BOVINE BLOOD / SERUM PRODUCTS

Components

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-NO</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bovine Blood Component</td>
<td>NA</td>
<td>&lt;4%</td>
</tr>
<tr>
<td>Inorganic Salts</td>
<td>NA</td>
<td>&lt;4%</td>
</tr>
<tr>
<td>Amino Acids</td>
<td>NA</td>
<td>&lt;4%</td>
</tr>
<tr>
<td>Vitamins</td>
<td>NA</td>
<td>&lt;4%</td>
</tr>
<tr>
<td>Standard Cell Culture Media</td>
<td>MA-5</td>
<td>&lt;4% 5%</td>
</tr>
<tr>
<td>Albumin</td>
<td>BSA-56</td>
<td>&lt;4%</td>
</tr>
<tr>
<td>Phosphate</td>
<td>PSS-15</td>
<td>&lt;4%</td>
</tr>
</tbody>
</table>

Emergency Overview

All blood products should be treated as potentially infectious, and handled as if capable of transmitting infectious agents. May cause eye and skin irritation. Handle in accordance with good industrial hygiene and safety practice. Low hazard for usual industrial or commercial handling.

Appearance: Yellow-orange, red brown

Physical State: Liquid

Odor Characteristic: None known.

Target Organ: None known.

Potential Health Effects:

Acute Effects:
- May cause irritation.
- Low hazard for usual industrial or commercial handling.

Chronic Effects:
- None known.

See Section 11 for additional Toxicological Information.

Aggravated Medical Conditions: No information available.

Eye Contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.

Skin Contact: Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur.

Inhalation: Move to fresh air. If breathing is difficult, give oxygen. Get medical attention if symptoms occur.

Ingestion: Do not induce vomiting. Obtain medical attention.
**Thermo Fisher Scientific - BOVINE BLOOD / SERUM PRODUCTS**

**Revision Date:** 07-Aug-2009

### Notes to Physician

Treat symptomatically.

### Flash Point Method

- **Autoignition Temperature**: Not applicable
- **Explosion Limit**: No information available.
- **Upper Lower**: No data available
- **Suitable Extinguishing Media**: Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.
- **Unsuitable Extinguishing Media**: No information available.
- **Hazardous Combustion Products**: No information available.
- **Sensitivity to mechanical impact**: No information available.
- **Sensitivity to static discharge**: No information available.

### Specific Hazards Arising from the Chemical

Thermal decomposition can lead to release of irritating gases and vapors.

### Protective Equipment and Precautions for Firefighters

As in fire, wear self-contained breathing apparatus. Pressure-demand, NSHA/NOSH (approved or equivalent) and full protective gear.

### MSHA/NIOSH Personal Protective Equipment

- **Health**: 1
- **Flammability**: 0
- **Reactivity**: 0
- **Physical hazards**: N/A

### Personal Precautions

Use personal protective equipment. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing.

### Environmental Precautions

Do not release into the environment.

### Methods for Containment and Clean Up

- Saturate with inert absorbent material. After clean-up, discard affected area with bleach and water at a ratio of 1:20. Dispose of cleanup material in marked disposal container.

### Handling

- Wear personal protective equipment. Handle as potentially infectious. Avoid contact with skin, eyes and clothing. Handle in accordance with good industrial hygiene and safety practice. Product should be handled aseptically and stored in sterile conditions to avoid bacterial contamination.

### Storage

- Keep containers tightly closed in a dry, cool and well-ventilated place. Keep at 4°C.

### Engineering Measures

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

### Exposure Guidelines

<table>
<thead>
<tr>
<th>Compound</th>
<th>Exposure Limit</th>
<th>Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OSHA TWA</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td>5 ppm</td>
<td>3 ppm</td>
</tr>
<tr>
<td></td>
<td>STEL: 15 ppm</td>
<td>STEL: 5 ppm</td>
</tr>
</tbody>
</table>

### Aquatic Hazard Persistence

Persistence: Category 1B

### MOH/SBH: Inherently Dangerous to Life or Health

### Personal Protective Equipment

Wear appropriate protective eyewear or chemical safety goggles as described by OSHA’s eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166 Wear appropriate protective gloves and clothing to prevent skin exposure. Follow the OSHA exposure regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/NIOSH or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

### Physical State

- **Appearance**
  - Clear
- **Odor**
  - Characteristic
- **Color Threshold**
  - Not applicable
- **pH**
  - Not applicable
- **Vapor Pressure**
  - Not applicable
- **Vapor Density**
  - Not applicable
- **Viscosity**
  - Not applicable
- **Boiling Point/Range**
  - Not applicable
- **Decomposition Temperature °C**
  - Not applicable

### Flash Points

- **Evaporation Rate**
- **SpecificGravity**
- **Solubility**
- **Config.**

### Stability

- **Stability**
  - Stable under normal conditions.
Conditions to Avoid
- Excess heat.

