup>

#### XYLANASE, ENDO-1,4- (CAS: 9025-57-4)

**DMEL**

Workers - Inhalation; Long term local effects: 60 ng/m<sup>3</sup>

### 8.2. Exposure controls

#### **Protective equipment**



#### **Appropriate engineering controls**

Provide adequate ventilation. Observe any occupational exposure limits for the product or ingredients. Provide eyewash station and safety shower.

#### **Eye/face protection**

Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. Unless the assessment indicates a higher degree of protection is required, the following protection should be worn: Chemical splash goggles. Personal protective equipment for eye and face protection should comply with European Standard EN166.

#### **Hand protection**

Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. To protect hands from chemicals, gloves should comply with European Standard EN374.

#### **Other skin and body protection**

Wear suitable protective clothing as protection against splashing or contamination.

#### **Hygiene measures**

Wash after use and before eating, smoking and using the toilet. When using do not eat, drink or smoke. Remove contaminated clothing and protective equipment before entering eating areas. Take off immediately all contaminated clothing and wash it before reuse.

#### **Respiratory protection**

If ventilation is inadequate, suitable respiratory protection must be worn. Use respiratory equipment with particle filter, type P3.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

**Appearance** Liquid.

**Colour** Amber.

**Odour** Slight.

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|                                              |                           |
|----------------------------------------------|---------------------------|
| Odour threshold                              | No information available. |
| pH                                           | No information available. |
| Melting point                                | No information available. |
| Initial boiling point and range              | No information available. |
| Flash point                                  | No information available. |
| Evaporation rate                             | No information available. |
| Evaporation factor                           | No information available. |
| Flammability (solid, gas)                    | No information available. |
| Upper/lower flammability or explosive limits | No information available. |
| Other flammability                           | No information available. |
| Vapour pressure                              | No information available. |
| Vapour density                               | No information available. |
| Relative density                             | 1.2                       |
| Bulk density                                 | No information available. |
| Solubility(ies)                              | Immiscible with water.    |
| Partition coefficient                        | No information available. |
| Auto-ignition temperature                    | No information available. |
| Decomposition Temperature                    | No information available. |
| Viscosity                                    | No information available. |
| Explosive properties                         | No information available. |
| Explosive under the influence of a flame     | No information available. |
| Oxidising properties                         | No information available. |

### 9.2. Other information

|                   |                |
|-------------------|----------------|
| Other information | Not available. |
|-------------------|----------------|

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

|            |                           |
|------------|---------------------------|
| Reactivity | No information available. |
|------------|---------------------------|

### 10.2. Chemical stability

|           |                                                 |
|-----------|-------------------------------------------------|
| Stability | Stable under the prescribed storage conditions. |
|-----------|-------------------------------------------------|

### 10.3. Possibility of hazardous reactions

|                                    |                                                                                |
|------------------------------------|--------------------------------------------------------------------------------|
| Possibility of hazardous reactions | Under normal conditions of storage and use, no hazardous reactions will occur. |
|------------------------------------|--------------------------------------------------------------------------------|

### 10.4. Conditions to avoid

|                     |                                                                                         |
|---------------------|-----------------------------------------------------------------------------------------|
| Conditions to avoid | Avoid handling which leads to dust formation. Avoid heat. Avoid the formation of mists. |
|---------------------|-----------------------------------------------------------------------------------------|

### 10.5. Incompatible materials

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**Materials to avoid**                      None known.

### 10.6. Hazardous decomposition products

**Hazardous decomposition products**      Does not decompose when used and stored as recommended. Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

**Toxicological effects**                      No information available.

#### Skin corrosion/irritation

**Skin corrosion/irritation**                  May be slightly irritating to skin.

#### Serious eye damage/irritation

**Serious eye damage/irritation**          Slightly irritating.

#### Respiratory sensitisation

**Respiratory sensitisation**                  May cause allergy or asthma symptoms or breathing difficulties if inhaled.

