Safety Data Sheet

Cat. # RC-192

Rifampicin

Size: 25g
SECTION 1: Identification

1.1. Identification

<table>
<thead>
<tr>
<th>Product form</th>
<th>Substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance name</td>
<td>Rifampicin USP Grade</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>13292-46-1</td>
</tr>
<tr>
<td>Product code</td>
<td>825A</td>
</tr>
<tr>
<td>Formula</td>
<td>C43H58N4O12</td>
</tr>
<tr>
<td>Synonyms</td>
<td>3((4-methyl-1-piperazinyl)iminomethyl)rifamycin sv / 3(4-methylpiperazinyliminomethyl)rifamycin sv / 5,6,9,17,21-hexahydro-23-methoxy-2,4,12,16,18,20,22-heptamethyly-8(N(4-methyl-1-piperazinyl)formimidoyl)2,7(epoxypentadeca(1,11,13)triemino)napthho(2,1-b)uran-1,11(2H)dione 21-acetate / 8((4-methyl-1-piperazinyl)iminomethyl)rifamycin sv / 8(4-methylpiperazinyliminomethyl)rifamycin sv / archidyn / arlicin / dione-21-acetate / L-5103 / NSC113926 / R/AMP / rfa / rifadin / rifadine / rifagen / rifaldazin / rifaldine / rifamate / rifampicin / rifampicin crystalline / rifampicina / rifampicin / rifampicium / rifampin / rifamycin / rifamycin amp / rifamycin sv / rifamycin, 3-(((4-methyl-1-piperazinyl)iminomethyl)-/ rifanah / rifaprodin / rifobac / rifoldin / rifoldine / riforal / rimactan / rimactane / rimactazid / rimactizid / tubocin</td>
</tr>
<tr>
<td>BIG no.</td>
<td>21488</td>
</tr>
</tbody>
</table>

1.2. Recommended use and restrictions on use

No additional information available

1.3. Supplier

Geno Technology, Inc./ G-Biosciences
9800 Page Avenue
Saint Louis, 63132-1429 - United States
T 800-628-7730 - F 314-991-1504
technical@GBiosciences.com - www.GBiosciences.com

1.4. Emergency telephone number

Emergency number | Chemtrec 1-800-424-9300 (USA/Canada), +1-703-527-3887 (Intl)

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

<table>
<thead>
<tr>
<th>Acute toxicity (oral)</th>
<th>Category 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>H302</td>
<td>Harmful if swallowed</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation Category 2</td>
<td>H319</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure) Category 3</td>
<td>H335</td>
</tr>
</tbody>
</table>

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS-US labeling

Hazard pictograms (GHS-US) : ![Warning]

Signal word (GHS-US) : Warning

Hazard statements (GHS-US) : H302 - Harmful if swallowed, H319 - Causes serious eye irritation, H335 - May cause respiratory irritation

Precautionary statements (GHS-US) : P261 - Avoid breathing dust/fume/gas/mist/vapors/spray, P264 - Wash hands, forearms and face thoroughly after handling, P270 - Do not eat, drink or smoke when using this product, P271 - Use only outdoors or in a well-ventilated area.
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according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P301+P312 - If swallowed: Call a poison center or doctor if you feel unwell
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P312 - Call a poison center or doctor if you feel unwell
P330 - Rinse mouth.
P337+P313 - If eye irritation persists: Get medical advice/attention.
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
P405 - Store locked up.
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

2.3. Other hazards which do not result in classification
No additional information available

2.4. Unknown acute toxicity (GHS US)
Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

<table>
<thead>
<tr>
<th>Name</th>
<th>Common Name (Synonyms)</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rifampicin USP Grade (Main constituent)</td>
<td>3(((4-methyl-1-piperazinyl)methyl)methyl)rifamycin sv / 3-(4-methyl-1-piperazinyl)methyl)rifamycin sv / 5,6,9,17,19,21-hexahydro-23-methoxy-2,4,12,16,18,20,22-heptamethyl-8(N(4-methyl-1-piperazinyl)methyl)imidazoyl)2,7-epoxypeptadeca[1,11,13]irinminno)naphtho(1,1-b)furane-1,11(2H)dione 21-acetate / 8(((4-methyl-1-piperazinyl)methyl)methyl)rifamycin sv / 8-(4-methylpiperazinyl)methyl)rifamycin sv / 8(4-methylpiperazinyl)methyl)rifamycin sv / 8(4-methylpiperazinyl)methyl)rifamycin sv / archidyn / arfincin / dione-21-acetate / L-5103 / NSC113926 / R/AMP / rfa / rifadin / rifadine / rifagen / rifaldazin / rifaldazine / rifadin / rifamate / rifampicin / rifampicin crystalline / rifampicin sv / rifampicina / rifampione / rifampicinum / rifapten / rifamycin / rifamycin amp / rifamcyin sv / rifamycin, 3-((4-methyl-1-piperazinyl)methyl)methyl / rifanah / rifaprodin / rifobac / rifolin / rifolide / riforal / rimacan / rimactane / rimactazid / tubocin</td>
<td>(CAS-No.) 13292-46-1</td>
<td>100</td>
<td>Acute Tox. 4 (Oral), H302 Eye Irrit. 2, H319 STOT SE 3, H335</td>
</tr>
</tbody>
</table>

