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

1.1 Product identifier

Product Name: Vaccinia (WR Strain) Purified Virus
Catalog Number: 10-254-000

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.

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 Vaccinia 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: Vaccinia virus has no serious health effects in humans, although it can cause disease of the skin when used to inoculate against the smallpox virus. Vaccinia virus is usually injected in the dermis where a localized lesion appears and then scabs over and heals in about 10-14 days. The vaccination is accompanied by fever, rash, lymphadenopathy, fatigue, myalgia and headaches in some patients. Accidental infection with the virus can occur through contact between the vaccination lesion and broken skin (inadvertent inoculation). Serious complications such as ocular vaccinia, myopericarditis, eczema vaccinatum (a papular, vesicular and pustular rash that is very infectious, 38 cases per million doses), progressive vaccinia (progressive necrosis at the vaccination site, 3 cases per million doses), postvaccinial CNV disease (headache, lethargy, seizures and coma, 12 cases per million doses), fetus malformations and abortions (very rare) sometimes occur after vaccination. Complications are more serious in immunosuppressed individuals and the smallpox vaccine usually causes one death for every million doses. Contraindications to vaccine are their use in immunocompromised individuals, individuals with certain skin (e.g., eczema) and cardiac diseases, and pregnant women. (Original Pathogen Safety Data Sheet and Risk Assessment located at publichealth.gc.ca)
Host Range: Several mammals, including humans, rabbits, cows and river buffalo have been shown to contain the virus.

Results of PBT and vPvB assessment
- PBT: Not applicable
- vPvB: Not applicable

SECTION 3: Composition/information on ingredients

3.2 Mixtures
Description: Mixture consisting of the following chemicals with Vaccinia Virus

<table>
<thead>
<tr>
<th>Components</th>
<th>Concentration/Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tris Base</td>
<td>10 mM</td>
</tr>
<tr>
<td>Sodium Chloride</td>
<td>150 mM</td>
</tr>
<tr>
<td>Ethylenediaminetetraacetic acid, (EDTA)</td>
<td>1 mM</td>
</tr>
<tr>
<td>Vaccinia Virus</td>
<td></td>
</tr>
</tbody>
</table>

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.
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. Wear appropriate protective equipment (see Section 8). Practice good work hygiene.

7.2 Conditions for safe storage, including any incompatibilities
Storage temperature ≤ -70°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.

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

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

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.

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

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

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 1:256 Lysol I.C. or 10% bleach.

SECTION 14: Transport information

14.1 UN number
   DOT, ADR, IMDG, IATA UN 3373

14.2 UN proper shipping name Biological substance Category B
   DOT, ADR, IMDG, IATA

14.3 Transport hazard class(es) Class 6, Division 6.2
   DOT, ADR, IMDG, IATA

14.4 Packing group Not Regulated
   DOT, ADR, IMDG, IATA

14.5 Environmental hazards Mixture Not Classified Marine Pollutant
   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
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.

United States (USA)

- **SARA Section 355**
  - None of the ingredients are listed.
- **SARA Section 302/304/311/312/313**
  - None of the ingredients are listed.
- **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.

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/VvPb**: 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

Date of Preparation

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