



SAFETY DATA SHEET FUNGAMYL..

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

1.1. Product identifier

Product name	FUNGAMYL..
Product number	12540
Synonyms; trade names	FUNGAMYL 2500 SG, FUNGAMYL ULTRA BG, FUNGAMYL PRIME

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

Identified uses	Enzyme Biocatalyst Food industry
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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
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1.4. Emergency telephone number

Emergency telephone	SGS - +32 (0)3 575 55 55 (24h)
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Sds No.	12540
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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
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Hazard statements	H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
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Precautionary statements	P261 Avoid breathing vapour/ spray. P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P501 Dispose of contents/ container in accordance with national regulations.
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Contains AMYLASE, alpha

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

AMYLASE, alpha		30-60%
CAS number: 9000-90-2	EC number: 232-565-6	REACH registration number: 01-2119938627-26-XXXX
Classification 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

Inhalation	Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Get medical attention if any discomfort continues.
Ingestion	Rinse mouth thoroughly with water. Get medical attention if any discomfort continues.
Skin contact	Remove contaminated clothing immediately and wash skin with soap and 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. Rinse with water. Get medical attention if any discomfort continues.

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

Inhalation	May cause an asthma-like shortness of breath. May cause sensitisation or allergic reactions in sensitive individuals.
Ingestion	May cause discomfort if swallowed.
Skin contact	Prolonged skin contact may cause redness and irritation.
Eye contact	May cause temporary eye irritation.

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

Notes for the doctor No specific recommendations. If in doubt, get medical attention promptly.

SECTION 5: Firefighting measures

5.1. Extinguishing media

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

5.2. Special hazards arising from the substance or mixture

Specific hazards	Oxides of the following substances: Carbon.
Hazardous combustion products	Oxides of carbon. Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours.

5.3. Advice for firefighters

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Protective actions during firefighting Contain and collect extinguishing water.

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. Avoid contact with skin and eyes. Avoid inhalation of dust. Provide adequate ventilation.

6.2. Environmental precautions

Environmental precautions 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. If not possible, collect spillage with shovel, broom or the like. Flush contaminated area with plenty of water. Collect and place in suitable waste disposal containers and seal securely. For waste disposal, see Section 13.

6.4. Reference to other sections

Reference to other sections Wear protective clothing as described in Section 8 of this safety data sheet.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Avoid spilling. Avoid inhalation of dust and contact with skin and eyes. Provide adequate ventilation.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Store in tightly-closed, original container in a dry, cool and well-ventilated place. Store in closed original container at temperatures between 5°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

Ingredient comments No exposure limits known for ingredient(s).

AMYLASE, alpha (CAS: 9000-90-2)

DMEL	Workers - Inhalation; Long term local effects: 60 ng/m ³ Consumer, Professional - Inhalation; Long term local effects: 15 ng/m ³
PNEC	- Fresh water; 5.2 µg/l - marine water; 0.52 µg/l - STP; 65000 µg/l

8.2. Exposure controls

Protective equipment



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Appropriate engineering controls	Provide adequate ventilation. Avoid inhalation of dust. Observe any occupational exposure limits for the product or ingredients.
Eye/face protection	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	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 rubber apron. Wear rubber footwear.
Hygiene measures	No specific hygiene procedures recommended but good personal hygiene practices should always be observed when working with chemical products.
Respiratory protection	If ventilation is inadequate, suitable respiratory protection must be worn. EN 136/140/141/145/143/149

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Granules.
Colour	White/off-white. to Light brown.
Odour	Characteristic.
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	No information available.
Bulk density	No information available.
Solubility(ies)	Soluble in water.
Partition coefficient	No information available.
Auto-ignition temperature	No information available.
Decomposition Temperature	No information available.
Viscosity	No information available.

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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 determined.

Refractive index No information available.

Particle size No information available.

Molecular weight No information available.

Volatility No information available.

Saturation concentration No information available.

Critical temperature No information available.

Volatile organic compound No information available.

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity There are no known reactivity hazards associated with this product.

10.2. Chemical stability

Stability Stable at normal ambient temperatures and when used as recommended.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions Not determined.

10.4. Conditions to avoid

Conditions to avoid Avoid excessive heat for prolonged periods of time.

10.5. Incompatible materials

Materials to avoid No specific material or group of materials is likely to react with the product to produce a hazardous situation.

