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| Safety Data Sheet |
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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

| | |
|-----------------------|------------------------------------|
| Product Name | HCMV (AD169 Strain) Purified Virus |
| Catalog Number | 10-103-100 |

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

SU24 Scientific research and development

1.3 Details of the supplier of the safety data sheet

| | |
|-------------------------------|--|
| Manufacturing Supplier | Advanced Biotechnologies, Inc 1545 Progress Way Eldersburg, MD 21784 Telephone (410) 792-9779 |
|-------------------------------|--|

1.4 Emergency telephone number

| | |
|---------------------------------|-----------------------------|
| 24 Hour Emergency Number | ChemTel, Inc 1-800-255-3924 |
|---------------------------------|-----------------------------|

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

This product is not classified as hazardous according to the Regulation (EC) No 1272/2008 and subsequent amendments.

This product is not classified as hazardous according to the Globally Harmonized System (GHS)

This product is not classified as hazardous according to OSHA GHS regulations within the U.S.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008

This product does not have a classification according to the CLP regulation.

This product is not classified as hazardous according to the OSHA GHS regulations within the U.S.

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|---|---------------|
| GHS Elements | Not Regulated |
| Hazard Pictograms | Not Regulated |
| Signal Word | Not Regulated |
| Hazard-determining components of labelling | None |
| Hazard statements | Not Regulated |

2.3 Other hazards

Hazards Not Otherwise Classified (HNOC) or covered by GHS

This preparation of HCMV is a BIOHAZARDOUS material containing ACTIVE VIRUS and should be handled in accordance with biosafety guidelines defined in the BMBL, NIH-CDC HHS Publication No. (CDC) 21-1112.

Category: WHO Risk Group 2

Emergency Overview: Biohazardous

Pathogenicity: Cytomegalovirus (CMV) infection is common and usually asymptomatic in healthy children and adults, but can cause severe disease in newborns and immunocompromised children or adults. CMV is the most common cause of congenital infection, affecting 0.2-2.4% of all infants, and also of viral-based mental retardation and hearing deficit in children of developing countries. Infections are often recurrent, caused by reactivation of latent virus (especially in immunocompromised patients such as bone marrow or other transplant recipients), reinfection may also occur due to the antigenic diversity of the virus. Infection may cause a mononucleosis-like syndrome with prolonged fever (lasting 2-3 weeks), malaise, atypical lymphocytosis, cervical lymphadenitis, mild hepatitis and encephalitis. (Original Pathogen Safety Data Sheet and Risk Assessment located at publichealth.gc.ca)

Host Range: Humans.

Results of PBT and vPvB assessment

| | |
|-------------|----------------|
| PBT | Not applicable |
| vPvB | Not applicable |

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SECTION 3: Composition/information on ingredients

3.2 Mixtures

Description: Mixture consisting of the following chemicals with Human Cytomegalovirus

| Components | | Concentration/Amount |
|------------------------------------|--|----------------------|
| CAS: 77-86-1 EC No: 201-064-4 | Tris Base Synonyms: Tris(hydroxymethyl)aminomethane, Trometamol | 10 mM |
| CAS: 7647-14-5 EC No: 231-598-3 | Sodium Chloride | 150 mM |
| CAS: 60-00-4 EC No: 200-449-4 | Ethylenediaminetetraacetic acid, (EDTA) Synonyms: Edetic Acid | 1 mM |
| | Human Cytomegalovirus | |

SECTION 4: First aid measures

4.1 Description of first aid measures

After inhalation Supply fresh air and seek medical advice.
After skin contact Immediately wash with water and soap and rinse thoroughly. Seek medical advice.
After eye contact Rinse immediately with plenty of water and seek medical advice.
After swallowing If swallowed, seek medical advice immediately and show the container/label/SDS.

4.2 Most important symptoms and effects, both acute and delayed

No further relevant information available.

4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Use fire extinguishing methods suitable to surrounding conditions.

5.2 Special hazards arising from the substance or mixture

No further relevant information available.

5.3 Advice for firefighters

Protective equipment: No special measures required.

