



# Safety Data Sheet

Canada

## Section 1. Identification

**Product name** CDM4PERMAB™

**Catalogue Number** SH30872.06



9 0 S H 3 0 8 7 2 . 0 6

**Product type** Powder.

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

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

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

Cytiva Austria  
Kremlstr. 5  
4061 Pasching  
AUSTRIA  
Tel.: +43 7229 64865  
Fax: +43 7229 64866

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

**Importer** Cytiva Canada  
1055 Vernon Dr  
Vancouver BC V6A 3P4  
Canada  
+1 778-956-2584

**In case of emergency** INFOTRAC  
Outside of the United States, call 24 Hour number: 001-352-323-3500 (Call Collect)  
In the United States, call 24 Hour number: 1-800-535-5053

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## Section 2. Hazard identification

**Classification of the substance or mixture** AQUATIC HAZARD (LONG-TERM) - Category 3

### **GHS label elements**

**Signal word** No signal word.

**Hazard statements** Harmful to aquatic life with long lasting effects.

### **Precautionary statements**

**Prevention** Avoid release to the environment.

**Response** Not applicable.

**Storage** Not applicable.

**Disposal** Dispose of contents and container in accordance with all local, regional, national and international regulations.



9 5 3 1 2 8 5 7 7 0

Supplemental label elements	Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 46.9%
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### Section 3. Composition/information on ingredients

**Substance/mixture** Mixture

**Other means of identification** Not available.

Ingredient name	Synonyms	% (w/w)	CAS number
Glucose	D-Glucose; Dextrose; D-gluconaldehyde; product composed of 62,1 % calcium carrageenate, 32,9 % dextrose and 5 % sucrose; DEXTROSE, ANHYDROUS; Grape sugar; GLUCOSE, D-; corn sugar; glucolin; D-GLUCOSE ANHYDROUS GRANULAR; GLUCOSE POWDER	≥15 - ≤40	CAS: 50-99-7
d-Galactose	D-Galactose; galactose, pure; galactose, impure; Galactose, D-; D-Galactose; Brain sugar; (3R,4S,5R,6R)-6-(hydroxymethyl) oxane-2,3,4,5-tetrol	≥1 - ≤5	CAS: 59-23-4
L-serine	2-Serine; serine; Serine, L-; 2-AMINO-3-HYDROXYPROPANOIC ACID, (S)-; BETA-HYDROXYALANINE; 2-Amino-3-hydroxypropanoic acid; 2-Amion-3-hydroxypropionic acid; D,L-Serine; (S)-2-Amino-3-hydroxypropanoic acid; SERINE PURISS, L-	≥1 - ≤5	CAS: 56-45-1
L-Leucine	2-Leucine; Leucine; E 641; L-Leu; alpha-aminoisocaproic acid;; (S)-2-amino-4-methylpentanoic acid; L-2-amino-4-methylvaleric acid; 2-aminoisobutylic acid; Leucine, L-; 2-Amino-4-methylvaleric acid; ALPHA-AMINOISOCAPROIC ACID; 2-AMINO-4-METHYL PENTANOIC ACID, (S)-; 2-Amino-4-methylpentanoic acid	≥1 - ≤5	CAS: 61-90-5
L-valine	2-Valine; 2-Amino-3-methylbutanoic acid; valine; Valine, L-; ALPHA-AMINO-BETA-METHYLBUTYRIC ACID, L-; ALPHA-AMINOISOVALERIC ACID, L-(+)-; VALINE, (S)-; 2-AMINO-3-METHYLBUTANOIC ACID, (S)-; 2-AMINO-3-METHYLBUTYRIC ACID, (S)-; ALPHA-AMINO-BETA-METHYLBUTYRIC ACID, (S)-; 2-Amino-3-methylbutyric acid	≥1 - ≤5	CAS: 72-18-4
L-Glutamic acid	L-Glutamic acid; 2-Glutamic acid; .alpha.-Aminoglutamic acid; Glutaminic acid; E 620; L-2-aminopentanedioic acid; L-α-aminoglutaric acid; Glutamic acid, L-; GLUTAMIC ACID, (S)(+)-; 1-AMINOPROPANE-1,3-DICARBOXYLIC ACID; AMINOGLUTARIC ACID, ALPHA-	≥0.5 - ≤1.5	CAS: 56-86-0
L-Arginine	L-Arginine; 2-Arginine; Arginine, L-; N5-(AMINOIMINOMETHYL)-L-ORNITHINE; 5-(AMINOIMINOMETHYL)AMINO)-L-NORVALINE; AMINO-DELTA-GUANIDINOVALERIC ACID, L-ALPHA-; ARGININE, L-(+); 2-AMINO-5-GUANIDINOVALERIC ACID, (S)-; 2-AMINO-5-((AMINOIMINOMETHYL)AMINO)PENTANOIC ACID, (S)-; 1-AMINO-4-GUANIDOVALERIC ACID; GUANIDINE AMINOVALERIC ACID	≥0.5 - ≤1.5	CAS: 74-79-3
Copper (II) sulfate pentahydrate	copper sulphate penta-hydrate; copper sulphate pentahydrate; Sulfuric acid, copper(2+) salt (1:1), pentahydrate; Copper sulfate, pentahydrate; Sulfuric acid copper(2+) salt (1:1), pentahydrate; Copper sulphate, pentahydrate; copper(II) sulfate pentahydrate; copper sulfate pentahydrate; Copper(II) sulfate,	≤0.1	CAS: 7758-99-8