#### Skin sensitisation

**Skin sensitisation**                          No information available.

#### Germ cell mutagenicity

**Genotoxicity - in vitro**                      No information available.

#### Carcinogenicity

**Carcinogenicity**                              No information available.

#### Reproductive toxicity

**Reproductive toxicity - fertility**          No information available.

#### Specific target organ toxicity - single exposure

**STOT - single exposure**                      No information available.

#### Specific target organ toxicity - repeated exposure

**STOT - repeated exposure**                  No information available.

#### Aspiration hazard

**Aspiration hazard**                          No information available.

**Inhalation**                                      May cause allergy or asthma symptoms or breathing difficulties if inhaled. Shortness of breath. Wheezing/breathing difficulties. Coughing. Effects may be delayed.

**Ingestion**                                        May cause irritation.

**Skin contact**                                    May be slightly irritating to skin.

**Eye contact**                                    May be slightly irritating to eyes.

### Toxicological information on ingredients.

#### CELLULASE

##### Acute toxicity - oral

**Notes (oral LD<sub>50</sub>)**                              LD<sub>50</sub> >2000 mg/kg, Oral, OECD 401

##### Skin corrosion/irritation

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**Skin corrosion/irritation** Not irritating. OECD 404

**Serious eye damage/irritation**

**Serious eye damage/irritation** Not irritating. OECD 405

**Respiratory sensitisation**

**Respiratory sensitisation** Sensitising.

**Germ cell mutagenicity**

**Genotoxicity - in vitro** This substance has no evidence of mutagenic properties.

### XYLANASE, ENDO-1,4-

**Acute toxicity - oral**

**Acute toxicity oral (LD<sub>50</sub> mg/kg)** 2,000.0

**Notes (oral LD<sub>50</sub>)** LD<sub>50</sub> > 2000 mg/kg, Oral, OECD 401 OECD 420

**Skin corrosion/irritation**

**Animal data** Based on available data the classification criteria are not met. Not irritating. OECD 404

**Serious eye damage/irritation**

**Serious eye damage/irritation** Based on available data the classification criteria are not met. Not irritating.

**Respiratory sensitisation**

**Respiratory sensitisation** Human: Sensitising.

**Germ cell mutagenicity**

**Genotoxicity - in vitro** This substance has no evidence of mutagenic properties.

## SECTION 12: Ecological information

**Ecotoxicity** Not regarded as dangerous for the environment. However, large or frequent spills may have hazardous effects on the environment.

### 12.1. Toxicity

**Toxicity** No information available.

### Ecological information on ingredients.

### CELLULASE

**Acute aquatic toxicity**

**Acute toxicity - fish** LC<sub>50</sub>, 96 hours: >39.5 mg/l, Fish  
OECD 203

**Acute toxicity - aquatic invertebrates** EC<sub>50</sub>, 48 hours: >39.5 mg/l, Daphnia magna  
OECD 202

### XYLANASE, ENDO-1,4-

**Acute aquatic toxicity**

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|                                               |                                                                       |
|-----------------------------------------------|-----------------------------------------------------------------------|
| <b>Acute toxicity - fish</b>                  | OECD 203<br>LC <sub>50</sub> , 96 hours: >1000 mg/l mg/l, Fish        |
| <b>Acute toxicity - aquatic invertebrates</b> | OECD 202<br>EC <sub>50</sub> , 48 hours: >42 mg/l mg/l, Daphnia magna |
| <b>Acute toxicity - aquatic plants</b>        | EC <sub>50</sub> , 72 hours: > 1000 mg/l,<br>OECD 203                 |

### 12.2. Persistence and degradability

**Persistence and degradability** No information available.

### Ecological information on ingredients.

#### CELLULASE

|                                      |                                                           |
|--------------------------------------|-----------------------------------------------------------|
| <b>Persistence and degradability</b> | The product is readily biodegradable. OECD 301E OECD 301F |
|--------------------------------------|-----------------------------------------------------------|

#### XYLANASE, ENDO-1,4-

|                                      |                                                |
|--------------------------------------|------------------------------------------------|
| <b>Persistence and degradability</b> | The product is readily biodegradable. OECD 301 |
|--------------------------------------|------------------------------------------------|

