




# SAFETY DATA SHEET

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II, as amended by UK REACH Regulation SI 2019/758

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

### 1.1 Product identifier

Product name	<b>ActiCHO™ P with Poloxamer-188, without Insulin, without L-Glutamine</b>	
Catalogue Number	SH31025.05	 9 0 S H 3 1 0 2 5 . 0 5
Product description	Not available.	
Product type	Powder.	
Other means of identification	Not available.	

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

For Further Manufacturing or Research Use. Not for Diagnostic or Therapeutic Use.

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

#### Supplier

Cytiva Austria  
Kremsplstr. 5  
4061 Pasching  
AUSTRIA  
Phone: +43 7229 64865

HyClone Laboratories  
925 West 1800 South  
Logan, Utah 84321  
Phone: (435) 792-8000

Cytiva Singapore  
1 Maritime Square #13-01  
Harbourfront Centre  
Singapore 099253

#### **Hours of operation**

Mo. - Fr.  
08.30 - 17.00

Person who prepared the SDS: sds\_author@cytiva.com

#### **United Kingdom (UK)**

Cytiva Austria  
Kremsplstr. 5  
4061 Pasching  
AUSTRIA  
Phone: +43 7229 64865

### **1.4 Emergency telephone number**

Call INFOTRAC 24 Hour number:  
001-352-323-3500 (Call Collect).

### National advisory body/Poison Centre

#### **United Kingdom (UK)**

National Poison Information Centre  
Medical Toxicology Unit  
Avalonley Road  
London SE14 5ER  
Tel.: +44 (171)635 91 91

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

**Product definition** Mixture

#### Classification according to UK CLP/GHS

Eye Irrit. 2, H319

☒ The product is not classified as hazardous according to UK CLP Regulation SI 2019/720 as amended.

**Ingredients of unknown toxicity** 18.3 percent of the mixture consists of component(s) of unknown acute oral toxicity  
81 percent of the mixture consists of component(s) of unknown acute dermal toxicity  
92 percent of the mixture consists of component(s) of unknown acute inhalation toxicity

**Ingredients of unknown ecotoxicity** Contains 47.7% of components with unknown hazards to the aquatic environment

See Section 16 for the full text of the H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

### 2.2 Label elements

#### Hazard pictograms



**Signal word** ☒ No signal word.

**Hazard statements** ☒ No known significant effects or critical hazards.

#### Precautionary statements

**General** Not applicable.

**Prevention** ☒ Not applicable.

**Response** ☒ Not applicable.

**Storage** Not applicable.

**Disposal** Not applicable.

**Supplemental label elements** ☒ Safety data sheet available on request.

**Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles** Not applicable.

#### Special packaging requirements

**Containers to be fitted with child-resistant fastenings** Not applicable.

**Tactile warning of danger** Not applicable.

### 2.3 Other hazards

**Product meets the criteria for PBT or vPvB according to Regulation (EC) No. 1907/2006, Annex XIII**

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

**Other hazards which do not result in classification** May form explosible dust-air mixture if dispersed.

## SECTION 3: Composition/information on ingredients

### 3.2 Mixtures

Mixture

Product/ingredient name	Identifiers	%	Classification	Type
L-serine	EC: 200-274-3 CAS: 56-45-1	<3.4	Aquatic Chronic 3, H412	[1]
L-valine	EC: 200-773-6 CAS: 72-18-4	<2.35	Acute Tox. 4, H302	[1]
L-tryptophan	EC: 200-795-6 CAS: 73-22-3	<1.05	Eye Irrit. 2, H319	[1]

See Section 16 for the full text of the H statements declared above.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment, are PBTs, vPvBs or Substances of equivalent concern, or have been assigned a workplace exposure limit and hence require reporting in this section.

#### Type

[1] Substance classified with a physical, health or environmental hazard

Occupational exposure limits, if available, are listed in Section 8.

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

<b>Eye contact</b>	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
<b>Inhalation</b>	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
<b>Skin contact</b>	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
<b>Ingestion</b>	Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
<b>Protection of first-aiders</b>	No action shall be taken involving any personal risk or without suitable training.

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

#### Over-exposure signs/symptoms

<b>Eye contact</b>	Adverse symptoms may include the following: irritation redness
<b>Inhalation</b>	Adverse symptoms may include the following: respiratory tract irritation coughing
<b>Skin contact</b>	No specific data.
<b>Ingestion</b>	No specific data.

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

<b>Notes to physician</b>	In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
<b>Specific treatments</b>	No specific treatment.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

**Suitable extinguishing media** Use dry chemical powder.

**Unsuitable extinguishing media** Avoid high pressure media which could cause the formation of a potentially explosible dust-air mixture.