pentahydrate (1:1:5); copper sulfate;  
COPPER(II) SULFATE, PENTAHYDRATE

Cupric chloride dihydrate	Cupric chloride, dihydrate; Copper (II) chloride, dihydrate; copper dichloride hydrate; Copper(2+) chloride dihydrate; Copper chloride, dihydrate; Cupric chloride dihydrate; Coppertrace; Copper chloride dihydrate; Copper chloride (CuCl <sub>2</sub> ), dihydrate; Copper dichloride dihydrate; Copper (II) Chloride Dihydrate	≤0.1	CAS: 10125-13-0
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**There are no ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.**

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

## Section 4. First-aid measures

### Description of necessary 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. 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.

### Most important symptoms/effects, acute and delayed

#### Potential acute health effects

<b>Eye contact</b>	Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes.
<b>Inhalation</b>	Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.
<b>Skin contact</b>	No known significant effects or critical hazards.
<b>Ingestion</b>	No known significant effects or critical hazards.

#### 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.

### Indication of immediate medical attention and special treatment needed, if necessary

<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.
<b>Protection of first-aiders</b>	No action shall be taken involving any personal risk or without suitable training.

**See toxicological information (Section 11)**



## Section 5. Fire-fighting measures

### Extinguishing media

<b>Suitable extinguishing media</b>	Use dry chemical powder.
<b>Unsuitable extinguishing media</b>	None known.
<b>Specific hazards arising from the chemical</b>	May form explosive dust-air mixture if dispersed. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
<b>Hazardous thermal decomposition products</b>	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides phosphorus oxides halogenated compounds metal oxide/oxides
<b>Special protective actions 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.

## Section 6. Accidental release measures

### 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 flares, smoking or flames in hazard area. Avoid breathing dust. Put on appropriate personal protective equipment.
<b>For emergency responders</b>	If specialized 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".
<b>Environmental precautions</b>	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). Water polluting material. May be harmful to the environment if released in large quantities.

### Methods and materials 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, labeled 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 release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor.

## Section 7. Handling and storage

### Precautions for safe handling

<b>Protective measures</b>	Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing dust. Avoid release to the environment. 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. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. 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 grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.
<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.



<b>Conditions for safe storage, including any incompatibilities</b>	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 oxidizing 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 unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
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## Section 8. Exposure controls/personal protection

### Control parameters

#### Occupational exposure limits

##### **Ingredient name**

Copper (II) sulfate pentahydrate

##### **Exposure limits**

##### **CA British Columbia Provincial (Canada, 9/2024) [copper (dusts and mists)]**

TWA 8 hours: 1 mg/m<sup>3</sup> (as Cu). Form: Dusts and mists.

##### **CA Quebec Provincial (Canada, 2/2024) [Copper , dusts & mists]**

TWAEV 8 hours: 1 mg/m<sup>3</sup> (as Cu). Form: dusts & mists.

##### **CA Alberta Provincial (Canada, 3/2023) [Copper (dust/mists)]**

OEL 8 hours: 1 mg/m<sup>3</sup> (as Cu). Form: Dusts and Mists.

#### Biological exposure indices

No exposure indices known.

### **Appropriate engineering controls**

Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor 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, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

### **Environmental exposure controls**

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.

### Individual protection measures

#### **Hygiene measures**

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.

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

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.

#### Skin protection

##### **Hand protection**

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. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

##### **Body protection**

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.

##### **Other skin protection**

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.

##### **Respiratory protection**

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.