### 12.3. Bioaccumulative potential

**Bioaccumulative potential** No information available.

**Partition coefficient** No information available.

### Ecological information on ingredients.

#### CELLULASE

|                                  |                                     |
|----------------------------------|-------------------------------------|
| <b>Bioaccumulative potential</b> | The product is not bioaccumulating. |
| <b>Partition coefficient</b>     | log Pow: < 0                        |

#### XYLANASE, ENDO-1,4-

|                                  |                                     |
|----------------------------------|-------------------------------------|
| <b>Bioaccumulative potential</b> | The product is not bioaccumulating. |
| <b>Partition coefficient</b>     | log Pow: < 0                        |

### 12.4. Mobility in soil

**Mobility** No information available.

### 12.5. Results of PBT and vPvB assessment

**Results of PBT and vPvB assessment** This product does not contain any substances classified as PBT or vPvB.

### 12.6. Other adverse effects

**Other adverse effects** No information available.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

**General information** Waste is classified as hazardous waste. Do not puncture or incinerate, even when empty. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities.



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**Disposal methods** Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

### SECTION 14: Transport information

**General** The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, ADR/RID).

#### 14.1. UN number

Not applicable.

#### 14.2. UN proper shipping name

Not applicable.

#### 14.3. Transport hazard class(es)

No transport warning sign required.

#### 14.4. Packing group

Not applicable.

#### 14.5. Environmental hazards

**Environmentally hazardous substance/marine pollutant**

No.

#### 14.6. Special precautions for user

Not applicable.

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

**Transport in bulk according to** Not applicable.

**Annex II of MARPOL 73/78  
and the IBC Code**

### SECTION 15: Regulatory information

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

##### **EU legislation**

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended).  
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended).  
Commission Regulation (EU) No 2015/830 of 28 May 2015.

##### **Restrictions (Annex XVII Regulation 1907/2006)**

This product is/contains a substance that is included in REGULATION (EC) No 1907/2006 (REACH) ANNEX XVII - RESTRICTIONS ON THE MANUFACTURE, PLACING ON THE MARKET AND USE OF CERTAIN DANGEROUS SUBSTANCES, MIXTURES AND ARTICLES. Entry number: 3

#### 15.2. Chemical safety assessment

A chemical safety assessment has been carried out.

### SECTION 16: Other information

## SHEARZYME PLUS

### Abbreviations and acronyms used in the safety data sheet

ATE: Acute Toxicity Estimate.  
 ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.  
 ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.  
 CAS: Chemical Abstracts Service.  
 DNEL: Derived No Effect Level.  
 IATA: International Air Transport Association.  
 IMDG: International Maritime Dangerous Goods.  
 Kow: Octanol-water partition coefficient.  
 LC<sub>50</sub>: Lethal Concentration to 50 % of a test population.  
 LD<sub>50</sub>: Lethal Dose to 50% of a test population (Median Lethal Dose).  
 PBT: Persistent, Bioaccumulative and Toxic substance.  
 PNEC: Predicted No Effect Concentration.  
 REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006.  
 RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.  
 vPvB: Very Persistent and Very Bioaccumulative.  
 IARC: International Agency for Research on Cancer.  
 MARPOL 73/78: International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978.  
 cATpE: Converted Acute Toxicity Point Estimate.  
 BCF: Bioconcentration Factor.  
 BOD: Biochemical Oxygen Demand.  
 EC<sub>50</sub>: 50% of maximal Effective Concentration.  
 LOAEC: Lowest Observed Adverse Effect Concentration.  
 LOAEL: Lowest Observed Adverse Effect Level.  
 NOAEC: No Observed Adverse Effect Concentration.  
 NOAEL: No Observed Adverse Effect Level.  
 NOEC: No Observed Effect Concentration.  
 LOEC: Lowest Observed Effect Concentration.  
 DMEL: Derived Minimal Effect Level.  
 EL50: Exposure Limit 50  
 hPa: Hectopascal  
 LL50: Lethal Loading fifty  
 OECD: Organisation for Economic Co-operation and Development  
 POW: Octanol-water partition coefficient  
 SCBA: self-contained breathing apparatus  
 STP: Sewage Treatment Plant  
 VOC: Volatile Organic Compounds

### Classification abbreviations and acronyms

Acute Tox. = Acute toxicity  
 Aquatic Acute = Hazardous to the aquatic environment (acute)  
 Aquatic Chronic = Hazardous to the aquatic environment (chronic)

### Key literature references and sources for data

Supplier's information.

