

# SAFETY DATA SHEET

United States

## Section 1. Identification

Product name

**Benzamidine Sepharose™ 4 Fast Flow (high sub), 25 ml**

Catalogue Number

17512310



9 0 1 7 5 1 2 3 1 0

Other means of identification Not available.

Product type Liquid.

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

#### Identified uses

Laboratory chemicals

Liquid chromatography.

Scientific research and development

Industrial applications: Analytical chemistry. Scientific research and development. Liquid chromatography.

Supplier

Cytiva  
Amersham Place  
Little Chalfont  
Buckinghamshire  
HP7 9NA United Kingdom  
+44 0800 515 313

Cytiva USA  
100 Results Way  
Marlborough, MA 01752  
1-800-526-3593

In case of emergency

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

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## Section 2. Hazards identification

OSHA/HCS status

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture

FLAMMABLE LIQUIDS - Category 3

### GHS label elements

Hazard pictograms



Signal word

Warning

Hazard statements

Flammable liquid and vapor.

### Precautionary statements

Prevention

Wear protective gloves: 1 - 4 hours (breakthrough time): butyl rubber, neoprene. Wear protective clothing: Recommended: lab coat. Wear eye or face protection: Recommended: safety glasses with side-shields. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating or lighting equipment. Use non-sparking tools. Take action to prevent static discharges. Keep container tightly closed.

Response

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

Storage

Store in a well-ventilated place. Keep cool.

Disposal

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



**Hazards not otherwise classified** None known.

### Section 3. Composition/information on ingredients

**Substance/mixture** Mixture  
**Other means of identification** Not available.

#### CAS number/other identifiers

**CAS number** Not applicable.

Ingredient name	%	CAS number
ethanol	14 - 19	64-17-5

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

**There are no additional 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

**Eye contact** 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.  
**Inhalation** Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
**Skin contact** Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.  
**Ingestion** 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

**Eye contact** No known significant effects or critical hazards.  
**Inhalation** No known significant effects or critical hazards.  
**Skin contact** No known significant effects or critical hazards.  
**Ingestion** No known significant effects or critical hazards.

##### Over-exposure signs/symptoms

**Eye contact** No specific data.  
**Inhalation** No specific data.  
**Skin contact** No specific data.  
**Ingestion** No specific data.

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

**Notes to physician** Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.  
**Specific treatments** No specific treatment.  
**Protection of first-aiders** 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

**Suitable extinguishing media** Use dry chemical, CO<sub>2</sub>, water spray (fog) or foam.  
**Unsuitable extinguishing media** Do not use water jet.  
**Specific hazards arising from the chemical** Flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.  
**Hazardous thermal decomposition products** Decomposition products may include the following materials:  
carbon dioxide  
carbon monoxide  
**Special protective actions for fire-fighters** 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.  
**Special protective equipment for fire-fighters** 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

- For non-emergency personnel** 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. Put on appropriate personal protective equipment.
- For emergency responders** 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".
- 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).

### Methods and materials for containment and cleaning up

- Small spill** Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** Stop leak if without risk. 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. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

## Section 7. Handling and storage

### Precautions for safe handling

- Protective measures** Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. 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.
- Advice on general occupational hygiene** 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.
- 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 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.

## Section 8. Exposure controls/personal protection

### Control parameters

#### Occupational exposure limits

ethanol

**ACGIH TLV (United States, 1/2022). Notes: 1996 Adoption Refers to Appendix A -- Carcinogens.**

STEL: 1000 ppm 15 minutes.

**NIOSH REL (United States, 10/2020). Notes:**

TWA: 1900 mg/m<sup>3</sup> 10 hours.

**NIOSH REL (United States, 10/2020).**

TWA: 1000 ppm 10 hours.

**OSHA PEL (United States, 5/2018).**

TWA: 1900 mg/m<sup>3</sup> 8 hours.

TWA: 1000 ppm 8 hours.

**OSHA PEL 1989 (United States, 3/1989).**

TWA: 1900 mg/m<sup>3</sup> 8 hours.

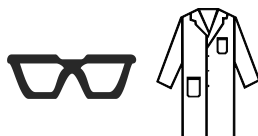
TWA: 1000 ppm 8 hours.

#### Biological exposure indices

No exposure indices known.



<b>Appropriate engineering controls</b>	Use only with adequate ventilation. 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.
<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.
<b>Individual protection measures</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. Recommended: safety glasses with side-shields
<b>Skin protection</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. 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. 1 - 4 hours (breakthrough time): butyl rubber, neoprene
<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. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves. Recommended: lab coat
<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. Recommended: A respirator is not needed under normal and intended conditions of product use.

**Personal protective equipment (Pictograms)****Section 9. Physical and chemical properties****Appearance**

<b>Physical state</b>	Liquid.
<b>Color</b>	White. White to yellowish.
<b>Odor</b>	Alcohol-like. [Slight]
<b>Odor threshold</b>	180 ppm
<b>pH</b>	5.5 to 8.5 [Conc. (% w/w): 100%]
<b>Melting point/freezing point</b>	Not available.
<b>Boiling point, initial boiling point, and boiling range</b>	Not available.
<b>Flash point</b>	Closed cup: 38 to 43°C (100.4 to 109.4°F)
<b>Burning time</b>	Not applicable.
<b>Burning rate</b>	Not applicable.
<b>Evaporation rate</b>	Not available.
<b>Flammability</b>	Not available.
<b>Lower and upper explosive (flammable) limits</b>	Not available.
<b>Vapor pressure</b>	Not available.