## Section 9. Physical and chemical properties and safety characteristics

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

### Appearance

<b>Physical state</b>	Solid. [Powder.]
<b>Color</b>	White. to Off-white.
<b>Odor</b>	Not available.
<b>Odor threshold</b>	Not available.
<b>pH</b>	5 to 7 [Conc. (% w/w): 1.7%]
<b>Melting point/freezing point</b>	Not available.
<b>Boiling point or initial boiling point and boiling range</b>	Not available.
<b>Flash point</b>	Not applicable.
<b>Burning time</b>	Not available.
<b>Burning rate</b>	Not available.
<b>Evaporation rate</b>	Not available.
<b>Flammability</b>	Not available.
<b>Lower and upper explosive (flammable) limits</b>	Not applicable.
<b>Vapor pressure</b>	Not available.
<b>Relative vapor density</b>	Not applicable.
<b>Relative density</b>	Not available.
<b>Solubility in water</b>	Not available.
<b>Partition coefficient: n-octanol/water</b>	Not applicable.
<b>Auto-ignition temperature</b>	Not applicable.
<b>Decomposition temperature</b>	Not available.
<b>SADT</b>	Not available.
<b>Viscosity</b>	Dynamic (room temperature): Not available. Kinematic (room temperature): Not available. Kinematic (40°C (104°F)): Not available.
<b>Flow time (ISO 2431)</b>	Not available.

### Particle characteristics

<b>Median particle size</b>	Not available.
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## Section 10. Stability and reactivity

<b>Reactivity</b>	No specific test data related to reactivity available for this product or its ingredients.
<b>Chemical stability</b>	The product is stable.
<b>Possibility of hazardous reactions</b>	Under normal conditions of storage and use, hazardous reactions will not occur.
<b>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 grounding and bonding containers and equipment before transferring material. Prevent dust accumulation.
<b>Incompatible materials</b>	Reactive or incompatible with the following materials: oxidizing materials
<b>Hazardous decomposition products</b>	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## Section 11. Toxicological information

### Information on toxicological effects

#### Acute toxicity

Product/ingredient name	Result



Glucose

**Rat - Oral - LD50**

25800 mg/kg

**Toxic effects:** Behavioral - Coma Lung, Thorax, or Respiration - Cyanosis Gastrointestinal - Hypermotility, diarrhea

L-serine

**Rat - Oral - LD50**

14 g/kg

I-Leucine

**Rat - Oral - LD50**

16000 mg/kg

L-valine

**Rat - Oral - LD50**

2000 mg/kg

I-Glutamic acid

**Rat - Oral - LD50**

&gt;30 g/kg

I-Arginine

**Rat - Oral - LD50**

12000 mg/kg

Copper (II) sulfate pentahydrate

**Rat - Oral - LD50**

300 mg/kg

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

**Skin corrosion/irritation**

Not available.

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

**Ingredient name**

L-serine

**Conclusion/Summary**

May cause skin irritation.

I-Leucine

May cause skin irritation.

L-valine

May cause skin irritation.

**Serious eye damage/eye irritation**

Not available.

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

**Ingredient name**

L-serine

**Conclusion/Summary**

May cause eye irritation.

I-Leucine

May cause eye irritation.

L-valine

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.

**Respiratory**

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

**Germ cell mutagenicity**

Not available.

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



**Carcinogenicity**

Not available.

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

**Ingredient name**

I-Arginine

**Conclusion/Summary**

To the best of our knowledge, the toxicological properties of this substance have not been thoroughly investigated.

**Reproductive toxicity**

Not available.

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

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

Not available.

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

Not available.

**Aspiration hazard**

Not available.

**Information on the likely routes of exposure** Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

**Potential acute health effects**

<b>Eye contact</b>	Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes.
<b>Inhalation</b>	Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.
<b>Skin contact</b>	No known significant effects or critical hazards.
<b>Ingestion</b>	No known significant effects or critical hazards.

**Symptoms related to the physical, chemical and toxicological characteristics**

<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.

**Delayed and immediate effects and also 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.



<b>Conclusion/Summary [Product]</b>	Not available.
<b>General</b>	Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.
<b>Carcinogenicity</b>	No known significant effects or critical hazards.
<b>Mutagenicity</b>	No known significant effects or critical hazards.
<b>Reproductive toxicity</b>	No known significant effects or critical hazards.

