SAFETY DATA SHEET

1. CHEMICAL IDENTIFICATION AND COMPANY INFORMATION

PRODUCT NAME: Ribavirin
PRODUCT NUMBER: R795
COMPANY INFO: PhytoTechnology Laboratories®
PO Box 12205, Shawnee, KS 66282-2205
Phone: 1-888-749-8682 or 1-913-341-5343; Fax: 1-888-449-8682 or 1-913-341-5442
www.phytotechlab.com
EMERGENCY PHONE NUMBER: 1-800-535-5053 - US Only
1-352-323-3500 - International
RECOMMENDED USE: For Research Use Only
RESTRICTIONS ON USE: Products sold by PhytoTechnology Laboratories® are intended for research and laboratory use only. Products are not to be used as human or animal therapeutics, cosmetics, agricultural or pesticidal products, food additives, or as household chemicals.

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

GHS Classification:
H360 – Reproductive toxicity (Category 1B)

GHS Label elements, including hazard and precautionary statements:

Pictogram: 
Signal Word: Danger

Hazard Statements: H360 – May damage fertility or the unborn child.

Precautionary Statements:
P202 – Do not handle until all safety precautions have been read and understood.
P280 – Wear protective gloves/protective clothing/eye protection/face protection.
P308 + P313 – IF exposed or concerned: Get medical attention/advice.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: 1-β-D-Ribofuranosyl-1,2,4-triazole-3-carboxamide; Virazole
CAS No: 36791-04-5
Formula: C₈H₁₂N₄O₅
Molecular Weight: 244.2

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS Number</th>
<th>Purity</th>
<th>Hazardous</th>
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<tbody>
<tr>
<td>Ribavirin</td>
<td>36791-04-5</td>
<td>&gt;98.9 %</td>
<td>No exposure limits established by OSHA or ACGIH</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

General Advice: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

Route of Entry | Symptoms                          | First Aid Procedures                                      |
---------------|-----------------------------------|-----------------------------------------------------------|
Ingestion      | May cause irritation if swallowed | If swallowed, wash out mouth with water. Never give anything by mouth to an unconscious person. Get medical attention. |
Inhalation:  May cause irritation to respiratory tract.  Safely remove victim to fresh air.  If not breathing, institute cardiopulmonary resuscitation (CPR).  If breathing is difficult, ensure clear airway and give oxygen.  Get medical attention.

Eye Contact:  Direct contact may cause irritation.  May cause redness, tearing, or blurred vision.  Flush immediately with large amounts of water for at least 15 minutes.  Eyelids should be held away from the eyeball to ensure thorough rinsing.  Get medical attention if irritation persists.

Skin Contact:  Irritating.  May cause reddening, itching or inflammation.  Wash area thoroughly with soap and water.  Remove and wash contaminated clothing.  Get medical attention if irritation persists.

Most Important Symptoms or Effects, Both Acute and Delayed:
See section 2 and/or section 11

Recommendation for Immediate Medical Care and Special Treatment Needed:
No data available

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media:  Water spray, carbon dioxide, dry chemical powder, or appropriate foam.  Use extinguishing media suitable for surrounding fire.

Special Protective Equipment and Precaution for Firefighters:  In the event of a fire, wear full protective clothing and NIOSH approved self-contained breathing apparatus.  Evacuate the area and fight fire from a safe distance.

Hazardous Combustion Products:  May emit toxic fumes under fire conditions.

Toxic Gases Produced:  Carbon monoxide, carbon dioxide, nitrogen oxides

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures:
Use personal protection recommended in Section 8.  Avoid dust formation.  Avoid breathing vapors, mist or gas.  Ensure adequate ventilation, especially in confined areas.  Evacuate personnel to safe areas.  Avoid breathing dust.

Environmental Precautions:  Prevent further leakage or spillage if safe to do so.  Do not let product enter drains.

Method of Containment and Cleanup:
Wear suitable protective clothing.  Avoid dust formation.  Carefully sweep up and remove.  Place material in a dry container and cover.  Remove from the area.  Flush spill area with water.  Do not let products enter drains.

7. HANDLING AND STORAGE

Precaution for Safe Handling:  Avoid contact with skin and eyes.  Avoid dust formation and aerosols.  Avoid incompatible substances.  Wash thoroughly after use.

Conditions for Safe Storage:  Keep in a tightly closed container and store in a cool, dry, and well-ventilated area.  Protect from moisture.

Recommended Storage Temperature:  2 to 6 °C

Incompatibilities:  Strong oxidizing agent

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OSHA’s Permissible Exposure Limits (PELs):  No data available

Threshold Limit Values (TLVs):  No data available

Engineering Controls:  Handle in accordance to general industrial hygiene and safety practice.