10.6. Hazardous decomposition products

Hazardous decomposition products Oxides of the following substances: Carbon.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Skin corrosion/irritation

Animal data No information available.

Serious eye damage/irritation

Serious eye damage/irritation No information available.

Respiratory sensitisation

Respiratory sensitisation May cause sensitisation by inhalation.

Skin sensitisation

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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 sensitisation by inhalation. Dust is severely irritating to the upper respiratory system.

Ingestion May cause discomfort if swallowed.

Skin contact Powder may irritate skin.

Eye contact Particles in the eyes may cause irritation and smarting.

Acute and chronic health hazards May cause respiratory allergy.

Toxicological information on ingredients.

AMYLASE, alpha

Acute toxicity - oral

Notes (oral LD₅₀) LD₅₀ >2000 mg/kg, Oral, OECD 401

Skin corrosion/irritation

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 Based on available data the classification criteria are not met.

SECTION 12: Ecological information

Ecotoxicity The product components are not classified as environmentally hazardous. However, large or frequent spills may have hazardous effects on the environment.

12.1. Toxicity

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Toxicity Not considered toxic to fish.

Acute aquatic toxicity

Acute toxicity - fish LC₅₀, 96 hours: >100 mg/l, Fish

Acute toxicity - aquatic invertebrates EC₅₀, 48 hours: >100 mg/l, Daphnia magna

Acute toxicity - aquatic plants IC₅₀, 72 hours: >100 mg/l, Algae

Ecological information on ingredients.

AMYLASE, alpha

Acute aquatic toxicity

Acute toxicity - fish LC₅₀, 96 hours: 58.3 - 326.7 mg/l, Fish
OECD 203

Acute toxicity - aquatic invertebrates EC₅₀, 48 hours: 31.7 - 457 mg/l, Daphnia magna
OECD 202

Acute toxicity - aquatic plants EC₅₀, 72 hours: >= 5.2 mg/l, Algae
OECD 201

12.2. Persistence and degradability

Persistence and degradability The product is biodegradable.

Ecological information on ingredients.

AMYLASE, alpha

Persistence and degradability The product is readily biodegradable. OECD 301

12.3. Bioaccumulative potential

Bioaccumulative potential The product does not contain any substances expected to be bioaccumulating.

Partition coefficient No information available.

Ecological information on ingredients.

AMYLASE, alpha

Bioaccumulative potential The product is not bioaccumulating.

Partition coefficient log Pow: < 0

12.4. Mobility in soil

Mobility Soluble in water.

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 Not determined.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

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General information	Waste is classified as hazardous waste. Do not puncture or incinerate, even when empty.
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).
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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.

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information

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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.
 LC₅₀: Lethal Concentration to 50 % of a test population.
 LD₅₀: 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.
 EC₅₀: 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 comments

NOTE: Lines within the margin indicate significant changes from the previous revision.

Revision date

13/10/2019

Version number

1.003

Supersedes date

10/02/2017

SDS number

12540

FUNGAMYL..

SDS status	Approved.
Hazard statements in full	H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Signature	Jitendra Panchal



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

Identification

Product name	Alpha-amylase
REACH registration number	01-2119938627-26-XXXX
CAS number	9000-90-2
EC number	232-565-6
EU index number	647-015-00-4
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. 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. PC35 Washing and cleaning products PC37 Water treatment chemicals. 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
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Worker

Non-proteolytic enzyme: Formulation or re-packing

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

Control of environmental exposure

Environmental release category	ERC2 Formulation into mixture
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Product characteristics

Physical state	Solid, low dustiness , or: Liquid
Concentration details	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

Dilution	Receiving surface water flow: 18000 m ³ /day
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Risk management measures

STP type	Municipal STP.
STP details	Assumed domestic sewage treatment plant flow: 2000 m ³ /day Removal efficiency (total): 99.99%

Conditions and measures related to external treatment of waste for disposal

Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
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2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Solid, low dustiness , or: Liquid
Concentration details	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. PROC15 Use as laboratory reagent. Handle in a fume cupboard or under extract ventilation.
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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.
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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.
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2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state	Solid, low dustiness , or: Liquid
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3. Exposure estimation (Environment 1)

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

3. Exposure estimation (Health 1)

Assessment method	Used ECETOC TRA model.
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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/m³, DNEL 60 ng/m³, 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/m³, DNEL 60 ng/m³, 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/m³, DNEL 60 ng/m³, RCR 0.1