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

**Hazards from the substance or mixture** May form explosible dust-air mixture if dispersed.

<b>Hazardous combustion products</b>	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides sulfur oxides phosphorus oxides halogenated compounds metal oxide/oxides
<b>5.3 Advice for firefighters</b>	
<b>Special precautions for fire-fighters</b>	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
<b>Special protective equipment for fire-fighters</b>	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to British standard BS EN 469 will provide a basic level of protection for chemical incidents.

## SECTION 6: Accidental release measures

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

<b>For non-emergency personnel</b>	☑ No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flames, smoking or flames in hazard area. Avoid breathing dust. Put on appropriate personal protective equipment.
<b>For emergency responders</b>	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

### 6.2 Environmental precautions

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

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

<b>Small spill</b>	☑ Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Vacuum or sweep up material and place in a designated, labelled waste container. Dispose of via a licensed waste disposal contractor.
<b>Large spill</b>	☑ Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labelled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor.

### 6.4 Reference to other sections

See Section 1 for emergency contact information.  
See Section 8 for information on appropriate personal protective equipment.  
See Section 13 for additional waste treatment information.

## SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

### 7.1 Precautions for safe handling

<b>Protective measures</b>	☑ Put on appropriate personal protective equipment (see Section 8). Avoid breathing dust. Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Prevent dust accumulation. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Electrical equipment and lighting should be protected to appropriate standards to prevent dust coming into contact with hot surfaces, sparks or other ignition sources. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material.
<b>Advice on general occupational hygiene</b>	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

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

Store between the following temperatures: 2 to 8°C (35.6 to 46.4°F). Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidising materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

### 7.3 Specific end use(s)

<b>Recommendations</b>	For Further Manufacturing or Research Use. Not for Diagnostic or Therapeutic Use.
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**Industrial sector specific solutions**

Not available.

**SECTION 8: Exposure controls/personal protection****8.1 Control parameters****Occupational exposure limits**

Product/ingredient name	Exposure limit values
copper sulphate pentahydrate	<b>EH40/2005 WELs (United Kingdom (UK), 1/2020) [Copper and compounds]</b> STEL 15 minutes: 2 mg/m <sup>3</sup> (as Cu). Form: Dusts and Mists. TWA 8 hours: 1 mg/m <sup>3</sup> (as Cu). Form: Dusts and Mists.
sodium selenite	<b>EH40/2005 WELs (United Kingdom (UK), 1/2020) [selenium and compounds, except hydrogen selenide]</b> TWA 8 hours: 0.1 mg/m <sup>3</sup> (as Se).
hexaammonium heptamolybdate	<b>EH40/2005 WELs (United Kingdom (UK), 1/2020) [molybdenum soluble compounds]</b> STEL 15 minutes: 10 mg/m <sup>3</sup> (as Mo). TWA 8 hours: 5 mg/m <sup>3</sup> (as Mo).
manganese sulphate	<b>EH40/2005 WELs (United Kingdom (UK), 1/2020) [manganese and its inorganic compounds]</b> TWA 8 hours: 0.2 mg/m <sup>3</sup> (as Mn). Form: Inhalable fraction. TWA 8 hours: 0.05 mg/m <sup>3</sup> (as Mn). Form: Respirable fraction.
nickel sulphate	<b>EH40/2005 WELs (United Kingdom (UK), 1/2020) [nickel inorganic compounds, water-soluble (except nickel tetracarbonyl)]</b> Carc. Absorbed through skin , Inhalation sensitiser. TWA 8 hours: 0.1 mg/m <sup>3</sup> (as Ni).
tin dichloride	<b>EH40/2005 WELs (United Kingdom (UK), 1/2020) [tin compounds, inorganic except SnH<sub>4</sub>]</b> STEL 15 minutes: 4 mg/m <sup>3</sup> (as Sn). TWA 8 hours: 2 mg/m <sup>3</sup> (as Sn).

**Biological exposure indices**

No exposure indices known.