Personal Protective Equipment (PPE):
Eye/Face Protection:  Chemical safety glasses or goggles.  Have eye-washing facilities readily available where eye contact can occur.
9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: White to off-white powder
pH (0.050 g/L): Under Development (4.5 – 6.5 suspected range)
Solubility: Soluble in Water
Melting Range: 166-176 °C
Vapor Density: No data available
Vapor Pressure: No data available
Specific Gravity: No data available
Odor: Odorless
Odor Threshold: No data available
Viscosity: No data available
Relative Density: No data available
Evaporation Rate: No data available
Initial Boiling Point and Boiling Range: No data available
Flammability (solid, gas): No data available
Partition coefficient: n-octanol/water: No data available
Auto-ignition Temperature: No data available
Decomposition Temperature: No data available
Flash Point (Closed Cup): No data available
Flammable Limits: Upper (%) – No data available Lower (%) – No data available

10. STABILITY AND REACTIVITY

Reactivity: No data available
Chemical Stability: Stable under normal conditions of use
Possibility of Hazard Reactions: Will not occur
Conditions to Avoid: Dust generation, moist air
Incompatibles Materials: Strong oxidizing agents
Hazardous Decomposition Products: Carbon dioxide, carbon monoxide, nitrogen oxides

11. TOXICOLOGICAL INFORMATION

Toxicity: 
LD$_{50}$ (Oral-Rat)(mg/Kg): 2700
LD$_{50}$ (IV-Rat)(mg/Kg): No data available
LD$_{50}$ (IP-Mouse)(mg/Kg): 1300

Carcinogenicity:
NTP: No
IARC: No
Z List: No
OSHA Reg: No

Reproductive Toxicity: Presumed human reproductive toxicant
Symptoms Associated with Overexposure: Irritation, itching, gastrointestinal upset, nausea, headache, vomiting, possible mutagenic and reproductive effects, breathing difficulties, cardiac problems, anemia, muscular problems, eye and ear problems, possible kidney or liver impairment

Specific Target Organ Toxicity: Single Exposure: No data available
Repeated Exposure: No data available

Target Organs: Stomach

Medical Conditions Aggravated By Exposure: Pre-existing conditions

Routes of Entry: Ingestion, inhalation, skin and eye contact

NIOSH/RTECS NO: XZ4250000

The toxicological properties of this product have not been thoroughly investigated

12. ECOLOGICAL INFORMATION
Ecotoxicity: No data available
Persistence and Degradability: No data available
Bioaccumulative Potential: No data available
Mobility in Soil: No data available
Other Adverse Effects: No data available

13. DISPOSAL CONSIDERATION
Disposal Procedure: Dispose in accordance with all applicable federal, state, and local environmental regulations.
EPA Hazardous Waste Number: No data available

14. TRANSPORT INFORMATION
Domestic (D.O.T.): Proper Shipping Name: CHEMICALS, N.O.S. (NON-REGULATED)
Hazard Class: N/A
UN/NA: N/A
Labels: N/A

International:
IMDG: Proper Shipping Name: CHEMICALS, N.O.S. (NON-REGULATED)
Hazard Class: N/A
UN/NA: N/A
Labels: N/A

IATA: Proper Shipping Name: CHEMICALS, N.O.S. (NON-REGULATED)
Hazard Class: N/A
UN/NA: N/A
Labels: N/A

15. REGULATORY INFORMATION
TSCA: No
SARA TITLE III:
Section 302 (EHS) Ingredients: No
Section 313 Ingredients: No
Section 304 (EHS/CERCLA) Ingredients: No

Section 311/312 Hazard: Chronic Health Hazard

Massachusetts Right to Know Components: No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right to Know Components: CAS No.: 36791-04-5 Ribavirin

New Jersey Right to Know Components: CAS No.: 36791-04-5 Ribavirin

California Prop. 65 Components: This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

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<tr>
<th>HMIS Rating:</th>
<th>Health Hazard</th>
<th>Chronic Health Hazard</th>
<th>Flammability</th>
<th>Physical Hazard</th>
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<tbody>
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<th>NFPA Rating:</th>
<th>Health Hazard</th>
<th>Fire Hazard</th>
<th>Reactivity Hazard</th>
<th>Special Hazard</th>
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*Chronic Hazard: Chronic (long-term) health effects may result from repeated overexposure.

*Phyto*Technology Laboratories® provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. The above information is intended to be used only as a guide to the appropriate precautionary handling of this material by a properly trained person. *Phyto*Technology Laboratories® shall not be held liable for any damage resulting from handling or from contact with the above product. This product is intended for LABORATORY USE ONLY. Our products may NOT BE USED as drugs, cosmetics, agricultural or pesticidal products, food additives or as household chemicals.

Revision Date: 19 May 15