PROC14 Tableting, compression, extrusion, pelletisation, granulation

Worker - inhalation, long-term - local: Exposure 30 ng/m³, DNEL 60 ng/m³, 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

Product name	Alpha-amylase
REACH registration number	01-2119938627-26-XXXX
CAS number	9000-90-2
EC number	232-565-6
EU index number	647-015-00-4
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. Title of exposure scenario

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

Environment

Environmental release category	ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
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Worker

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

Process category	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

Physical state	Solid, low dustiness , or: Liquid
Concentration details	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

Dilution	Receiving surface water flow: 18000 m³/day
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Risk management measures

STP type	Municipal STP.
STP details	Assumed domestic sewage treatment plant flow: 2000 m³/day Removal efficiency (total): 99.99%

Conditions and measures related to external treatment of waste for disposal

Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
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2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Solid, low dustiness , or: Liquid
Concentration details	Covers concentrations up to 15 %. Concentration of substance in product: 0.5% 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

Setting	Indoor.
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Non-proteolytic enzyme: Industrial processing aid (including Cleaning in Place)

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).
<u>Technical conditions and measures at process level (source) to prevent release</u>	
Technical protective measures	High efficiency particulate air filter (HEPA filter) Provide extract ventilation to points where emissions occur. 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.
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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.
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2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state	Solid, low dustiness , or: Liquid
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3. Exposure estimation (Environment 1)

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

3. Exposure estimation (Health 1)

Assessment method	Used ECETOC TRA model.
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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/m³, DNEL 60 ng/m³, 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/m³, DNEL 60 ng/m³, RCR 0.17

PROC15 Use as laboratory reagent.

Worker - inhalation, long-term - local: Exposure 6 ng/m³, DNEL 60 ng/m³, RCR 0.1

PROC7 Industrial spraying

Worker - inhalation, long-term - local: Exposure 40 ng/m³, DNEL 60 ng/m³, 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: Professional use of laundry products

Identification

Product name	Alpha-amylase
REACH registration number	01-2119938627-26-XXXX
CAS number	9000-90-2
EC number	232-565-6
EU index number	647-015-00-4
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. Title of exposure scenario

Main title	Non-proteolytic enzyme: Professional use of laundry products
Product category	PC35 Washing and cleaning products
Main sector	SU22 Professional uses
<u>Environment</u>	
Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
<u>Worker</u>	
Process category	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 PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

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

Product characteristics

Physical state	Solid, low dustiness , or: Liquid
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Amounts used

Daily amount for wide dispersive uses: 0.0000055 tonnes

Frequency and duration of use

Non-proteolytic enzyme: Professional use of laundry products

Emission days: 365 days/year
Continuous release.

Environmental factors not influenced by risk management measures

Dilution Receiving surface water flow: 18000 m³/day

Risk management measures

STP type Municipal STP.

STP details Assumed domestic sewage treatment plant flow: 2000 m³/day
Removal efficiency (total): 99.99%

Conditions and measures related to external treatment of waste for disposal

Waste treatment 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

Physical state Solid, low dustiness , or: Liquid

Concentration details Concentration of substance in product: 0.5%

Frequency and duration of use

Covers daily exposure up to 12hours
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
Application duration: 0.1 hours/day

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

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

Technical protective measures No specific risk management measure identified beyond those operational conditions stated.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented.

Risk management measures

Additional advice Avoid contact with skin and eyes. Wash off any skin contamination immediately.

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

Product characteristics

Physical state Solid, low dustiness , or: Liquid

3. Exposure estimation (Environment 1)

Assessment method Used ECETOC TRA model.

Environmental release Water: 0.00275 kg/day
Air: 0 kg/day
Soil: 0 kg/day

Non-proteolytic enzyme: Professional use of laundry products

Environmental exposure	Fresh water: Exposure 0.00026 mg/l, PNEC 0.0052 mg/l, RCR 0.05
	Marine water: Exposure 0.000026 mg/l, PNEC 0.00052 mg/l, RCR 0.05
	STP: Exposure 0.00001 mg/l, PNEC 65 mg/l, RCR 0.01

3. Exposure estimation (Health 1)

Assessment method	Used ECETOC TRA model.
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 Worker - inhalation, long-term - local: Exposure 1 ng/m³, DNEL 15 ng/m³, RCR 0.07 PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Worker - inhalation, long-term - local: Exposure 3 ng/m³, DNEL 15 ng/m³, RCR 0.2 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: Professional use of dishwash products; automated