Incompatible Materials
- None known.

Hazardous Decomposition Products
- None known.

Hazardous Polymerization
- Hazardous polymerization does not occur.

Hazardous Reactions
- None under normal processing.

Acute Toxicity
- No acute toxicity information is available for this product.

Product Information

Component Information

<table>
<thead>
<tr>
<th>Component</th>
<th>Linear Name</th>
<th>Linear Normal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>1720 mg/L (Ref)</td>
<td>Low Normal</td>
<td>Not tested</td>
</tr>
<tr>
<td>Acetone</td>
<td>0.1 mg/L (Ref)</td>
<td>High Normal</td>
<td>2.0 mg/L (Ref.)</td>
</tr>
</tbody>
</table>

Irritation
- No information available.

Toxicologically Synergistic Products
- No information available.

Chronic Toxicity

Carcinogenicity
- There are no known carcinogenic chemicals in this product.

Genotoxicity
- No information available.

Mutagenic Effects
- No information available.

Reproductive Effects
- No information available.

Developmental Effects
- No information available.

Teratogenicity
- No information available.

Other Adverse Effects
- The toxicological properties have not been fully investigated.

Endocrine Disruptor Information
- No information available.

Ecotoxicity

Persistence and Degradability
- No information available.

Bioaccumulation/Accumulation
- No information available.

Mobility

Component |
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalyst</td>
</tr>
<tr>
<td>1.61</td>
</tr>
</tbody>
</table>

Waste Disposal Methods

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

DOT

UN-No Proper Shipping Name Hazard Class Packing Group UN1645 CARBON DIOXIDE, SOLID 9 III

TDG

UN-No Proper Shipping Name Hazard Class Packing Group UN1645 CARBON DIOXIDE, SOLID 9 III

IATA

UN-No Proper Shipping Name Hazard Class Packing Group UN1545 CARBON DIOXIDE, SOLID 9 III
**INDUCER**

- **UN/Number**: UN15545
- **Proper Shipping Name**: CARBON DIOXIDE, SOLID
- **Hazard Class**: 9
- **Packing Group**: III

**Material Safety Data Sheet (MSDS)**

All the components in the product are on the following inventory list:

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA</th>
<th>DOL</th>
<th>INSDS</th>
<th>ENDS</th>
<th>MCL</th>
<th>PHS</th>
<th>ENCS</th>
<th>ACGS</th>
<th>CHINA</th>
<th>INDCL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>150-424</td>
</tr>
<tr>
<td>Ammonium metavanadate</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>100-01756</td>
</tr>
<tr>
<td>Process water</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>134-09-5</td>
</tr>
</tbody>
</table>

Legend:
- X: Listed
- E: Indicates a substance that is the subject of a Section 113 Consent Order under TSCA.
- F: Indicates a substance that is the subject of a Section 62 Rule under TSCA.
- N: Indicates a substance that is the subject of a Section 5 rule management under TSCA.
- D: Indicates a substance that is identified in a proposed or final regulation using rate.
- S: Indicates a substance that is the subject of a Section 6 rate rule under TSCA.
- X: Indicates a substance exempt from reporting under the Inventory Update Rule, as per the TSCA Inventory Data Base Production and Use Reporting (40 CFR 721).
- Y: Indicates an attempt to polymerize that has a number-average molecular weight of 1,000 or greater.
- T: Indicates an attempt to polymerize that is a polymer and is used only for solids, in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rate.

**U.S. Federal Regulations**

- **TSCA 1220**: Not applicable
- **SARA 311**: Not applicable
- **SARA 312 (Hazardous Chemical):**
  - **Component**: Ammonium metavanadate
  - **CAS#**: 134-09-5
  - **Weight %**: 52.2
  - **SARA 312 - Transport**
  - **Ammonium metavanadate**: 1200-284

**SARA 314/312 Hazardous Categorization**

**Medical Response**

**U.S. Department of Transportation**

- **Reportable Quantity (RQ)**: Y
- **DOT Marine Pollutant**: N
- **DOT Severe Marine Pollutant**: N

**U.S. Department of Homeland Security**

This product does not contain any DHS chemicals.

**Other International Regulations**

- **Mexico - Grade**: No Information Available

**Canada**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the BSES contains all the information required by the CPR.

**WHMIS Hazard Class**

- **D3**: Biohazardous Infectious Materials