According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial preparation date: 02.26.2018

D-Ribose

SECTION 1: Identification

Product identifier

Product name: D-Ribose Product code: RB2000

Recommended use of the product and restriction on use Relevant identified uses: Not determined or not applicable. Uses advised against: Not determined or not applicable. Reasons why uses advised against: Not determined or not applicable.

Manufacturer or supplier details

Manufacturer: Supplier:

| AquaPhoenix Scientific | AquaPhoenix Scientific Inc. |
|------------------------|-----------------------------|
| 860 Gitts Run Road | 860 Gitts Run Road |
| Hanover | Hanover |
| PA 17331 | PA 17331 |
| (717) 632-1291 | (717) 632-1291 |

Emergency telephone number: United States

Emergency Telephone No.: 800-255-3924

SECTION 2: Hazard(s) identification

GHS classification: Not a hazardous substance or mixture Label elements

Hazard pictograms: None

Signal word: None

Hazard statements: None Precautionary statements: None Hazards not otherwise classified: None

SECTION 3: Composition/information on ingredients

| Identification | Name | Weight % |
|---------------------------|---------------|----------|
| CAS number: 61788-76-9 | Cereclor E-60 | 50-85 |
| CAS number: 64742-53-6 | L-60 | 1-20 |

Additional Information: None

SECTION 4: First aid measures

Description of first aid measures General notes:

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial preparation date: 02.26.2018

D-Ribose

Not determined or not applicable.

After inhalation:

Loosen clothing as necessary and position individual in a comfortable position Maintain an unobstructed airway Get medical advice/attention if you feel unwell

After skin contact:

Rinse affected area with soap and water If symptoms develop or persist, seek medical attention

After eye contact:

Rinse/flush exposed eye(s) gently using water for 15-20 minutes Remove contact lenses, if present and easy to do Continue rinsing Get medical advice/attention

After swallowing:

Rinse mouth and then drink plenty of water Do not induce vomiting Get medical advice/attention if you feel unwell

Most important symptoms and effects, both acute and delayed

Acute symptoms and effects:

Not determined or not applicable.

Delayed symptoms and effects:

Not determined or not applicable.

Immediate medical attention and special treatment

Specific treatment:

Not determined or not applicable.

Notes for the doctor:

Not determined or not applicable.

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media:

Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition

Unsuitable extinguishing media:

Not determined or not applicable.

Specific hazards during fire-fighting:

Thermal decomposition can lead to release of irritating gases and vapors

Special protective equipment for firefighters:

Wear protective eye wear, gloves and clothing Refer to Section 8 Use typical firefighting equipment, self-contained breathing apparatus, special tightly sealed suit **Special precautions:** Heating causes a rise in pressure, risk of bursting and combustion Shut off sources of ignition

Carbon monovido and carbon diavido move forms unan

Carbon monoxide and carbon dioxide may form upon combustion

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures:

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial preparation date: 02.26.2018

D-Ribose

Ensure adequate ventilation Ensure air handling systems are operational Wear protective eye wear, gloves and clothing

Environmental precautions:

Should not be released into the environment Prevent from reaching drains, sewer or waterway

Methods and material for containment and cleaning up:

Absorb with non-combustible liquid-binding material (sand, diatomaceous earth (clay), acid binders, universal binders)

Dispose of contents / container in accordance with local regulations

Reference to other sections:

Not determined or not applicable.

SECTION 7: Handling and storage

Precautions for safe handling:

Do not eat, drink, smoke or use personal products when handling chemical substances. Avoid breathing mist or vapor. Use only with adequate ventilation.

Conditions for safe storage, including any incompatibilities:

Store in a cool, well-ventilated area. Store away from foodstuffs.

SECTION 8: Exposure controls/personal protection

Only those substances with limit values have been included below.