Full text of hazard classes and H-statements: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures


First-aid measures after inhalation: Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

First-aid measures after skin contact: Rinse with water. Do not apply (chemical) neutralizing agents. Take victim to a doctor if irritation persists.

First-aid measures after eye contact: Rinse with water. Remove contact lenses, if present and easy to do. Continue rinsing. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists.

4.2. Most important symptoms and effects (acute and delayed)

Potential Adverse human health effects and symptoms:
- Harmful if swallowed. May cause respiratory irritation. Causes serious eye irritation.

Symptoms/effects after inhalation:
- AFTER INHALATION OF DUST/MIST: Irritation of the respiratory tract. Irritation of the nasal mucous membranes.

Symptoms/effects after eye contact:
- Irritation of the eye tissue. FOLLOWING SYMPTOMS MAY APPEAR LATER: Conjunctivitis.

Symptoms/effects after ingestion:

Chronic symptoms:
- ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Skin rash/inflammation. Change in the haemogramme/blood composition. Yellow skin.

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media:

Unsuitable extinguishing media:
- Quick-acting BC powder extinguisher. Quick-acting CO2 extinguisher.

5.2. Specific hazards arising from the chemical

Reactivity:
- The product is non-reactive under normal conditions of use, storage and transport.

5.3. Special protective equipment and precautions for fire-fighters

Precautionary measures fire:
- Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighbourhood close doors and windows.

Firefighting instructions:
- Dilute toxic gases with water spray.

Protection during firefighting:
- Heat/fire exposure: compressed air/oxygen apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment:

Emergency procedures:
- Mark the danger area. Prevent dust cloud formation. No naked flames. Wash contaminated clothes.

Measures in case of dust release:
- In case of dust production: keep upwind. Dust production: have neighbourhood close doors and windows.

6.1.2. For emergency responders

Protective equipment:
- Do not attempt to take action without suitable protective equipment. For further information refer to section 8: “Exposure controls/personal protection”.

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

For containment:
- Contain released product, pump into suitable containers. Plug the leak, cut off the supply. Knock down/dilute dust cloud with water spray.

Methods for cleaning up:
- Stop dust cloud by covering with sand/earth. Scoop solid spill into closing containers. Clean contaminated surfaces with an excess of water. Wash clothing and equipment after handling.

Other information:
- Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling:
- Avoid raising dust. Keep away from naked flames/heat. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection. Comply with the legal requirements. Clean contaminated clothing.

Hygiene measures:
- Do not eat, drink or smoke when using this product. Always wash hands after handling the product.
7.2. Conditions for safe storage, including any incompatibilities

- **Storage conditions**: Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.
- **Heat-ignition**: KEEP SUBSTANCE AWAY FROM: heat sources.
- **Information on mixed storage**: KEEP SUBSTANCE AWAY FROM: oxidizing agents.
- **Storage area**: Store in a cool area. Store in a dry area. Store in a dark area. May be stored under inert gas. Meet the legal requirements.
- **Special rules on packaging**: SPECIAL REQUIREMENTS: closing. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Appropriate engineering controls

- **Appropriate engineering controls**: Ensure good ventilation of the work station.
- **Environmental exposure controls**: Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

- **Hand protection**: Gloves
- **Eye protection**: Safety glasses. In case of dust production: protective goggles
- **Skin and body protection**: Protective clothing
- **Respiratory protection**: Dust production: dust mask with filter type P2

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

- **Physical state**: Solid
- **Appearance**: Solid. Powder.
- **Color**: Orange to red
- **Odor**: No data available
- **Odor threshold**: No data available
- **pH**: < 6
- **Melting point**: 183 °C
- **Freezing point**: Not applicable
- **Boiling point**: Not applicable
- **Flash point**: Not applicable
- **Relative evaporation rate (butyl acetate=1)**: No data available
- **Flammability (solid, gas)**: Non flammable.
- **Vapor pressure**: No data available
- **Relative vapor density at 20 °C**: Not applicable
- **Relative density**: Not applicable
- **Molecular mass**: 822.96 g/mol
- **Solubility**: Poorly soluble in water. Soluble in organic solvents. Water: poorly soluble, Literature
- **Log Pow**: No data available
- **Auto-ignition temperature**: Not applicable
- **Decomposition temperature**: 183 °C
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Viscosity, kinematic: Not applicable
Viscosity, dynamic: No data available
Explosion limits: Not applicable
Explosive properties: No data available
Oxidizing properties: No data available

9.2. Other information

VOC content: 0 %
Other properties: Substance has acid reaction.