**Vapor Pressure at 20°C****Vapor pressure at 50°C**

Ingredient name	mm Hg	kPa	Method	mm Hg	kPa	Method
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	ethanol	42.95	5.7		
	water	23.8	3.2		
	Agarose	0	0		
<b>Relative vapor density</b>	Not available.				
<b>Relative density</b>	Not available.				
<b>Solubility(ies)</b>					
	<b>Media</b>			<b>Result</b>	
	cold water			Easily soluble	
	hot water			Easily soluble	
<b>Solubility in water</b>	Not available.				
<b>Miscible with water</b>	Yes.				
<b>Partition coefficient: n-octanol/ water</b>	Not applicable.				
<b>Auto-ignition temperature</b>	Not available.				
	<b>Ingredient name</b>	<b>°C</b>	<b>°F</b>	<b>Method</b>	
	ethanol	455	851	DIN 51794	
<b>Decomposition temperature</b>	Not available.				
<b>SADT</b>	Not available.				
<b>Viscosity</b>	Not available.				
<b>Flow time (ISO 2431)</b>	Not available.				
<b>Particle characteristics</b>					
<b>Median particle size</b>	Not applicable.				

## 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 all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
<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	Species	Dose	Exposure
ethanol	LC50 Inhalation Vapor	Rat	124700 mg/m <sup>3</sup>	4 hours

#### Irritation/Corrosion

Not available.

#### Conclusion/Summary

**Skin** Repeated exposure may cause skin dryness or cracking.

#### Sensitization

Not available.

#### Mutagenicity

Not available.

#### Carcinogenicity

Not available.

#### Reproductive toxicity

Not available.

#### Teratogenicity

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**

**Eye contact** No known significant effects or critical hazards.  
**Inhalation** No known significant effects or critical hazards.  
**Skin contact** No known significant effects or critical hazards.  
**Ingestion** No known significant effects or critical hazards.

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

**Eye contact** No specific data.  
**Inhalation** No specific data.  
**Skin contact** No specific data.  
**Ingestion** 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.

**General** No known significant effects or critical hazards.  
**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.

**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)
ethanol	7000	N/A	N/A	124.7	N/A

**Other information** Adverse symptoms include the following: kidney abnormalities, liver abnormalities  
 Adverse symptoms may include the following: central nervous system depression

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

Product/ingredient name	Result	Species	Exposure
ethanol	Acute EC50 3306 mg/l Marine water	Algae - <i>Ulva pertusa</i>	96 hours
	Acute EC50 1074 mg/l Fresh water	Crustaceans - <i>Cypris subglobosa</i>	48 hours
	Acute EC50 9.3 mg/l Fresh water	Daphnia - <i>Daphnia magna</i>	48 hours
	Acute LC50 11000000 µg/l Marine water	Fish - <i>Alburnus alburnus</i>	96 hours
	Chronic NOEC 4.995 mg/l Marine water	Algae - <i>Ulva pertusa</i>	96 hours
	Chronic NOEC 100 µl/L Fresh water	Daphnia - <i>Daphnia magna</i> - Neonate	21 days

**Persistence and degradability**

Product/ingredient name	Test	Result	Dose	Inoculum
ethanol	-	100 % - Readily - 20 days	-	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
ethanol	-	-	Readily

**Bioaccumulative potential**

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
ethanol	-0.35	0.66	Low

**Mobility in soil**

**Soil/water partition coefficient (K<sub>oc</sub>)** 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. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

**Waste stream** Code: D001  
Classification: Ignitability

## Section 14. Transport information

Product is not regulated as dangerous goods for transport.

## Section 15. Regulatory information

**U.S. Federal regulations** TSCA 8(a) CDR Exempt/Partial exemption: Not determined

**Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)** Not listed

**Clean Air Act Section 602 Class I Substances** Not listed

**Clean Air Act Section 602 Class II Substances** Not listed

**DEA List I Chemicals (Precursor Chemicals)** Not listed

**DEA List II Chemicals (Essential Chemicals)** Not listed

### SARA 302/304

#### Composition/information on ingredients

No products were found.

**SARA 304 RQ** Not applicable.

### SARA 311/312

**Classification** FLAMMABLE LIQUIDS - Category 3

#### Composition/information on ingredients

Name	%	Classification
ethanol	14 - 19	FLAMMABLE LIQUIDS - Category 2

### State regulations

**Massachusetts** The following components are listed: ETHYL ALCOHOL

**New York** None of the components are listed.

**New Jersey** The following components are listed: ETHYL ALCOHOL

**Pennsylvania** The following components are listed: ETHANOL

### California Prop. 65

This product does not require a Safe Harbor warning under California Prop. 65.

### 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**

**United States** Not determined.  
**Canada inventory** All components are listed or exempted.

**Section 16. Other information****National Fire Protection Association (U.S.A.)****Procedure used to derive the classification**

Classification	Justification
FLAMMABLE LIQUIDS - Category 3	On basis of test data

**History**

**Date of printing** 10/2/2023  
**Date of issue/Date of revision** 10/2/2023  
**Date of previous issue** 4/13/2022  
**Version** 9  
 sds\_author@cytiva.com

**Key to abbreviations**

ATE = Acute Toxicity Estimate  
 BCF = Bioconcentration Factor  
 GHS = Globally Harmonized System of Classification and Labeling of Chemicals  
 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  
 Not available.

**References**

▢ Indicates information that has changed from previously issued version.

**Notice to reader**

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