Identification

Product name	Alpha-amylase
REACH registration number	01-2119938627-26-XXXX
CAS number	9000-90-2
EC number	232-565-6
EU index number	647-015-00-4
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. Title of exposure scenario

Main title	Non-proteolytic enzyme: Professional use of dishwash products; automated
Product category	PC35 Washing and cleaning products
Main sector	SU22 Professional uses
<u>Environment</u>	
Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
<u>Worker</u>	
Process category	PROC4 Chemical production where opportunity for exposure arises PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

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

Product characteristics

Physical state	Solid, low dustiness , or: Liquid
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Amounts used

Daily amount for wide dispersive uses: 0.0000055 tonnes

Frequency and duration of use

Emission days: 365 days/year
Continuous release.

Environmental factors not influenced by risk management measures

Non-proteolytic enzyme: Professional use of dishwash products; automated

Dilution Receiving surface water flow: 18000 m³/day

Risk management measures

STP type Municipal STP.

STP details Assumed domestic sewage treatment plant flow: 2000 m³/day
Removal efficiency (total): 99.99%

Conditions and measures related to external treatment of waste for disposal

Waste treatment 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

Physical state Solid, low dustiness , or: Liquid

Concentration details Concentration of substance in product: 0.5%

Frequency and duration of use

Covers daily exposure up to 12hours
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
Application duration: 0.1 hours/day

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

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

Technical protective measures Provide extract ventilation to points where emissions occur.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented.

Risk management measures

Additional advice Avoid contact with skin and eyes. Wash off any skin contamination immediately.

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

Product characteristics

Physical state Solid, low dustiness , or: Liquid

3. Exposure estimation (Environment 1)

Assessment method Used ECETOC TRA model.

Environmental release Water: 0.00275 kg/day
Air: 0 kg/day
Soil: 0 kg/day

Environmental exposure Fresh water: Exposure 0.00026 mg/l, PNEC 0.0052 mg/l, RCR 0.05
Marine water: Exposure 0.000026 mg/l, PNEC 0.00052 mg/l, RCR 0.05
STP: Exposure 0.000001 mg/l, PNEC 65 mg/l, RCR 0.01

3. Exposure estimation (Health 1)

Non-proteolytic enzyme: Professional use of dishwash products; automated

Assessment method Used ECETOC TRA model.

Exposure PROC4 Chemical production where opportunity for exposure arises
Worker - inhalation, long-term - local: Exposure 4 ng/m³, DNEL 15 ng/m³, RCR 0.27
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
Worker - inhalation, long-term - local: Exposure 4 ng/m³, DNEL 15 ng/m³, RCR 0.27
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: Professional use of dishwash products involving hand contact

Identification

Product name	Alpha-amylase
REACH registration number	01-2119938627-26-XXXX
CAS number	9000-90-2
EC number	232-565-6
EU index number	647-015-00-4
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. Title of exposure scenario

Main title	Non-proteolytic enzyme: Professional use of dishwash products involving hand contact
Product category	PC35 Washing and cleaning products
Main sector	SU22 Professional uses
<u>Environment</u>	
Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
<u>Worker</u>	
Process category	PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring.

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

Product characteristics

Physical state	Solid, low dustiness , or: Liquid
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Amounts used

Daily amount per site: 0.0000055 tonnes

Frequency and duration of use

Emission days: 365 days/year
Continuous release.

Non-proteolytic enzyme: Professional use of dishwash products involving hand contact

Environmental factors not influenced by risk management measures

Dilution Receiving surface water flow: 18000 m³/day

Risk management measures

STP type Municipal STP.

STP details Assumed domestic sewage treatment plant flow: 2000 m³/day
Removal efficiency (total): 99.99%

Conditions and measures related to external treatment of waste for disposal

Waste treatment 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

Physical state Liquid

Concentration details Concentration of substance in product: 0.015%

Frequency and duration of use

Covers daily exposure up to 12hours
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
Application duration: 0.1 hours/day
PROC10 Roller application or brushing
PROC13 Treatment of articles by dipping and pouring.
Application duration: 1 hour

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

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

Technical protective measures No specific risk management measure identified beyond those operational conditions stated.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented.

Risk management measures

Additional advice Avoid contact with skin and eyes. Wash off any skin contamination immediately.

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

Product characteristics

Physical state Solid, low dustiness , or: Liquid

3. Exposure estimation (Environment 1)

Assessment method Used ECETOC TRA model.