**Recommended monitoring procedures**

Reference should be made to monitoring standards, such as the following: British Standard BS EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) British Standard BS EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) British Standard BS EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

**DNELs/DMELs****Product/ingredient name**

L-serine

**Result****DNEL - General population - Long term - Oral**

37.5 mg/kg bw/day

Effects: Systemic**DNEL - General population - Long term - Inhalation**130 mg/m<sup>3</sup>Effects: Systemic**DNEL - General population - Long term - Dermal**

375 mg/kg bw/day

Effects: Systemic**DNEL - Workers - Long term - Inhalation**529 mg/m<sup>3</sup>Effects: Systemic**DNEL - Workers - Long term - Dermal**

750 mg/kg bw/day

Effects: Systemic

L-valine



**DNEL - General population - Long term - Oral**

7.9 mg/kg bw/day

Effects: Systemic**DNEL - General population - Long term - Inhalation**27.3 mg/m<sup>3</sup>Effects: Systemic**DNEL - General population - Long term - Dermal**

78.5 mg/kg bw/day

Effects: Systemic

L-tryptophan	<b>DNEL - Workers - Long term - Inhalation</b> 110.7 mg/m <sup>3</sup> <u>Effects:</u> Systemic
	<b>DNEL - Workers - Long term - Dermal</b> 157 mg/kg bw/day <u>Effects:</u> Systemic
	<b>DNEL - General population - Long term - Oral</b> 47 mg/kg bw/day <u>Effects:</u> Systemic
	<b>DNEL - General population - Long term - Inhalation</b> 164 mg/m <sup>3</sup> <u>Effects:</u> Systemic
	<b>DNEL - General population - Long term - Dermal</b> 471 mg/kg bw/day <u>Effects:</u> Systemic
	<b>DNEL - Workers - Long term - Inhalation</b> 664 mg/m <sup>3</sup> <u>Effects:</u> Systemic
	<b>DNEL - Workers - Long term - Dermal</b> 941 mg/kg bw/day <u>Effects:</u> Systemic
<b><u>PNECs</u></b>	
Not available.	
<b>8.2 Exposure controls</b>	
<b>Appropriate engineering controls</b>	Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
<b><u>Individual protection measures</u></b>	
<b>Hygiene measures</b>	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
<b>Eye/face protection</b>	 Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields. If operating conditions cause high dust concentrations to be produced, use dust goggles.
<b><u>Skin protection</u></b>	
<b>Hand protection</b>	 Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
<b>Body protection</b>	Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
<b>Other skin protection</b>	Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
<b>Respiratory protection</b>	Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.
<b>Environmental exposure controls</b>	Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

## SECTION 9: Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

### 9.1 Information on basic physical and chemical properties

#### Appearance

<b>Physical state</b>	Solid. [Powder.]
<b>Colour</b>	Light brown. to Orange.
<b>Odour</b>	Not available.
<b>Odour threshold</b>	Not available.
<b>pH</b>	3 to 4 [Conc. (% w/w): 2.2%]
<b>Melting point/freezing point</b>	Not available.
<b>Initial boiling point and boiling range</b>	Not available.
<b>Flammability (solid, gas)</b>	Not available.
<b>Upper/lower flammability or explosive limits</b>	Not applicable.
<b>Flash point</b>	Not applicable.
<b>Auto-ignition temperature</b>	Not applicable.
<b>Decomposition temperature</b>	Not available.
<b>Viscosity</b>	Dynamic (room temperature): Not available. Kinematic (room temperature): Not available. Kinematic (40°C): Not available.
<b>Solubility in water</b>	Not available.
<b>Partition coefficient: n-octanol/ water</b>	Not applicable.
<b>Vapour pressure</b>	Not available.
<b>Evaporation rate</b>	Not available.
<b>Relative density</b>	Not available.
<b>Vapour density</b>	Not applicable.
<b>Explosive properties</b>	Non-explosive in the presence of the following materials or conditions: open flames, sparks and static discharge, heat, shocks and mechanical impacts, oxidising materials, reducing materials, combustible materials, organic materials, metals, acids, alkalis and moisture.
<b>Oxidising properties</b>	Not available.

#### Particle characteristics

<b>Median particle size</b>	Not available.
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### 9.2 Other information

Not available.

<b>Burning time</b>	Not available.
<b>Burning rate</b>	Not available.
<b>Solubility in water</b>	Not available.

## SECTION 10: Stability and reactivity

<b>10.1 Reactivity</b>	No specific test data related to reactivity available for this product or its ingredients.
<b>10.2 Chemical stability</b>	The product is stable.
<b>10.3 Possibility of hazardous reactions</b>	Under normal conditions of storage and use, hazardous reactions will not occur.
<b>10.4 Conditions to avoid</b>	Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Prevent dust accumulation.
<b>10.5 Incompatible materials</b>	Reactive or incompatible with the following materials: oxidising materials
<b>10.6 Hazardous decomposition products</b>	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

##### Product/ingredient name

L-serine

##### Result

Rat - Oral - LD50

14 g/kg

L-valine

Rat - Oral - LD50

2000 mg/kg

L-tryptophan

Rat - Oral - LD50

&gt;16 g/kg

Toxic effects: Eye - Ptosis Behavioral - Coma Changes in Chemistry or  
Temperature - Body temperature decrease

**Conclusion/Summary [Product]** Not available.

#### Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapours) (mg/l)	Inhalation (dusts and mists) (mg/l)
HyClone™ ActiCHO™ P	79341.7	N/A	N/A	N/A	N/A
L-serine	14000	N/A	N/A	N/A	N/A
L-valine	2000	N/A	N/A	N/A	N/A

#### Skin corrosion/irritation

Not available.