**Numerical measures of toxicity****Acute toxicity estimates**

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
CDM4PERMAb™	66072.6	105273.1	N/A	N/A	N/A
Glucose	25800	N/A	N/A	N/A	N/A
L-serine	14000	N/A	N/A	N/A	N/A
I-Leucine	16000	N/A	N/A	N/A	N/A
L-valine	2000	N/A	N/A	N/A	N/A
I-Arginine	12000	N/A	N/A	N/A	N/A
Copper (II) sulfate pentahydrate	500	N/A	N/A	N/A	N/A
Cupric chloride dihydrate	100	N/A	N/A	N/A	N/A

**Section 12. Ecological information****Toxicity**

Product/ingredient name	Result
L-serine	<b>Acute - EC50</b> Daphnia 83 mg/l [48 hours]
L-valine	<b>Acute - NOEC</b> Algae 1000 mg/l [72 hours] <b>LC50</b> Fish 10000 mg/l [96 hours]
Copper (II) sulfate pentahydrate	<b>Acute - EC50 - Fresh water</b> US EPA Daphnia - Water flea - <i>Daphnia magna</i> <u>Age:</u> 1 182 ppb [48 hours] <u>Effect:</u> Intoxication <b>Acute - LC50 - Fresh water</b> US EPA Fish - Rainbow trout,donaldson trout - <i>Oncorhynchus mykiss</i> <u>Weight:</u> 0.6 g 0.032 ppm [96 hours] <u>Effect:</u> Mortality
Cupric chloride dihydrate	<b>Acute - EC50 - Marine water</b> US EPA Algae - Diatom - <i>Skeletonema costatum</i> <u>Age:</u> 3 days 9.52 ppb [72 hours] <u>Effect:</u> Population <b>Chronic - NOEC - Marine water</b> US EPA Crustaceans - Harpacticoid copepod - <i>Tisbe battagliai</i> <u>Age:</u> <24 hours 18 ppb [21 days] <u>Effect:</u> Mortality

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

**Ingredient name**

L-serine  
I-Leucine  
L-valine

**Conclusion/Summary**

Naturally occurring substance  
Naturally occurring substance  
Naturally occurring substance

**Persistence and degradability**

<b>Product/ingredient name</b>	<b>Result</b>		
L-valine	82% [28 days]		
<b>Conclusion/Summary [Product]</b>	Not available.		
<b>Ingredient name</b>	<b>Conclusion/Summary</b>		
L-serine	Not expected to bioaccumulate. Naturally occurring substance		
I-Leucine	Not expected to bioaccumulate. Naturally occurring substance		
L-valine	Not expected to bioaccumulate. Naturally occurring substance		
<b>Product/ingredient name</b>	<b>Aquatic half-life</b>	<b>Photolysis</b>	<b>Biodegradability</b>
Glucose	-	-	Readily
L-valine	-	-	Readily
I-Arginine	-	-	Readily
<b>Bioaccumulative potential</b>			
<b>Product/ingredient name</b>	<b>LogP<sub>ow</sub></b>	<b>BCF</b>	<b>Potential</b>
Glucose	-3.24	-	Low
L-serine	-3.07	0.609	Low
I-Leucine	-1.52	0.849	Low
L-valine	-2.26	0.846	Low
I-Glutamic acid	<-4	-	Low
I-Arginine	-4.2	-	Low

**Mobility in soil**

Soil/Water partition coefficient Not available.

Other adverse effects No known significant effects or critical hazards.

**Section 13. Disposal considerations**

**Disposal methods** The generation of waste should be avoided or minimized 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. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

**Section 14. Transport information**

	<b>TDG Classification</b>	<b>DOT Classification</b>	<b>ADR/RID</b>	<b>IMDG</b>	<b>IATA</b>
<b>UN number</b>	Not regulated.	Not regulated.	Not regulated.	Not regulated.	Not regulated.
<b>UN proper shipping name</b>	-	-	-	-	-
<b>Transport hazard class(es)</b>	-	-	-	-	-
<b>Packing group</b>	-	-	-	-	-
<b>Environmental hazards</b>	No.	No.	No.	No.	No.
<b>Additional information</b>	-	-	-	-	-

**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.



**Transport in bulk according to IMO instruments** Not available.

## Section 15. Regulatory information

### Canadian lists

<b>Canadian NPRI</b>	The following components are listed: selenium (and its compounds)
<b>CEPA Toxic substances</b>	None of the components are 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>Canada</b>	Not determined.
<b>United States</b>	Not determined.

## Section 16. Other information

### History

**Date of printing** 2/17/2026

**Date of issue/Date of revision** 2/17/2026

**Date of previous issue** No previous validation

**Version** 1

sds\_author@cytiva.com

<b>Key to abbreviations</b>	ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals HPR = Hazardous Products Regulations IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) N/A = Not available UN = United Nations
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### Procedure used to derive the classification

<b>Classification</b>	<b>Justification</b>
AQUATIC HAZARD (LONG-TERM) - Category 3	Calculation method

### References

Not available.



Indicates information that has changed from previously issued version.

### Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

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