Environmental release Water: 0.00275 kg/day
Air: 0 kg/day
Soil: 0 kg/day

Non-proteolytic enzyme: Professional use of dishwash products involving hand contact

Environmental exposure	Fresh water: Exposure 0.00026 mg/l, PNEC 0.0052 mg/l, RCR 0.05
	Marine water: Exposure 0.000026 mg/l, PNEC 0.00052 mg/l, RCR 0.05
	STP: Exposure 0.000001 mg/l, PNEC 65 mg/l, RCR 0.01

3. Exposure estimation (Health 1)

Assessment method	Used ECETOC TRA model.
Exposure	PROC10 Roller application or brushing
	PROC13 Treatment of articles by dipping and pouring.
	Worker - inhalation, long-term - local: Exposure 3 ng/m ³ , DNEL 15 ng/m ³ , RCR 0.2
	PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
	Worker - inhalation, long-term - local: Exposure 3 ng/m ³ , DNEL 15 ng/m ³ , RCR 0.2
	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: Professional use of medical devices; Equipment cleaning and maintenance

Identification

Product name	Alpha-amylase
REACH registration number	01-2119938627-26-XXXX
CAS number	9000-90-2
EC number	232-565-6
EU index number	647-015-00-4
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. Title of exposure scenario

Main title	Non-proteolytic enzyme: Professional use of medical devices; Equipment cleaning and maintenance
Product category	PC35 Washing and cleaning products
Main sector	SU22 Professional uses
Sector of use	SU20 Health services

Environment

Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
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Worker

Process category	PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid
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Amounts used

Daily amount per site: 0.0000055 tonnes

Non-proteolytic enzyme: Professional use of medical devices; Equipment cleaning and maintenance

Frequency and duration of use

Emission days: 365 days/year
Continuous release.

Environmental factors not influenced by risk management measures

Dilution Receiving surface water flow: 18000 m³/day

Risk management measures

STP type Municipal STP.

STP details Assumed domestic sewage treatment plant flow: 2000 m³/day
Removal efficiency (total): 99.99%

Conditions and measures related to external treatment of waste for disposal

Waste treatment 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

Physical state Solid, low dustiness , or: Liquid

Concentration details Concentration of substance in product: 0.5%

Frequency and duration of use

Covers daily exposure up to 12hours
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
Application duration: 0.1 hours
PROC10 Roller application or brushing
PROC13 Treatment of articles by dipping and pouring.
Application duration: 1 hour

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

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

Technical protective measures Avoid the formation of mists.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Pre-employment screening and appropriate health surveillance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Risk management measures

Additional advice Avoid contact with skin and eyes. Wash off any skin contamination immediately.

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

Product characteristics

Physical state Solid, low dustiness , or: Liquid

3. Exposure estimation (Environment 1)

Non-proteolytic enzyme: Professional use of medical devices; Equipment cleaning and maintenance

Assessment method	Used ECETOC TRA model.
Environmental release	Water: 0.00275 kg/day Air: 0 kg/day Soil: 0 kg/day
Environmental exposure	Fresh water: Exposure 0.00026 mg/l, PNEC 0.0052 mg/l, RCR 0.05 Marine water: Exposure 0.000026 mg/l, PNEC 0.00052 mg/l, RCR 0.05 STP: Exposure 0.000001 mg/l, PNEC 65 mg/l, RCR 0.01

3. Exposure estimation (Health 1)

Assessment method	Used ECETOC TRA model.
Exposure	PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Worker - inhalation, long-term - local: Exposure 3 ng/m ³ , DNEL 15 ng/m ³ , RCR 0.2 PROC10 Roller application or brushing Worker - inhalation, long-term - local: Exposure 8 ng/m ³ , DNEL 15 ng/m ³ , RCR 0.54 PROC13 Treatment of articles by dipping and pouring. Worker - inhalation, long-term - local: Exposure 9 ng/m ³ , DNEL 15 ng/m ³ , RCR 0.6 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: Professional septic tank maintenance, drain cleaning and grease trap maintenance

Identification

Product name	Alpha-amylase
REACH registration number	01-2119938627-26-XXXX
CAS number	9000-90-2
EC number	232-565-6
EU index number	647-015-00-4
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. Title of exposure scenario

Main title	Non-proteolytic enzyme: Professional septic tank maintenance, drain cleaning and grease trap maintenance
Product category	PC37 Water treatment chemicals.
Main sector	SU22 Professional uses
<u>Environment</u>	
Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
<u>Worker</u>	
Process category	PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

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

Product characteristics

Physical state	Solid, low dustiness , or: Liquid
Concentration details	Concentration of substance in product: 0.2%

Amounts used

Daily amount per site: 0.0000055 tonnes

Non-proteolytic enzyme: Professional septic tank maintenance, drain cleaning and grease trap maintenance

Frequency and duration of use

Emission days: 365 days/year

Environmental factors not influenced by risk management measures

Dilution Receiving surface water flow: 18000 m³/day

Risk management measures

STP type Municipal STP.