**Conclusion/Summary [Product]** Not available.

##### Ingredient name

L-serine

L-valine

L-tryptophan

##### Conclusion/Summary

May cause skin irritation.

May cause skin irritation.

May cause skin irritation.

#### Serious eye damage/eye irritation

##### Product/ingredient name

L-tryptophan

##### Result

Rabbit - Eyes - Severe irritant

Amount/concentration applied: 100 mg

**Conclusion/Summary [Product]** Not available.

##### Ingredient name

L-serine

L-valine

L-tryptophan

##### Conclusion/Summary

May cause eye irritation.

May cause eye irritation.

May cause eye irritation.

#### Respiratory corrosion/irritation

Not available.

**Conclusion/Summary [Product]** Not available.

#### Respiratory or skin sensitization

Not available.

#### Skin

**Conclusion/Summary [Product]** Not available.

##### Ingredient name

nickel sulphate

tin dichloride

##### Conclusion/Summary

May produce an allergic reaction.

May cause allergic reactions in certain individuals.

#### Respiratory



**Conclusion/Summary [Product]** Not available.**Ingredient name**

nickel sulphate

tin dichloride

**Conclusion/Summary**

May produce an allergic reaction. Causes damage to organs through prolonged or repeated exposure if inhaled.

May cause allergic reactions in certain individuals.

**Germ cell mutagenicity**

Not available.

**Conclusion/Summary [Product]** Not available.**Carcinogenicity**

Not available.

**Conclusion/Summary [Product]** Not available.**Reproductive toxicity**

Not available.

**Conclusion/Summary [Product]** Not available.**Ingredient name**

nickel sulphate

**Conclusion/Summary**

Presumed human reproductive toxicant

**Specific target organ toxicity (single exposure)**

Not available.

**Specific target organ toxicity (repeated exposure)****Product/ingredient name**

manganese sulphate

nickel sulphate

**Result**

STOT RE 2, H373

STOT RE 1, H372

**Aspiration hazard**

Not available.

**Information on likely routes of exposure**

Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

**Potential acute health effects****Inhalation**

☑ Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes.

**Ingestion**

No known significant effects or critical hazards.

**Skin contact**

No known significant effects or critical hazards.

**Eye contact**

☑ Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes.

**Symptoms related to the physical, chemical and toxicological characteristics****Inhalation**Adverse symptoms may include the following:  
respiratory tract irritation  
coughing**Ingestion**

No specific data.

**Skin contact**

No specific data.

**Eye contact**☑ Adverse symptoms may include the following:  
irritation  
redness**Delayed and immediate effects as well as chronic effects from short and long-term exposure****Short term exposure****Potential immediate effects**

Not available.

**Potential delayed effects**

Not available.

**Long term exposure****Potential immediate effects** Not available.**Potential delayed effects** Not available.**Potential chronic health effects**

Not available.

**Conclusion/Summary [Product]** Not available.**General** Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.**Carcinogenicity** No known significant effects or critical hazards.**Mutagenicity** No known significant effects or critical hazards.**Reproductive toxicity** No known significant effects or critical hazards.**Other information** Not available.**SECTION 12: Ecological information****12.1 Toxicity****Product/ingredient name**

L-serine

**Result****Acute - EC50**Daphnia  
83 mg/l [48 hours]**Acute - NOEC**Algae  
1000 mg/l [72 hours]

L-valine

**LC50**Fish  
10000 mg/l [96 hours]**Conclusion/Summary [Product]** Not available.**Ingredient name**

L-serine

L-valine

L-tryptophan

**Conclusion/Summary**

Naturally occurring substance

Naturally occurring substance

Naturally occurring substance

**12.2 Persistence and degradability****Product/ingredient name**

L-valine

**Result**

82% [28 days]