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SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

To minimize contact, wear a laboratory coat, nitrile or latex gloves, and protective glasses.

6.2 Environmental precautions

Disinfect material before disposal.

6.3 Methods and material for containment and cleaning up

Take up with absorbent material. Disinfect area with 3% hydrogen peroxide followed by 70% isopropyl alcohol.

6.4 Reference to other sections

See Section 7 for Safe Handling.

See Section 8 for Exposure Controls.

See Section 13 for Disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Biosafety Level-2 (BSL-2) practices, containment equipment, and facilities are recommended. Although there is little evidence that infectious aerosols are a significant source of laboratory acquired infections (LAI), it is prudent to avoid the generation of aerosols during the handling of clinical materials or isolates. Primary containment devices (Biological Safety Cabinet, BSC) should be utilized to prevent exposure of workers to infectious aerosols.

The concentration of sodium azide is below the regulatory threshold limits. However, precautions for handling potentially hazardous reagents should be practiced when using this product. Wear appropriate protective equipment (see Section 8). Practice good work hygiene. Only use in a well-ventilated area.

7.2 Conditions for safe storage, including any incompatibilities

Storage temperature $\leq -70^{\circ}\text{C}$ in well-sealed receptacle.

7.3 Specific end use(s)

No further relevant information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with limit values that require monitoring at the workplace

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

8.2 Exposure controls

Personal protective equipment

General protective/hygienic measures

The usual precautionary measures are to be adhered to when handling chemicals and biological material.

Ventilation

Work in a biological safety cabinet to reduce the possibility of exposure.

Respiratory protection

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard, if a risk assessment indicates this is necessary.

Protection of hands

Protective gloves (i.e. nitrile or equivalent).

Eye protection

Safety glasses or safety goggles, as appropriate.

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Body protection

Protective work clothing and laboratory coats.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties**General Information**

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|---|--|
| Appearance | Form: Liquid Color: Slightly Whitish |
| Odor | Odorless |
| Odor Threshold | Does not apply, as substance is odorless. |
| pH | 7.5 |
| Change in condition | Melting point/Melting range: Not determined Boiling point/Boiling range: Not determined |
| Flash point | Not applicable |
| Evaporation rate | Not determined |
| Flammability (solid, gaseous) | Does not apply, substance is a liquid. |
| Auto/Self-ignition temperature | Not determined |
| Decomposition temperature | Not determined |
| Self-igniting | Product is not self-igniting. |
| Danger of explosion | Product does not present an explosion hazard. |
| Vapor pressure/density | Not determined |
| Density | Not determined |
| Viscosity | Not determined |
| Solubility in/Miscibility with Water | Soluble |

9.2 Other information

No further relevant information available.

SECTION 10: Stability and reactivity

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|--|--|
| 10.1 Reactivity | No further relevant information available. |
| 10.2 Chemical stability | No further relevant information available. |
| 10.3 Possibility of hazardous reactions | No dangerous reactions known. |
| 10.4 Conditions to avoid | No further relevant information available. |
| 10.5 Incompatible materials | No further relevant information available. |
| 10.6 Hazardous decomposition products | No further relevant information available. |

SECTION 11: Toxicological information

11.1 Information on toxicological effects

| | |
|--|---|
| Acute toxicity | Based on available data, the classification criteria are not met. |
| LD/LC50 values relevant for classification | Unknown |
| Primary irritant effect | |
| Skin corrosion/irritation | Based on available data, the classification criteria are not met. |
| Serious eye damage/irritation | Based on available data, the classification criteria are not met. |
| Respiratory or skin sensitization | Based on available data, the classification criteria are not met. |
| CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction) | |
| Germ cell mutagenicity | Based on available data, the classification criteria are not met. |
| Carcinogenicity | Based on available data, the classification criteria are not met. |
| Reproductive toxicity | Based on available data, the classification criteria are not met. |

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| STOT-single exposure | Based on available data, the classification criteria are not met. |
| STOT-repeated exposure | Based on available data, the classification criteria are not met. |
| Aspiration hazard | Based on available data, the classification criteria are not met. |

