SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier
Product Identifier : Rifampicin
Product Number : R003
CAS Number : [13292-46-1]

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified Uses : For research use only - restricted to professional users.
Uses Advised Against : Not for human or animal use

1.3 Details of the supplier of the safety data sheet
Company : TOKU-E Company
715 W Orchard Dr. Suite 3
Bellingham, WA 98225
Phone Number : (360) 734-1789
E-mail Address : info@toku-e.com
Safety Data Sheet Issued by : TOKU-E Company (USA)

1.4 Emergency telephone number
Emergency Phone Number (Internat.) : +1 (352) 353-3500 (INFOTRAC, 24-Hour Number)
Emergency Phone Number (US Only) : 1 (800) 535-5053 (INFOTRAC, 24-Hour Number)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
GHS classification in accordance with 29 CFR 1910 (OSHA HCS)
Acute Toxicity - Oral (Category 4), H302
Skin Irritation (Category 2), H315
Eye Irritation (Category 2), H319
Specific Target Organ Toxicity - Single Exposure, Respiratory System (Category 3), H335

For the full text of the H-Statements mentioned in this section, see Section 16.

2.2 GHS label elements, including precautionary statements
Pictogram(s):

 Signal Word: Warning

Hazard Statement(s)
H302 Harmful if swallowed
H315 Causes skin irritation
H319 Causes serious eye irritation
H335 May cause respiratory irritation
Precautionary Statement(s)

P264    Wash hands/skin thoroughly after handling.
P270    Do not eat, drink, or smoke when using this product.
P301+P312    IF SWALLOWED: Call a POISON CENTER or doctor/physician IF you feel unwell
P330    Rinse mouth
P501    Dispose of contents/container in accordance with governmental regulation
P280    Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352    IF ON SKIN: Wash with plenty of water/soap
P321    Specific treatment, see applicable response statements on this label
P332+P313    IF SKIN irritation occurs: Get medical advice/attention.
P362+P364    Take off contaminated clothing and wash it before reuse.
P305+P351+    IF IN SKIN irritation persists: Get medical advice/attention.
P337+P313    IF SKIN irritation occurs: Get medical advice/attention.
P261    Avoid breathing dust/fumes/gas/mist/vapors/spray.
P271    Use only outdoors or in a well-ventilated area.
P304+P340    IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312    Call a POISON CENTER/doctor if you feel unwell.
P403+P233    Store in a well-ventilated place. Keep container tightly closed
P405    Store locked up.

2.3 Hazards otherwise not classified (HNOC) or not covered by GHS
None

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances
Synonym(s)    3-(4-Methylpiperazinyliminomethyl) rifamycin SV, Rifampin, Rifamycin AMP
Formula    \( C_{43}H_{58}N_4O_{12} \)
Molecular weight    822.94 g/mol

Hazardous components

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rifampicin</td>
<td></td>
<td>( \leq 100% )</td>
</tr>
</tbody>
</table>

CAS Number [13292-46-1]    Acute Tox. 4, H302
EC Number [236-312-0]    Skin Irrit. 2, H315
Eye Irrit. 2A, H319
STOT SE 3, H335

For the full text of the H-Statements mentioned in this section, see Section 16.

SECTION 4: FIRST-AID MEASURES

4.1 Description of first-aid measures

General information
Consult a doctor/physician if exposed - additional medical care may be required. Show this safety data sheet to the medical provider.

If inhaled
If inhaled, move to fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash skin thoroughly with soap and water. Remove any contaminated clothing. Consult a physician.

In case of eye contact
Flush eye with water. After initial flush, remove any contact lenses and continue flushing for at least 15 minutes.

If swallowed
Rinse mouth with water. Immediately call a doctor, physician, or poison control center. Never give anything by mouth to an unconscious person.
4.2 Most important symptoms/effects, acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing media
Suitable extinguishing media
Water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Unsuitable extinguishing media
No data available

5.2 Special hazards arising from the substance or mixture
Hazardous Combustion Products
Carbon and nitrogen oxides

5.3 Advice for firefighters
Wear self-contained breathing apparatus if necessary.

5.4 Further information
No data available

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Consult the safety measures listed in Section 7 and 8. Use personal protective equipment. Avoid breathing dust, vapors, mist or gas. Avoid direct contact with spilled substances. Ensure adequate ventilation. Avoid dust formation. For personal protection see Section 8.

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

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
Refer to section 8 for exposure control and personal protection. Refer to section 13 for disposal information.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.
Avoid contact with skin and eyes.
For precautionary statements see section 2.2

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place. Protect from humidity.
Recommended storage temperature: -20 °C
Hygroscopic.
Protect from light.

Incompatibilities:
Strong oxidizing agents
8.1 Control parameters

Components with workplace control parameters:
Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Appropriate engineering controls:
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling this product.