### Revision date

01/05/2020

### Version number

1.000

### SDS number

60243

### SDS status

Approved.

### Hazard statements in full

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

## SHEARZYME PLUS

**Signature**

J Spenceley



**Exposure scenario**  
**Non-proteolytic enzyme: Formulation or re-packing**

**Identification**

|                           |                                                                                                                                                                     |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product name              | Cellulase                                                                                                                                                           |
| REACH registration number | 01-2119949289-21-XXXX                                                                                                                                               |
| CAS number                | 9012-54-8                                                                                                                                                           |
| EC number                 | 232-734-4                                                                                                                                                           |
| EU index number           | 647-002-00-3                                                                                                                                                        |
| Supplier                  | Univar Solutions UK Ltd<br>Aquarius House<br>6 Mid Point Business Park<br>Bradford<br>BD3 7AY<br>+44 1274 267300<br>+44 1274 267306<br>SDS.EMEA@univarsolutions.com |

**1. Title of exposure scenario**

|                  |                                                                                                                                                                                                                                                             |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Main title       | Non-proteolytic enzyme: Formulation or re-packing                                                                                                                                                                                                           |
| Process scope    | Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities. |
| Product category | PC21 Laboratory chemicals.<br>PC35 Washing and cleaning products<br>PC37 Water treatment chemicals.<br>PC39 Cosmetics, personal care.                                                                                                                       |
| Main sector      | SU3 Industrial uses                                                                                                                                                                                                                                         |
| Sector of use    | SU10 Formulation [mixing] of preparations and/or re-packaging                                                                                                                                                                                               |

**Environment**

|                                |                               |
|--------------------------------|-------------------------------|
| Environmental release category | ERC2 Formulation into mixture |
|--------------------------------|-------------------------------|

**Worker**

## Non-proteolytic enzyme: Formulation or re-packing

|                         |                                                                                                                                                                            |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Process category</b> | PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions                                 |
|                         | PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions                 |
|                         | PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition |
|                         | PROC4 Chemical production where opportunity for exposure arises                                                                                                            |
|                         | PROC5 Mixing or blending in batch processes                                                                                                                                |
|                         | PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities                                                                             |
|                         | PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities                                                                                 |
|                         | PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)                                                                  |
|                         | PROC14 Tableting, compression, extrusion, pelletisation, granulation                                                                                                       |
|                         | PROC15 Use as laboratory reagent.                                                                                                                                          |

### 2. Conditions of use affecting exposure (Industrial - Environment 1)

#### Control of environmental exposure

|                                       |                               |
|---------------------------------------|-------------------------------|
| <b>Environmental release category</b> | ERC2 Formulation into mixture |
|---------------------------------------|-------------------------------|

#### Product characteristics

|                              |                                   |
|------------------------------|-----------------------------------|
| <b>Physical state</b>        | Solid, low dustiness , or: Liquid |
| <b>Concentration details</b> | Covers concentrations up to 15 %. |

#### Amounts used

Daily amount per site: 1 tonnes  
Annual amount per site: 10 tonnes

#### Frequency and duration of use

Emission days: 365 days/year  
Continuous release.