**Conclusion/Summary [Product]** Not available.**Ingredient name**

L-serine

L-valine

L-tryptophan

**Conclusion/Summary**

Not expected to bioaccumulate. Naturally occurring substance

Not expected to bioaccumulate. Naturally occurring substance

Not expected to bioaccumulate. Naturally occurring substance

**Product/ingredient name**

L-valine

**Aquatic half-life**

-

**Photolysis**

-

**Biodegradability**

Readily

**12.3 Bioaccumulative potential**

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
L-serine	-3.07	0.609	Low
L-valine	-2.26	0.846	Low
L-tryptophan	-1.06	1.37	Low

**12.4 Mobility in soil****Soil/water partition coefficient** Not available.**Mobility** Not available.**12.5 Results of PBT and vPvB assessment**

L-serine	No	N/A	No	No	No	N/A	No
L-valine	No	N/A	No	No	No	N/A	No
L-tryptophan	No	N/A	No	No	No	N/A	No

**12.6 Other adverse effects** No known significant effects or critical hazards.

## SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

### 13.1 Waste treatment methods

#### Product

##### Methods of disposal

The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

##### Hazardous waste

✓ Within the present knowledge of the supplier, this product is not regarded as hazardous waste, as defined by EU Directive 2008/98/EC.

#### Packaging

##### Methods of disposal

The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

##### Special precautions

✓ This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

## SECTION 14: Transport information

	ADR/RID	ADN	IMDG	IATA
14.1 UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
14.2 UN proper shipping name	✓	✓	✓	✓
14.3 Transport hazard class(es)	✓	✓	✓	✓
14.4 Packing group	-	-	-	-
14.5 Environmental hazards	No.	No.	No.	No.
Additional information	-	-	-	-

#### 14.6 Special precautions for user

**Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

#### 14.7 Transport in bulk according to IMO instruments

Not available.

## SECTION 15: Regulatory information

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

#### UK (GB)/REACH

##### Annex XIV - List of substances subject to authorisation

##### Annex XIV

None of the components are listed.

##### Substances of very high concern

None of the components are listed.

##### Ozone depleting substances

Not listed.

##### Prior Informed Consent (PIC)

Not listed.

**Persistent Organic Pollutants**

Not listed.

**Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles**

Product/ingredient name	%	Designation [Usage]
Molybdate (Mo7O246-), ammonium, hydrate (1:6:4)	≤0.1	65
Labelling	Not applicable.	

**Seveso Directive**

This product is not controlled under the Seveso Directive.

Product/ingredient name	List name	Name on list	Classification	Notes
nickel sulphate	EH40/2005 WELs	nickel inorganic compounds, water-soluble (except nickel tetracarbonyl)	Carc	-

**EU regulations**

**Industrial emissions (integrated pollution prevention and control) - Air** Not listed

**Industrial emissions (integrated pollution prevention and control) - Water** Not listed

**International regulations****Chemical Weapon Convention List Schedules I, II & III Chemicals**

Not listed.

**Montreal Protocol**

Not listed.

**Stockholm Convention on Persistent Organic Pollutants**

Not listed.

**Rotterdam Convention on Prior Informed Consent (PIC)**

Not listed.

**UNECE Aarhus Protocol on POPs and Heavy Metals**

Not listed.

**Inventory list**

<b>United States</b>	Not determined.
<b>Canada inventory</b>	Not determined.
<b>China</b>	Not determined.
<b>Japan</b>	<b>Japan inventory (CSCL):</b> Not determined. <b>Japan inventory (ISHL):</b> Not determined.

**15.2 Chemical safety assessment**

This product contains substances for which Chemical Safety Assessments are still required.

**SECTION 16: Other information**



 Indicates information that has changed from previously issued version.

**Abbreviations and acronyms**

ATE = Acute Toxicity Estimate  
 GB CLP = UK CLP (EC No 1272/2008) on the Classification, Labelling and Packaging of Substances and Mixtures as amended by (EU Exit) Regulations 2019 No. 720 and amendments  
 DMEL = Derived Minimal Effect Level  
 DNEL = Derived No Effect Level  
 EUH statement = GB CLP-specific Hazard statement  
 N/A = Not available  
 PBT = Persistent, Bioaccumulative and Toxic  
 PNEC = Predicted No Effect Concentration  
 RRN = REACH Registration Number  
 SGG = Segregation Group  
 vPvB = Very Persistent and Very Bioaccumulative

**Procedure used to derive the classification**

Classification	Justification
Eye Irrit. 2, H319	Calculation method

Full text of abbreviated H statements	 H302	Harmful if swallowed.
	H319	Causes serious eye irritation.
	H412	Harmful to aquatic life with long lasting effects.
Full text of classifications	 Acute Tox. 4	ACUTE TOXICITY - Category 4
	Aquatic Chronic 3	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3
	Eye Irrit. 2	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2
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