

SAFETY DATA SHEET

Singapore

Section 1. Identification

GHS product identifier**Butyl Sepharose™ HP HiScale 26/20, 10 cm****Catalogue Number**

30013244



9 0 3 0 0 1 3 2 4 4

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

Uses advised against

Consumer use

Reason

-

Supplier

Cytiva
Amersham Place
Little Chalfont
Buckinghamshire
HP7 9NA United Kingdom
+44 1494 508000

Cytiva Singapore
25 Tuas South Street 1
Singapore 638034

Emergency telephone number (with hours of operation)

+65 6863 6704
(hours of operation: 8.30 pm - 5.30 pm)

Section 2. Hazards identification

Classification of the substance or mixture FLAMMABLE LIQUIDS - Category 3**GHS label elements, including precautionary statements****Hazard pictograms****Signal word** Warning**Hazard statements** Flammable liquid and vapor.**Precautionary statements****Prevention** Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.**Response** Not applicable.**Storage** Not applicable.**Disposal** Dispose of contents and container in accordance with all local, regional, national and international regulations.**Other hazards which do not result in classification** None known.

Section 3. Composition/information on ingredients

| | | |
|--------------------------------------|-----------------|-------------------------------|
| Substance/mixture | Mixture | |
| Other means of identification | Not available. | |
| Chemical formula | Not applicable. | |
| Ingredient name | % | Identifiers |
| Ethanol | 14 - 19 | CAS: 64-17-5 EC: 200-578-6 |

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 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 ₂ , 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. Absorb with an inert 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. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. 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. |

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: 4 to 30°C (39.2 to 86°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

Ingredient name

Ethanol

Exposure limits

Workplace Safety and Health Act (Singapore, 1/2025)

PEL (long term) 8 hours: 1000 ppm.

PEL (long term) 8 hours: 1880 mg/m³.

Biological exposure indices

No exposure indices known.

Appropriate engineering controls

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.

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. Recommended: safety glasses with side-shields |
| <u>Skin protection</u> | |
| 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. 1 - 4 hours (breakthrough time): butyl rubber, neoprene |
| 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. 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 |
| 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. Recommended: A respirator is not needed under normal and intended conditions of product use. |

Section 9. Physical and chemical properties

Appearance

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

| Ingredient name | Vapor Pressure at 20°C | | | Vapor pressure at 50°C | | |
|-----------------|------------------------|-----|--------|------------------------|-----|--------|
| | mm Hg | kPa | Method | mm Hg | kPa | Method |
| ethanol | 42.94865 | 5.7 | | | | |
| water | 17.5 | 2.3 | | | | |

Relative vapor density Not available.

| Media | Result |
|------------|----------------|
| cold water | Easily soluble |
| hot water | Easily soluble |

Solubility in water Not soluble

Miscible with water Yes.
Partition coefficient: n-octanol/water Not applicable

Auto-ignition temperature Not available

| Ingredient name | °C | °F | Method |
|-----------------|-----|-----|-----------|
| ethanol | 455 | 851 | DIN 51794 |

Decomposition temperature Not available



| | |
|---------------------------------|--|
| SADT | Not available. |
| Viscosity | Dynamic (room temperature): Not available. Kinematic (room temperature): Not available. Kinematic (40°C (104°F)): Not available. |
| Flow time (ISO 2431) | Not available. |
| Particle characteristics | |
| Median particle size | Not applicable. |

Section 10. Stability and reactivity

| | |
|---|---|
| Reactivity | No specific test data related to reactivity available for this product or its ingredients. |
| Chemical stability | The product is stable. |
| Possibility of hazardous reactions | Under normal conditions of storage and use, hazardous reactions will not occur. |
| Conditions to avoid | 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. |
| Incompatible materials | Reactive or incompatible with the following materials: oxidizing materials |
| Hazardous decomposition products | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |
| SADT | Not available. |

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

| Product/ingredient name | Result |
|-------------------------|--|
| Ethanol | Rat - Oral - LD50 7060 mg/kg <u>Toxic effects:</u> Lung, Thorax, or Respiration - Other changes |
| | Rat - Inhalation - LC50 Vapor 124700 mg/m³ [4 hours] |

Conclusion/Summary [Product] Not available.

Skin corrosion/irritation

Not available.

Conclusion/Summary [Product] Repeated exposure may cause skin dryness or cracking.

Serious eye damage/eye irritation

Not available.

Conclusion/Summary [Product] Not available.

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.

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

| | |
|---------------------|---|
| 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.

Conclusion/Summary [Product] 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

Ethanol

Result

Acute - LC50 - Marine water

Fish - Bleak - *Alburnus alburnus*Size: 8 to 10 cm11 g/l [96 hours]Effect: Mortality

Chronic - NOEC - Marine water

Algae - Green algae - *Ulva pertusa*

4.995 mg/l [96 hours]

Effect: Reproduction

Acute - EC50 - Fresh water

Crustaceans - Ostracod - *Cypris subglobosa*

1074 mg/l [48 hours]

Effect: Intoxication

Chronic - NOEC - Fresh water

Daphnia - Water flea - *Daphnia magna* - NeonateAge: <24 hours

100 µl/l [21 days]

Effect: Mortality

Acute - EC50 - Marine water

Algae - Green algae - *Ulva pertusa*Size: 9.4 mm

3306 mg/l [96 hours]

Effect: Reproduction

Conclusion/Summary [Product] Not available.

Persistence/degradability

Product/ingredient name

Ethanol

Result

Aerobic

100% [20 days] - Readily

Conclusion/Summary [Product] Not available.

Product/ingredient name

Ethanol

Aquatic half-life

-

Photolysis

-

Biodegradability

Readily

Bioaccumulative potential

Product/ingredient name

Ethanol

LogP_{ow}

-0.35

BCF

0.66

Potential

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. 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.



Section 14. Transport information

| | UN | IMDG | IATA |
|-----------------------------------|----------------|----------------|--|
| UN number | Not regulated. | Not regulated. | Not regulated. |
| UN proper shipping name | - | - | - |
| Transport hazard class(es) | - | - | - |
| Packing group | - | - | - |
| Environmental hazards | No. | No. | No. |
| Additional information | - | - | Remarks IATA Special Provision A 58 - Aqueous solutions containing 24% or less alcohol by volume is not subject to these regulations. |

| | ADR/RID | ADN |
|---|---|----------------|
| UN number | Not regulated. | Not regulated. |
| UN proper shipping name | - | - |
| Transport hazard class(es) | - | - |
| Packing group | - | - |
| Environmental hazards | No. | No. |
| Additional information | - | - |
| 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

Singapore - hazardous chemicals under government control

None.

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.

International lists

National inventory

| | |
|-------------------------|---|
| United States | Not determined. |
| Canada inventory | All components are listed or exempted. |
| China | All components are listed or exempted. |
| Japan | Japan inventory (CSCL) : All components are listed or exempted. Japan inventory (ISHL) : Not determined. |

Section 16. Other information

History

| | |
|---------------------------------------|----------------------------|
| Date of printing | 15 December 2025 |
| Date of issue/Date of revision | 15 December 2025 |
| Date of previous issue | No previous validation. |
| Version | 1 sds_author@cytiva.com |

| | |
|-----------------------------|---|
| Key to abbreviations | ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling 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 |
|-----------------------------|---|

Procedure used to derive the classification

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

| | |
|-------------------|----------------|
| References | Not available. |
|-------------------|----------------|

 Indicates information that has changed from previously issued version.

Notice to reader

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