#### Environmental factors not influenced by risk management measures

|                 |                                                         |
|-----------------|---------------------------------------------------------|
| <b>Dilution</b> | Receiving surface water flow: 18000 m <sup>3</sup> /day |
|-----------------|---------------------------------------------------------|

#### Risk management measures

|                    |                                                                                                              |
|--------------------|--------------------------------------------------------------------------------------------------------------|
| <b>STP type</b>    | Municipal STP.                                                                                               |
| <b>STP details</b> | Assumed domestic sewage treatment plant flow: 2000 m <sup>3</sup> /day<br>Removal efficiency (total): 99.99% |

#### Conditions and measures related to external treatment of waste for disposal

|                        |                                                                                                           |
|------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>Waste treatment</b> | External treatment and disposal of waste should comply with applicable local and/or national regulations. |
|------------------------|-----------------------------------------------------------------------------------------------------------|

### 2. Conditions of use affecting exposure (Workers - Health 1)

#### Product characteristics

|                              |                                                                               |
|------------------------------|-------------------------------------------------------------------------------|
| <b>Physical state</b>        | Solid, low dustiness , or: Liquid                                             |
| <b>Concentration details</b> | Covers concentrations up to 15 %. Concentration of substance in product: 0.5% |

#### Frequency and duration of use

Covers daily exposure up to 12hours

## Non-proteolytic enzyme: Formulation or re-packing

### Other given operational conditions affecting workers exposure

|                  |                                                                                             |
|------------------|---------------------------------------------------------------------------------------------|
| Setting          | Indoor.                                                                                     |
| Temperature      | Assumes activities are at ambient temperature (unless stated differently).                  |
| Ventilation rate | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). |

### Technical conditions and measures at process level (source) to prevent release

|                               |                                                                                                                                                                                                                |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technical protective measures | High efficiency particulate air filter (HEPA filter) Provide extract ventilation to points where emissions occur.<br>PROC15 Use as laboratory reagent. Handle in a fume cupboard or under extract ventilation. |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Organisational measures to prevent/limit releases, dispersion and exposure

|                         |                                                                                                                                                                                                                            |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Organisational measures | Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Risk management measures

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Wear suitable coveralls to prevent exposure to the skin. Use suitable eye protection. In case of insufficient ventilation, wear suitable respiratory equipment. with filter for particulates: P3.

|                   |                  |
|-------------------|------------------|
| Additional advice | Avoid splashing. |
|-------------------|------------------|

## 2. Conditions of use affecting exposure (Non-industrial - Health 1)

### Product characteristics

|                |                                   |
|----------------|-----------------------------------|
| Physical state | Solid, low dustiness , or: Liquid |
|----------------|-----------------------------------|

## 3. Exposure estimation (Environment 1)

|                                |                                                                                                                                                                                         |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Environmental release category | ERC2 Formulation into mixture                                                                                                                                                           |
| Assessment method              | Used ECETOC TRA model.                                                                                                                                                                  |
| Environmental release          | Water: 20 kg/day<br>Air: 0 kg/day<br>Soil: 0 kg/day                                                                                                                                     |
| Environmental exposure         | Fresh water: Exposure 0.00026 mg/l, PNEC 0.0052 mg/l, RCR 0.05<br>Marine water: Exposure 0.000026 mg/l, PNEC 0.00052 mg/l, RCR 0.05<br>STP: Exposure 0.001 mg/l, PNEC 65 mg/l, RCR 0.01 |

## 3. Exposure estimation (Health 1)

|                   |                        |
|-------------------|------------------------|
| Assessment method | Used ECETOC TRA model. |
|-------------------|------------------------|

## Non-proteolytic enzyme: Formulation or re-packing

### Exposure

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC5 Mixing or blending in batch processes

Worker - inhalation, long-term - local: Exposure 20 ng/m<sup>3</sup>, DNEL 60 ng/m<sup>3</sup>, RCR 0.33

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

Worker - inhalation, long-term - local: Exposure 10 ng/m<sup>3</sup>, DNEL 60 ng/m<sup>3</sup>, RCR 0.17

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

PROC15 Use as laboratory reagent.

Worker - inhalation, long-term - local: Exposure 6 ng/m<sup>3</sup>, DNEL 60 ng/m<sup>3</sup>, RCR 0.1

PROC14 Tableting, compression, extrusion, pelletisation, granulation

Worker - inhalation, long-term - local: Exposure 30 ng/m<sup>3</sup>, DNEL 60 ng/m<sup>3</sup>, RCR 0.5

Worker - dermal Qualitative approach used to conclude safe use.