Occupational Exposure limit values:

| Country (Legal Basis) | Substance | Identifier | Permissible concentration |
|-----------------------|-----------|------------|---|
| ACGIH | L-60 | 64742-53-6 | 8-Hour Exposure Limit (TLV-TWA): 5 mg/m ³ (Mineral oil, excluding metal working fluids, pure, highly and severely refined; Inhalable fraction) |
| United States (OSHA) | L-60 | 64742-53-6 | PEL: 500 ppm (2000 mg/m ³) [Petroleum Distillates (Naphtha) (Rubber Solvent)] |
| | L-60 | 64742-53-6 | PEL: 5 mg/m ³ [Oil mist (Mineral)] |
| | L-60 | 64742-53-6 | TWA: 5 mg/m ³ [Oil Mist (Mineral)] |
| | L-60 | 64742-53-6 | TWA: 400 ppm (1600 mg/m ³) [Petroleum Distillates (Naphtha) (Rubber Solvent)] |

Biological limit values:

No biological exposure limits noted for the ingredient(s).

Information on monitoring procedures:

Not determined or not applicable.

Appropriate engineering controls:

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling.

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor and mists below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above.

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial preparation date: 02.26.2018

D-Ribose

Eye and face protection:

Safety goggles or glasses, or appropriate eye protection.

Skin and body protection:

Select glove material impermeable and resistant to the substance.

Respiratory protection:

When necessary, use NIOSH-approved breathing equipment.

General hygienic measures:

Wash hands before breaks and at the end of work.

Avoid contact with skin, eyes and clothing.

Perform routine housekeeping.

Wash contaminated clothing before reusing.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

| - | |
|---|----------------------------------|
| Appearance | Liquid |
| Odor | Not determined |
| Odor threshold | Not determined |
| рН | Not determined |
| Melting point/freezing point | 88 - 92 °C |
| Initial boiling point/range | Not determined |
| Flash point (closed cup) | Not determined |
| Evaporation rate | Not determined |
| Flammability (solid, gas) | Not determined |
| Upper flammability/explosive limit | Not determined |
| Lower flammability/explosive limit | Not determined |
| Vapor pressure | Not determined |
| Vapor density | Not determined |
| Density | Not determined |
| Relative density | Not determined |
| Solubilities | Not determined or not available. |
| Partition coefficient (n-octanol/water) | Not determined |
| Auto/Self-ignition temperature | Not determined |
| Decomposition temperature | Not determined |
| Dynamic viscosity | Not determined |
| Kinematic viscosity | Not determined |
| Explosive properties | Not determined |
| Oxidizing properties | Not determined |

Other information

SECTION 10: Stability and reactivity

Reactivity:

Does not react under normal conditions of use and storage.

Chemical stability:

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial preparation date: 02.26.2018

D-Ribose

Stable under normal conditions of use and storage.

Possibility of hazardous reactions:

None under normal conditions of use and storage.

Conditions to avoid:

None known.

Incompatible materials:

None known.

Hazardous decomposition products:

None known.

SECTION 11: Toxicological information

Acute toxicity

Assessment: Based on available data, the classification criteria are not met.

Product data: No data available.

Substance data: No data available.

Skin corrosion/irritation

Assessment: Based on available data, the classification criteria are not met.

Product data: No data available.

Substance data: No data available.

Serious eye damage/irritation

Assessment: Based on available data, the classification criteria are not met.

Product data: No data available.

Substance data: No data available.

Respiratory or skin sensitization

Assessment: Based on available data, the classification criteria are not met.

Product data: No data available.

Substance data: No data available.

Carcinogenicity

Assessment: Based on available data, the classification criteria are not met.

Product data: No data available.

Substance data: No data available.

International Agency for Research on Cancer (IARC): None of the ingredients are listed.

National Toxicology Program (NTP): None of the ingredients are listed.

Germ cell mutagenicity

Assessment: Based on available data, the classification criteria are not met.

Product data: No data available.

Substance data: No data available.

Reproductive toxicity

Assessment: Based on available data, the classification criteria are not met.

Product data: No data available.

Substance data: No data available.

Specific target organ toxicity (single exposure)

Assessment: Based on available data, the classification criteria are not met.

Product data: No data available.

Substance data: No data available.

Specific target organ toxicity (repeated exposure)

Assessment: Based on available data, the classification criteria are not met.

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial preparation date: 02.26.2018

D-Ribose

Product data: No data available.

Substance data: No data available.