STP details Assumed domestic sewage treatment plant flow: 2000 m³/day
Removal efficiency (total): 99.99%

Conditions and measures related to external treatment of waste for disposal

Waste treatment 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

Physical state Solid, low dustiness , or: Liquid

Concentration details Concentration of substance in product: 0.5%

Frequency and duration of use

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
Application duration: 1 hour
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
Application duration: 0.1 hours

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

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

Technical protective measures Handle product within a closed system. With occasional controlled exposure

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

Additional advice Avoid contact with skin and eyes. Wash off any skin contamination immediately.

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

Product characteristics

Physical state Solid, low dustiness , or: Liquid

3. Exposure estimation (Environment 1)

Assessment method Used ECETOC TRA model.

Non-proteolytic enzyme: Professional septic tank maintenance, drain cleaning and grease trap maintenance

Environmental release	Water: 0.00275 kg/day Air: 0 kg/day Soil: 0 kg/day
Environmental exposure	Fresh water: Exposure 0.00026 mg/l, PNEC 0.0052 mg/l, RCR 0.05 Marine water: Exposure 0.000026 mg/l, PNEC 0.00052 mg/l, RCR 0.05 STP: Exposure 0.005 mg/l, PNEC 65 mg/l, RCR 0.01

3. Exposure estimation (Health 1)

Assessment method	Used ECETOC TRA model.
Exposure	PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions Worker - inhalation, long-term - local: Exposure 2 ng/m ³ , DNEL 15 ng/m ³ , RCR 0.14 PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Worker - inhalation, long-term - local: Exposure 2 ng/m ³ , DNEL 15 ng/m ³ , RCR 0.14 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: Professional use of pouch products for treatment of water and manure

Identification

Product name	Alpha-amylase
REACH registration number	01-2119938627-26-XXXX
CAS number	9000-90-2
EC number	232-565-6
EU index number	647-015-00-4
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. Title of exposure scenario

Main title	Non-proteolytic enzyme: Professional use of pouch products for treatment of water and manure
Product category	PC37 Water treatment chemicals.
Main sector	SU22 Professional uses
Sector of use	SU23 Electricity, steam, gas, water supply and sewage treatment

Environment

Environmental release category	ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
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Worker

Process category	PROC0 Other process or activity.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Solid, low dustiness , or: Liquid
Concentration details	Concentration of substance in product: 3%

Amounts used

Daily amount per site: 0.00000055 tonnes

Frequency and duration of use

Non-proteolytic enzyme: Professional use of pouch products for treatment of water and manure

Emission days: 365 days/year

Environmental factors not influenced by risk management measures

Dilution Receiving surface water flow: 18000 m³/day

Risk management measures

STP type Municipal STP.

STP details Assumed domestic sewage treatment plant flow: 2000 m³/day
Removal efficiency (total): 99.99%

Conditions and measures related to external treatment of waste for disposal

Waste treatment 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

Physical state Solid, low dustiness

Concentration details Concentration of substance in product: 3%

Frequency and duration of use

Application duration: 0.1 hours

Other given operational conditions affecting workers exposure

Setting Outdoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

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

Technical protective measures When handled correctly, undamaged units represent no danger.

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

Additional advice Avoid contact with skin and eyes. Wash off any skin contamination immediately.

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

Product characteristics

Physical state Solid, low dustiness , or: Liquid

3. Exposure estimation (Environment 1)

Assessment method Used ECETOC TRA model.