Personal Protective Equipment (PPE):

**Respiratory protection**
Where risk assessment shows air-purifying respirators are appropriate, use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Skin protection**
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal techniques to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the selected EN 374 derived from it.

Full Contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: > 480 min
Material tested: Dermatri® (KCL 740, Size M)

Splash Contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: > 480 min
Material tested: Dermatri® (KCL 740, Size M)

Data source: KCL GmbH, D-36124 Eichenzell,
phone +49 (0)6659 87300, email sales@kcl.de
Test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use. It should not be construed as offering an approval for any specific use scenario.

**Eye/Face protection**
Use a face shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

**Body protection**
Wear protective clothing. The type of protective equipment must be selected according to the concentration of the dangerous substance at the specific work place.

**Environmental exposure controls**
Do not let product enter drains. Discharge into the environment must be avoided.
SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties
- Appearance: Red crystalline powder
- Odor: No data available
- Odor Threshold: No data available
- pH: No data available
- Melting Point/Freezing Point: 194 °C
- Initial Boiling Point and Range: No data available
- Flash Point: No data available
- Evaporation rate: No data available
- Flammability (solid, gas): No data available
- Upper/Lower Flammability or Explosive Limits: No data available
- Vapour Pressure: No data available
- Vapour Density: No data available
- Relative Density: No data available
- Solubility(ies): Water: 1.4 mg/mL
  DMSO: Freely soluble
  Chloroform: Freely soluble
  Ethyl Acetate: Soluble
- Partition Coefficient: n-octanol/water: No data available
- Auto-Ignition Temperature: No data available
- Decomposition Temperature: No data available
- Viscosity: No data available
- Explosive Properties: No data available
- Oxidising Properties: No data available

9.2 Other safety information
No data available

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
Exposure to light, moisture

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
No data available

See Section 5 for hazardous combustion products.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
- Acute Toxicity
  Oral LD₅₀: Rat: 1570 mg/kg, Rabbit: 2120 mg/kg
  Intravenous LD₅₀: Mouse: 260 mg/kg
Skin Corrosion/Irritation
No data available

Serious Eye Damage/ Eye Irritation
No data available

Respiratory or Skin Sensitization
No data available

Germ Cell Mutagenicity
Bacteria: Salmonella typhimurium, 1 pph - DNA repair
Bacteria: Escherichia coli, 100 mg/L- Mutation in microorganisms
Yeast: Saccharomyces cerevisiae, 1 pph - Gene conversion and mitotic recombination

Carcinogenicity
Classified by the Internation Agency for Research on Cancer Monograph as Group 3, not classifiable as to its carcinogenicity to humans.
IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by the National Toxicology Program.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by the Occupational Health and Safety Association.

Reproductive Toxicity
Rat: TDLo 800 mg/kg, Oral
Female, 9-21 days after conception
Toxic Effects: Reproductive - Fertility - Post-implantation mortality
Reproductive - Specific Developmental Abnormalities - Central Nervous System, Urogenital System

Rat: TDLo 1400 mg/kg, Oral
Female, 4-10 days after conception
Toxic Effects: Reproductive - Specific Developmental Abnormalities - Craniofacial, Musculoskeletal System

Specific Target Organ Toxicity: Single Exposure
No data available

Specific Target Organ Toxicity: Repeated Exposure
No data available

Aspiration Hazard
No data available

Additional Information
RTECS # VJ7000000

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity
No data available

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available
12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

12.6 Other adverse effects
No data available

In the absence of complete ecological information, treat product as environmentally hazardous.
Use proper storage, handling, and disposal to prevent unintentional release into the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Product
Offer surplus and non-recyclable products to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Avoid disposal of material in drains or sewers.

Contaminated Packaging
Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION

DOT (US)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

SECTION 15: REGULATORY INFORMATION

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 313.

SARA 311/312 Hazards
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 311/312.

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

Pennsylvania Right to Know
No components are subject to the Pennsylvania Right to Know Act.

New Jersey Right to Know
No components are subject to the New Jersey Right to Know Act.

California Prop. 65 Components
WARNING! This product contains a chemical known to the State of California to cause birth defects or developmental harm.
SECTION 16: OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3
H302  Harmful if swallowed
H315  Causes skin irritation
H319  Causes serious eye irritation
H335  May cause respiratory irritation

HMIS Rating
Health Hazard:  1
Chronic Health Hazard:  *
Flammability:  0
Physical Hazard:  0

NFPA Rating
Health Hazard:  1
Fire Hazard:  0
Reactivity Hazard:  0

Further information
Revision Date: 2018-06-06

The above information is based upon the present state of our knowledge and is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information is believed to be correct but does not purport to be all inclusive. It does not represent any guarantees of the properties of the product. TOKU-E Company shall not be held liable for damage or injury resulting from contact, handling, or storage of the above product.