SECTION 10: Stability and reactivity

10.1. Reactivity
The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability
Stable under normal conditions.

10.3. Possibility of hazardous reactions
No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid
None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials
No additional information available

10.6. Hazardous decomposition products
Hazardous decomposition products.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity: Oral: Harmful if swallowed.

**Rifampicin USP Grade (13292-46-1)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>1570 mg/kg (Rat)</td>
</tr>
<tr>
<td>ATE US (oral)</td>
<td>1570 mg/kg body weight</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation: Not classified
pH: < 6

Serious eye damage/irritation: Causes serious eye irritation.
pH: < 6

Respiratory or skin sensitization: Not classified

Germ cell mutagenicity: Not classified

Carcinogenicity: Not classified

Reproductive toxicity: Not classified

Specific target organ toxicity – single exposure: May cause respiratory irritation.

Specific target organ toxicity – repeated exposure: Not classified

Aspiration hazard: Not classified

Potential Adverse human health effects and symptoms: Harmful if swallowed. May cause respiratory irritation. Causes serious eye irritation.

Symptoms/effects after inhalation: AFTER INHALATION OF DUST/MIST: Irritation of the respiratory tract. Irritation of the nasal mucous membranes.

Symptoms/effects after eye contact: Irritation of the eye tissue. FOLLOWING SYMPTOMS MAY APPEAR LATER: Conjunctivitis.


Chronic symptoms: ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Skin rash/inflammation. Change in the haemogramme/blood composition. Yellow skin.
SECTION 12: Ecological information

12.1. Toxicity
Ecology - general: The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

Ecology - air: Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).

Ecology - water: Mild water pollutant (surface water). No data available on ecotoxicity.

12.2. Persistence and degradability

<table>
<thead>
<tr>
<th>Substance</th>
<th>Persistence and degradability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rifampicin USP Grade (13292-46-1)</td>
<td>Biodegradability in water: no data available.</td>
</tr>
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12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>Substance</th>
<th>Bioaccumulative potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rifampicin USP Grade (13292-46-1)</td>
<td>No bioaccumulation data available.</td>
</tr>
</tbody>
</table>

12.4. Mobility in soil
No additional information available

12.5. Other adverse effects
No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

<table>
<thead>
<tr>
<th>Substance</th>
<th>Waste treatment methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rifampicin USP Grade (13292-46-1)</td>
<td>Waste treatment methods.</td>
</tr>
</tbody>
</table>

Product/Packaging disposal recommendations: Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber with energy recovery. Dissolve or mix with a combustible solvent.


SECTION 14: Transport information

Department of Transportation (DOT)
In accordance with DOT

Other information: No supplementary information available.

Transportation of Dangerous Goods

Transport by sea
Not regulated

Air transport
Not regulated

SECTION 15: Regulatory information

15.1. US Federal regulations

<table>
<thead>
<tr>
<th>Substance</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rifampicin USP Grade (13292-46-1)</td>
<td>Not listed on the United States TSCA (Toxic Substances Control Act) inventory</td>
</tr>
</tbody>
</table>
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15.2. International regulations

CANADA
No additional information available

EU-Regulations
No additional information available

National regulations
No additional information available

15.3. US State regulations

Rifampicin USP Grade (13292-46-1)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. - California - Proposition 65 - Carcinogens List</td>
<td>No</td>
</tr>
<tr>
<td>U.S. - California - Proposition 65 - Developmental Toxicity</td>
<td>Yes</td>
</tr>
<tr>
<td>U.S. - California - Proposition 65 - Reproductive Toxicity - Female</td>
<td>Yes</td>
</tr>
<tr>
<td>U.S. - California - Proposition 65 - Reproductive Toxicity - Male</td>
<td>Yes</td>
</tr>
</tbody>
</table>

SECTION 16: Other information

Revision date: 05/11/2017

Full text of H-phrases:

<table>
<thead>
<tr>
<th>H</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H302</td>
<td>Harmful if swallowed</td>
</tr>
<tr>
<td>H319</td>
<td>Causes serious eye irritation</td>
</tr>
<tr>
<td>H335</td>
<td>May cause respiratory irritation</td>
</tr>
</tbody>
</table>

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.