Environmental release Water: 0.000275 kg/day
Air: 0 kg/day
Release fraction to soil from wide dispersive use (regional only): 20%

Environmental exposure Fresh water: Exposure 0.00026 mg/l, PNEC 0.0052 mg/l, RCR 0.05
Marine water: Exposure 0.000026 mg/l, PNEC 0.00052 mg/l, RCR 0.05
STP: Exposure 0.000001 mg/l, PNEC 65 mg/l, RCR 0.01

Non-proteolytic enzyme: Professional use of pouch products for treatment of water and manure

3. Exposure estimation (Health 1)

Assessment method	Used ECETOC TRA model.
Exposure	Worker - inhalation, long-term - local: Exposure <0.01 ng/m ³ , DNEL 15 ng/m ³ , RCR <0.01 Dermal exposure is considered to be not relevant. 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: Consumer use of laundry products

Identification

Product name	Alpha-amylase
REACH registration number	01-2119938627-26-XXXX
CAS number	9000-90-2
EC number	232-565-6
EU index number	647-015-00-4
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. Title of exposure scenario

Main title	Non-proteolytic enzyme: Consumer use of laundry products
Product category	PC35 Washing and cleaning products
Main sector	SU21 Consumer uses
<u>Environment</u>	
Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

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

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Assumes a good basic standard of occupational hygiene is implemented.
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2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Amounts used

Daily amount for wide dispersive uses: 0.0000055 tonnes
Amount refers to local.

Risk management measures

STP type	Municipal STP.
STP details	Removal efficiency (total): 99.99%

Conditions and measures related to external treatment of waste for disposal

Non-proteolytic enzyme: Consumer use of laundry products

Waste treatment External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste

Recovery method External recovery and recycling of waste should comply with applicable local and/or national regulations.

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

Product characteristics

Physical state Solid, low dustiness , or: Liquid

Concentration details Concentration of substance in product: 0.5%

Amounts used

Laundry regular
Powder products
Amount per use: 290 g
Laundry compact
Powder products
Amount per use: 200 g
Laundry compact
Tablet.
Amount per use: 135 g
Laundry regular
Liquid
Amount per use: 230 g
Laundry compact
Liquid
Amount per use: 140 g

Frequency and duration of use

Application duration: 0.1 hours

Other given operational conditions affecting Non-industrial exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

3. Exposure estimation (Environment 1)

Assessment method Used ECETOC TRA model.

Environmental release Water: 0.00275 kg/day
Air: 0 kg/day
Soil: 0 kg/day

Environmental exposure Fresh water: Exposure 0.00026 mg/l, PNEC 0.0052 mg/l, RCR 0.05
Marine water: Exposure 0.000026 mg/l, PNEC 0.00052 mg/l, RCR 0.05
STP: Exposure 0.00001 mg/l, PNEC 65 mg/l, RCR 0.01

3. Exposure estimation (Health 1)

Assessment method Used ECETOC TRA model.

Exposure Consumer - inhalation, long-term - local and systemic: Exposure 3 ng/m³, DNEL 15 ng/m³, RCR 0.2

Non-proteolytic enzyme: Consumer use of laundry products

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: Consumer hand dishwashing

Identification

Product name	Alpha-amylase
REACH registration number	01-2119938627-26-XXXX
CAS number	9000-90-2
EC number	232-565-6
EU index number	647-015-00-4
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. Title of exposure scenario

Main title	Non-proteolytic enzyme: Consumer hand dishwashing
Product category	PC35 Washing and cleaning products
Main sector	SU21 Consumer uses
<u>Environment</u>	
Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

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

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Assumes a good basic standard of occupational hygiene is implemented.
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2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Amounts used

Daily amount for wide dispersive uses: 0.0000055 tonnes
Amount refers to local.

Risk management measures

STP type	Municipal STP.
STP details	Removal efficiency (total): 99.99%

Conditions and measures related to external treatment of waste for disposal

Non-proteolytic enzyme: Consumer hand dishwashing

Waste treatment External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste

Recovery method External recovery and recycling of waste should comply with applicable local and/or national regulations.

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

Product characteristics

Physical state Liquid

Concentration details Concentration of substance in product: 0.015%

Amounts used

Amount per use: 10 g

Frequency and duration of use

Application duration: <60 minutes

Other given operational conditions affecting Non-industrial exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

3. Exposure estimation (Environment 1)

Assessment method Used ECETOC TRA model.

Environmental release Water: 0.00275 kg/day
Air: 0 kg/day
Soil: 0 kg/day

Environmental exposure Fresh water: Exposure 0.00026 mg/l, PNEC 0.0052 mg/l, RCR 0.05
Marine water: Exposure 0.000026 mg/l, PNEC 0.00052 mg/l, RCR 0.05
STP: Exposure 0.00001 mg/l, PNEC 65 mg/l, RCR 0.01

3. Exposure estimation (Health 1)

Assessment method Used ECETOC TRA model.