SECTION 12: Ecological information

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|--|--|
| 12.1 Toxicity | |
| Aquatic toxicity | No further relevant information available. |
| 12.2 Persistence and degradability | No further relevant information available. |
| 12.3 Bioaccumulative potential | No further relevant information available. |
| 12.4 Mobility in soil | No further relevant information available. |
| Other Information | The ecological effects have not been thoroughly investigated, but none have been identified. |
| General notes | Avoid release to the environment. |
| 12.5 Results of PBT and vPvB assessment | |
| PBT | None of the substances present are considered PBT. |
| vPvB | None of the substances present are considered vPvB. |
| 12.6 Other adverse effects | No further relevant information available. |

SECTION 13: Disposal considerations

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| 13.1 Waste treatment methods | |
| Recommendation | The user of this product has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state, and federal laws and regulations regarding treatment, storage, and disposal for hazardous and nonhazardous wastes. |
| Uncleaned packaging recommendation | Disposal must be made according to official regulations. |
| Recommended cleansing agents | Disinfection with 10% sodium hypochlorite (bleach) or 1:256 Lysol IC Quaternary Disinfectant Cleaner. |

SECTION 14: Transport information

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| 14.1 UN number | |
| DOT, ADR, IMDG, IATA | UN 3373 |
| 14.2 UN proper shipping name | |
| DOT, ADR, IMDG, IATA | Biological substance Category B |
| 14.3 Transport hazard class(es) | |
| DOT, ADR, IMDG, IATA Class | Class 6, Division 6.2 |
| 14.4 Packing group | |
| DOT, ADR, IMDG, IATA | Not Regulated |
| 14.5 Environmental hazards | |
| Marine Pollutant | Mixture Not Classified Marine Pollutant |
| 14.6 Special precautions for user | Not Applicable |
| 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code | Not Applicable |

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SECTION 15: Regulatory information

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

Labelling according to Regulation (EC) No 1272/2008

The product is classified and labelled according to the CLP regulation.

Unites States (USA)

SARA Section 355

No ingredients exceed threshold reporting limits.

SARA Section 302/304/311/312/313

No ingredients exceed threshold reporting limits.

TSCA (Toxic Substances Control Act)

All chemicals are listed.

Proposition 65 (California)

None of the ingredients are listed.

Chemicals known to cause Cancer

None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for females

None of the ingredients are listed.

Chemicals known to cause developmental toxicity

None of the ingredients are listed.

Carcinogenic Categories

EPA (Environmental Protection Agency)

None of the ingredients are listed.

IARC (International Agency for Research on Cancer)

None of the ingredients are listed.

NIOSH-Ca

None of the ingredients are listed.

Canada - Canadian Domestic Substances List (DSL)

All chemicals are listed.

International Regulations

WHO/HSE/GCR/2015.2: UN3373

Other regulations, limitations and prohibitive regulations

Seveso III Directive (2012/18/EU)

None of the ingredients are listed.

Substances of very high concern (SVHC)

None of the ingredients are listed.

15.2 Chemical safety assessment

A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

Disclaimer

The above information is believed to be accurate but does not purport to be all inclusive and shall be used only as a guide. Advanced Biotechnologies, Inc. shall not assume any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we can not guarantee that these are the only hazards that exist.

Abbreviations and acronyms

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

CAS: Chemical Abstracts Service (division of the American Chemical Society)

DOT: US Department of Transportation

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

IATA: International Air Transport Association

IMDG: International Maritime Code for Dangerous Goods

LC50/LD50: Lethal concentration, 50 percent/Lethal dose, 50 percent

NIOSH: National Institute for Occupational Safety and Health

OSHA: Occupational Safety and Health Administration

PBT/vPvB: Persistent, Bioaccumulative and Toxic/very Persistent and very Bioaccumulative

REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals (EC 1907/2006)

SARA: Superfund Amendments and Reauthorization Act

STEL: Short Term Exposure Limit

STOT: Specific Target Organ Toxicity

SVHC: Candidate List of Substances of Very High Concern

TWA: Time Weighted Average

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Date of Preparation

The effective date in the header of this document is the date of preparation and/or last revision.