Aspiration toxicity

Assessment: Based on available data, the classification criteria are not met.

Product data: No data available.

Substance data: No data available.

Information on likely routes of exposure: No data available.

Symptoms related to the physical, chemical and toxicological characteristics: No data available. Other information: No data available.

SECTION 12: Ecological information

Acute (short-term) toxicity

Assessment: Based on available data, the classification criteria are not met.

Product data: No data available.

Substance data:

| Name | Result |
|---------------|---|
| Cereclor E-60 | Algae (Selenastrum capricornutum) 96 hr - EC50 (biomas) = >3.2 mg/l |
| | LC50 Albumus albumus 96 hr >5000 mg/l |
| | EC50 - Daphnia magna 48hr .0059 mg/l |

Chronic (long-term) toxicity

Product data: No data available.

Substance data: No data available.

Persistence and degradability

Product data: No data available.

Substance data: No data available.

Bioaccumulative potential

Product data: No data available.

Substance data: No data available.

Mobility in soil

Product data: No data available.

Substance data: No data available.

Other adverse effects: No data available.

SECTION 13: Disposal considerations

Disposal methods:

It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11)

SECTION 14: Transport information

United States Transportation of dangerous goods (49 CFR DOT)

| UN number | Not Regulated |
|-------------------------------|---------------|
| UN proper shipping name | Not Regulated |
| UN transport hazard class(es) | None |
| Packing group | None |
| Environmental hazards | None |
| Special precautions for user | None |

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial preparation date: 02.26.2018

D-Ribose

International Maritime Dangerous Goods (IMDG)

| UN number | Not Regulated |
|-------------------------------|---------------|
| UN proper shipping name | Not Regulated |
| UN transport hazard class(es) | None |
| Packing group | None |
| Environmental hazards | None |
| Special precautions for user | None |

International Air Transport Association Dangerous Goods Regulations (IATA-DGR)

| UN number | Not Regulated |
|-------------------------------|---------------|
| UN proper shipping name | Not Regulated |
| UN transport hazard class(es) | None |
| Packing group | None |
| Environmental hazards | None |
| Special precautions for user | None |

SECTION 15: Regulatory information

United States regulations

Inventory listing (TSCA):

| 64742-53-6 | L-60 | Listed |
|------------|---------------|--------|
| 61788-76-9 | Cereclor E-60 | Listed |

Significant New Use Rule (TSCA Section 5): Not determined.

Export notification under TSCA Section 12(b): Not determined.

SARA Section 311/312 hazards:

| Acute | Chronic | Fire | Pressure | Reactive |
|-------|---------|------|----------|----------|
| No | No | No | No | No |

SARA Section 302 extremely hazardous substances: Not determined.

SARA Section 313 toxic chemicals:

| 64742-53-6 | L-60 | Not Listed |
|------------|---------------|---------------|
| 61788-76-9 | Cereclor E-60 | Not Listed |

CERCLA: Not determined.

RCRA: Not determined.

Section 112(r) of the Clean Air Act (CAA): Not determined.

Massachusetts Right to Know:

| 64742-53-6 | L-60 | Listed |
|------------|---------------|--------|
| | Cereclor E-60 | Listed |

New Jersey Right to Know:

| 64742-53-6 | L-60 | Listed |
|------------|---------------|--------|
| 61788-76-9 | Cereclor E-60 | Listed |

New York Right to Know:

| 64742-53-6 | L-60 | Not | |
|------------|------|--------|--|
| | | Listed | |

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial preparation date: 02.26.2018

Page 8 of 8

D-Ribose

| 61788-76-9 | Cereclor E-60 | Not Listed | | | | |
|-----------------------------|---------------|---------------|--|--|--|--|
| Pennsylvania Right to Know: | | | | | | |
| 64742-53-6 | L-60 | Listed | | | | |
| 61788-76-9 | Cereclor E-60 | Not | | | | |

California Proposition 65: None of the ingredients are listed.

SECTION 16: Other information

Abbreviations and Acronyms: None Disclaimer:

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations. The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material.

HMIS: 0-0-0

Initial preparation date: 02.26.2018

End of Safety Data Sheet