#### 4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.



**Exposure scenario**  
**Non-proteolytic enzyme: Industrial processing aid (including Cleaning in Place)**

#### Identification

|                                  |                                                                                                                                                                     |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product name</b>              | Cellulase                                                                                                                                                           |
| <b>REACH registration number</b> | 01-2119949289-21-XXXX                                                                                                                                               |
| <b>CAS number</b>                | 9012-54-8                                                                                                                                                           |
| <b>EC number</b>                 | 232-734-4                                                                                                                                                           |
| <b>EU index number</b>           | 647-002-00-3                                                                                                                                                        |
| <b>Supplier</b>                  | Univar Solutions UK Ltd<br>Aquarius House<br>6 Mid Point Business Park<br>Bradford<br>BD3 7AY<br>+44 1274 267300<br>+44 1274 267306<br>SDS.EMEA@univarsolutions.com |

#### 1. Title of exposure scenario

|                      |                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Main title</b>    | Non-proteolytic enzyme: Industrial processing aid (including Cleaning in Place)                                                                                                                                                                                                                                                                                  |
| <b>Main sector</b>   | SU3 Industrial uses                                                                                                                                                                                                                                                                                                                                              |
| <b>Sector of use</b> | SU2b Offshore industries<br>SU5 Manufacture of textiles, leather, fur<br>SU6b Manufacture of pulp, paper and paper products<br>SU8 Manufacture of bulk, large-scale chemicals (including petroleum products)<br>SU9 Manufacture of fine chemicals<br>SU23 Electricity, steam, gas, water supply and sewage treatment<br>SU24 Scientific research and development |

#### Environment

|                                       |                                                                                                |
|---------------------------------------|------------------------------------------------------------------------------------------------|
| <b>Environmental release category</b> | ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article) |
|---------------------------------------|------------------------------------------------------------------------------------------------|

#### Worker



## Non-proteolytic enzyme: Industrial processing aid (including Cleaning in Place)

|                         |                                                                                                                                                                            |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Process category</b> | PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions                                 |
|                         | PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions                 |
|                         | PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition |
|                         | PROC4 Chemical production where opportunity for exposure arises                                                                                                            |
|                         | PROC5 Mixing or blending in batch processes                                                                                                                                |
|                         | PROC7 Industrial spraying                                                                                                                                                  |
|                         | PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities                                                                             |
|                         | PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities                                                                                 |
|                         | PROC13 Treatment of articles by dipping and pouring.                                                                                                                       |
|                         | PROC15 Use as laboratory reagent.                                                                                                                                          |

### 2. Conditions of use affecting exposure (Industrial - Environment 1)

#### Product characteristics

|                              |                                   |
|------------------------------|-----------------------------------|
| <b>Physical state</b>        | Solid, low dustiness , or: Liquid |
| <b>Concentration details</b> | Covers concentrations up to 15 %. |

#### Amounts used

Daily amount per site: 0.5 tonnes  
Annual amount per site: 10 tonnes

#### Frequency and duration of use

Emission days: 365 days/year  
Continuous release.

#### Environmental factors not influenced by risk management measures

|                 |                                                         |
|-----------------|---------------------------------------------------------|
| <b>Dilution</b> | Receiving surface water flow: 18000 m <sup>3</sup> /day |
|-----------------|---------------------------------------------------------|

#### Risk management measures

|                    |                                                                                                              |
|--------------------|--------------------------------------------------------------------------------------------------------------|
| <b>STP type</b>    | Municipal STP.                                                                                               |
| <b>STP details</b> | Assumed domestic sewage treatment plant flow: 2000 m <sup>3</sup> /day<br>Removal efficiency (total): 99.99% |

#### Conditions and measures related to external treatment of waste for disposal

|                        |                                                                                                           |
|------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>Waste treatment</b> | External treatment and disposal of waste should comply with applicable local and/or national regulations. |
|------------------------|-----------------------------------------------------------------------------------------------------------|

