SECTION 1: Identification

1.1. Identification

Product form : Substance
Substance name : Rifampicin USP Grade
CAS-No. : 13292-46-1
Product code : 825A
Formula : C43H58N4O12
Synonyms : 3((4-methyl-1-piperazinyl)iminomethyl)rifamycin sv / 3(4-methylpiperazinyliminomethyl)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)formimidoyl]2,7(epoxypentadeca(1,11,13)trienimino)naphtho(2,1-b)furano-1,11(2H)dione 21-acetate / 8((4-methyl-1-piperazinyl)imino)methyl)rifamycin sv / 8(4-methylpiperazinyliminomethyl)rifamycin sv / archidyn / arficin / dione-21-acetate / L-5103 / NSC113926 / RAMP / rif / rifadin / rifadine / rifagen / rifaldazin / rifaldine / rifamate / rifampicin / rifampicin crystalline / rifampicin sv / rifampicine / rifampicium / rifampin / rifamycin / rifamycin amp / rifamycin sv / rifamycin, 3-(((4-methyl-1-piperazinyl)imino)methyl)- / rifanah / rifaprodin / rifobac / rifoldin / rifoldine / riforal / rimactan / rimactane / rimactazid / rimactizid / tubocin
BIG no : 21488

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

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
Acute toxicity (oral) Category 4 : H302 Harmful if swallowed
Serious eye damage/eye irritation Category 2 : H319 Causes serious eye irritation
Specific target organ toxicity (single exposure) Category 3 : H335 May cause respiratory irritation

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labelling
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.
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

Substance type : Mono-constituent

<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)iminomethyl)rifamycin sv / 3(4-methylpiperazinyliminomethyl)rifamycin sv / 5,6,9,17,19,21-hexahydro-23-methoxy-2,4,12,16,18,20,22-heptamethyl-b(4(4-methyl-1-piperazinyl)formimidoyl)2,7-epoxytrideca[1,11,13]trieniminomethyl)naphto(2,1-b)fur-an-1,11(2H)dione 21-acetate / 8(((4-methyl-1-piperazinyliminomethyl)rifamycin sv / 8(4-methylpiperazinyliminomethyl)rifamycin sv / archidyn / articin / dione-21-acetate / L-5103 / NSC113926 / R/AMP / rifa / rifadin / rifadine / rifagen / rifaladin / rifaldazine / rifaldin / rifamate / rifampicin / rifampicin crystaline / rifampicin sv / rifampicine / rifampicium / rifampin / rifamycin / rifamycin amp / rifamycin sv / rifamycin, 3-((4-methyl-1-piperazinyliminomethyl)-rifanah / rifaprodin / ribocac / rifoldin / rifoldine / riforal / rimactan / rimactane / rimactazid / rimactizid / tubocin (CAS-No.) 13292-46-1</td>
<td>100</td>
<td>Acute Tox. 4 (Oral), H302 Eye Irrit. 2, H319 STOT SE 3, H335</td>
<td></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.
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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.

4.3. Immediate medical attention and special treatment, if necessary
Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

5.2. Specific hazards arising from the chemical
No additional information available

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.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel
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. Keep container tightly closed.
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.
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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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Solid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Solid, Powder.</td>
</tr>
<tr>
<td>Color</td>
<td>Orange to red</td>
</tr>
<tr>
<td>Odor</td>
<td>No data available</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>&lt; 6</td>
</tr>
<tr>
<td>Melting point</td>
<td>183 °C</td>
</tr>
<tr>
<td>Freezing point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Boiling point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative evaporation rate (butyl acetate=1)</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Non flammable</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapor density at 20 °C</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative density</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Molecular mass</td>
<td>822.96 g/mol</td>
</tr>
<tr>
<td>Solubility</td>
<td>Poorly soluble in water. Soluble in organic solvents. Water: poorly soluble, Literature</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>183 °C</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>No data available</td>
</tr>
</tbody>
</table>
9.2. Other information

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOC content</td>
<td>0 %</td>
</tr>
<tr>
<td>Other properties</td>
<td>Acid reaction.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity (oral)</td>
<td>Harmful if swallowed.</td>
</tr>
<tr>
<td>Acute toxicity (dermal)</td>
<td>Not classified</td>
</tr>
<tr>
<td>Acute toxicity (inhalation)</td>
<td>Not classified</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>1570 mg/kg (Rat, Oral)</td>
</tr>
<tr>
<td>ATE US (oral)</td>
<td>1570 mg/kg body weight</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Not classified</td>
</tr>
<tr>
<td>pH: &lt; 6</td>
<td></td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>Causes serious eye irritation.</td>
</tr>
<tr>
<td>pH: &lt; 6</td>
<td></td>
</tr>
<tr>
<td>Respiratory or skin sensitization</td>
<td>Not classified</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Specific target organ toxicity – single exposure</td>
<td>May cause respiratory irritation.</td>
</tr>
<tr>
<td>Specific target organ toxicity – repeated exposure</td>
<td>Not classified</td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>Not classified</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Potential Adverse human health effects and symptoms</td>
<td>Harmful if swallowed. May cause respiratory irritation. Causes serious eye irritation.</td>
</tr>
<tr>
<td>Symptoms/effects after inhalation</td>
<td>AFTER INHALATION OF DUST/MIST: Irritation of the respiratory tract. Irritation of the nasal mucous membranes.</td>
</tr>
<tr>
<td>Symptoms/effects after eye contact</td>
<td>Irritation of the eye tissue. FOLLOWING SYMPTOMS MAY APPEAR LATER: Conjunctivitis.</td>
</tr>
<tr>
<td>Chronic symptoms</td>
<td>ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Skin rash/inflammation. Change in the haemogramme/blood composition. Yellow skin.</td>
</tr>
</tbody>
</table>
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

Rifampicin USP Grade (13292-46-1)

Persistence and degradability: Biodegradability in water: no data available.

12.3. Bioaccumulative potential

Rifampicin USP Grade (13292-46-1)

Bioaccumulative potential: No bioaccumulation data available.

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


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

Rifampicin USP Grade (13292-46-1)

Not listed on the United States TSCA (Toxic Substances Control Act) inventory
Rifampicin USP Grade
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CANADA
No additional information available

EU-Regulations
No additional information available

National regulations
No additional information available

15.3. US State regulations

<table>
<thead>
<tr>
<th>Rifampicin USP Grade (13292-46-1)</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

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision date : 05/11/2017

Full text of H-phrases:

<table>
<thead>
<tr>
<th>H302</th>
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</tr>
</thead>
<tbody>
<tr>
<td>H319</td>
<td>Causes serious eye irritation</td>
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<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.