Exposure Consumer - inhalation, long-term - local and systemic: Exposure 3 ng/m³, DNEL 15 ng/m³, RCR 0.2

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: Consumer use of machine dishwashing products

Identification

Product name	Alpha-amylase
REACH registration number	01-2119938627-26-XXXX
CAS number	9000-90-2
EC number	232-565-6
EU index number	647-015-00-4
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. Title of exposure scenario

Main title	Non-proteolytic enzyme: Consumer use of machine dishwashing products
Product category	PC35 Washing and cleaning products
Main sector	SU21 Consumer uses
<u>Environment</u>	
Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

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

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Assumes a good basic standard of occupational hygiene is implemented.
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2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Amounts used

Daily amount for wide dispersive uses: 0.0000055 tonnes
Amount refers to local.

Risk management measures

STP type	Municipal STP.
STP details	Removal efficiency (total): 99.99%

Conditions and measures related to external treatment of waste for disposal

Non-proteolytic enzyme: Consumer use of machine dishwashing products

Waste treatment External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste

Recovery method External recovery and recycling of waste should comply with applicable local and/or national regulations.

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

Product characteristics

Physical state Solid, low dustiness , or: Liquid

Concentration details Concentration of substance in product: 0.5%

Amounts used

Amount per use: 50 g

Frequency and duration of use

Application duration: 0.1 hours

Other given operational conditions affecting Non-industrial exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

3. Exposure estimation (Environment 1)

Assessment method Used ECETOC TRA model.

Environmental release Water: 0.00275 kg/day
Air: 0 kg/day
Soil: 0 kg/day

Environmental exposure Fresh water: Exposure 0.00026 mg/l, PNEC 0.0052 mg/l, RCR 0.05
Marine water: Exposure 0.000026 mg/l, PNEC 0.00052 mg/l, RCR 0.05
STP: Exposure 0.00001 mg/l, PNEC 65 mg/l, RCR 0.01

3. Exposure estimation (Health 1)

Assessment method Used ECETOC TRA model.

Exposure Consumer - inhalation, long-term - local and systemic: Exposure 3 ng/m³, DNEL 15 ng/m³, RCR 0.2

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: Consumer septic tank maintenance, drain cleaning and grease trap maintenance

Identification

Product name	Alpha-amylase
REACH registration number	01-2119938627-26-XXXX
CAS number	9000-90-2
EC number	232-565-6
EU index number	647-015-00-4
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. Title of exposure scenario

Main title	Non-proteolytic enzyme: Consumer septic tank maintenance, drain cleaning and grease trap maintenance
Product category	PC37 Water treatment chemicals.
Main sector	SU21 Consumer uses
<u>Environment</u>	
Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

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

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Assumes a good basic standard of occupational hygiene is implemented.
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2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Amounts used

Daily amount for wide dispersive uses: 0.0000055 tonnes
Amount refers to local.

Risk management measures

STP type	Municipal STP.
STP details	Removal efficiency (total): 99.99%

Conditions and measures related to external treatment of waste for disposal

Non-proteolytic enzyme: Consumer septic tank maintenance, drain cleaning and grease trap maintenance

Waste treatment External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste

Recovery method External recovery and recycling of waste should comply with applicable local and/or national regulations.

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

Product characteristics

Physical state Liquid

Concentration details Concentration of substance in product: 0.5%

Frequency and duration of use

Application duration: 0.1 hours

Other given operational conditions affecting Non-industrial exposure

Setting Outdoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

3. Exposure estimation (Environment 1)

Assessment method Used ECETOC TRA model.

Environmental release Water: 0.00275 kg/day
Air: 0 kg/day
Soil: 0 kg/day

Environmental exposure Fresh water: Exposure 0.00026 mg/l, PNEC 0.0052 mg/l, RCR 0.05
Marine water: Exposure 0.000026 mg/l, PNEC 0.00052 mg/l, RCR 0.05
STP: Exposure 0.00001 mg/l, PNEC 65 mg/l, RCR 0.01

3. Exposure estimation (Health 1)

Assessment method Used ECETOC TRA model.

Exposure Consumer - inhalation, long-term - local and systemic: Exposure 1.5 ng/m³, DNEL 15 ng/m³, RCR 0.1

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.