### 2. Conditions of use affecting exposure (Workers - Health 1)

#### Product characteristics

|                              |                                                                                                                                                                      |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Physical state</b>        | Solid, low dustiness , or: Liquid                                                                                                                                    |
| <b>Concentration details</b> | Covers concentrations up to 15 %.<br>Concentration of substance in product: 0.5%<br>PROC7 Industrial spraying Maximum concentration after dilution for use: 0.0065 % |

#### Frequency and duration of use

Covers daily exposure up to 12hours

#### Other given operational conditions affecting workers exposure

|                |         |
|----------------|---------|
| <b>Setting</b> | Indoor. |
|----------------|---------|

## Non-proteolytic enzyme: Industrial processing aid (including Cleaning in Place)

|                                                                                              |                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Temperature</b>                                                                           | Assumes activities are at ambient temperature (unless stated differently).                                                                                                                                     |
| <b>Ventilation rate</b>                                                                      | Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).                                                                                                                    |
| <b><u>Technical conditions and measures at process level (source) to prevent release</u></b> |                                                                                                                                                                                                                |
| <b>Technical protective measures</b>                                                         | High efficiency particulate air filter (HEPA filter) Provide extract ventilation to points where emissions occur.<br>PROC15 Use as laboratory reagent. Handle in a fume cupboard or under extract ventilation. |

### **Organisational measures to prevent/limit releases, dispersion and exposure**

|                                |                                                                                                                                                                                                                            |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Organisational measures</b> | Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### **Risk management measures**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Wear suitable coveralls to prevent exposure to the skin. Use suitable eye protection. In case of insufficient ventilation, wear suitable respiratory equipment. with filter for particulates: P3.

|                          |                  |
|--------------------------|------------------|
| <b>Additional advice</b> | Avoid splashing. |
|--------------------------|------------------|

## 2. Conditions of use affecting exposure (Non-industrial - Health 1)

### **Product characteristics**

|                       |                                   |
|-----------------------|-----------------------------------|
| <b>Physical state</b> | Solid, low dustiness , or: Liquid |
|-----------------------|-----------------------------------|

## 3. Exposure estimation (Environment 1)

|                               |                                                                                                                                                                                         |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Assessment method</b>      | Used ECETOC TRA model.                                                                                                                                                                  |
| <b>Environmental release</b>  | Water: 250 kg/day<br>Air: 0 kg/day<br>Soil: 0 kg/day                                                                                                                                    |
| <b>Environmental exposure</b> | Fresh water: Exposure 0.00026 mg/l, PNEC 0.0052 mg/l, RCR 0.05<br>Marine water: Exposure 0.000026 mg/l, PNEC 0.00052 mg/l, RCR 0.05<br>STP: Exposure 0.001 mg/l, PNEC 65 mg/l, RCR 0.01 |

## 3. Exposure estimation (Health 1)

|                          |                        |
|--------------------------|------------------------|
| <b>Assessment method</b> | Used ECETOC TRA model. |
|--------------------------|------------------------|

## Non-proteolytic enzyme: Industrial processing aid (including Cleaning in Place)

### Exposure

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC5 Mixing or blending in batch processes

PROC13 Treatment of articles by dipping and pouring.

Worker - inhalation, long-term - local: Exposure 20 ng/m<sup>3</sup>, DNEL 60 ng/m<sup>3</sup>, RCR 0.33

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

Worker - inhalation, long-term - local: Exposure 10 ng/m<sup>3</sup>, DNEL 60 ng/m<sup>3</sup>, RCR 0.17

PROC15 Use as laboratory reagent.

Worker - inhalation, long-term - local: Exposure 6 ng/m<sup>3</sup>, DNEL 60 ng/m<sup>3</sup>, RCR 0.1

PROC7 Industrial spraying

Worker - inhalation, long-term - local: Exposure 40 ng/m<sup>3</sup>, DNEL 60 ng/m<sup>3</sup>, RCR 0.5

Worker - dermal Qualitative approach used to conclude safe use.

### 4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.