SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers
   Product name : Rubidium
   Product Number : 276332
   Brand : Aldrich
   REACH No. : A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.
   CAS-No. : 7440-17-7

1.2 Relevant identified uses of the substance or mixture and uses advised against
   Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet
   Company : Sigma-Aldrich Inc.
   3050 SPRUCE ST
   ST. LOUIS MO 63103
   UNITED STATES
   Telephone : +1 314 771-5765
   Fax : +1 800 325-5052

1.4 Emergency telephone
   Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
   Classification according to Regulation (EC) No 1272/2008
   Substances and mixtures which in contact with water emit flammable gases (Category 1), H260
   Skin corrosion (Sub-category 1B), H314
   Serious eye damage (Category 1), H318
   For the full text of the H-Statements mentioned in this Section, see Section 16.
2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal Word Danger

Hazard statement(s)

H260 In contact with water releases flammable gases which may ignite spontaneously.

H314 Causes severe skin burns and eye damage.

Precautionary statement(s)

P223 Do not allow contact with water.

P231 + P232 Handle and store contents under inert gas. Protect from moisture.

P260 Do not breathe dust.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard information (EU)

EUH014 Reacts violently with water.

Reduced Labeling (< 125 ml)

Pictogram

Signal Word Danger

Hazard statement(s)

H314 Causes severe skin burns and eye damage.

Precautionary statement(s)

P260 Do not breathe dust.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard information (EU)

EUH014 Reacts violently with water.

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.
**SECTION 3: Composition/information on ingredients**

3.1 **Substances**

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rubidium</td>
<td>Water-react 1; Skin Corr. 1B; Eye Dam. 1; H260, H314, H318</td>
<td>&lt;= 100 %</td>
</tr>
</tbody>
</table>

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 advice**
First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

**If inhaled**
After inhalation: fresh air. Call in physician.

**In case of skin contact**
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

**In case of eye contact**
After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

**If swallowed**
After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation). Call a physician immediately. Do not attempt to neutralise.

4.2 **Most important symptoms and effects, both 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: Firefighting measures**

5.1 **Extinguishing media**

**Suitable extinguishing media**
Sand Special powder against metal fire Cement

**Unsuitable extinguishing media**
Foam Water
5.2 Special hazards arising from the substance or mixture
Rubidium oxides
Not combustible.
May not get in touch with: Water
Ambient fire may liberate hazardous vapours.

5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information
Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.

6.2 Environmental precautions
Do not let product enter drains. Risk of explosion.

6.3 Methods and materials for containment and cleaning up
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Advice on safe handling
Keep workplace dry. Do not allow product to come into contact with water.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Storage conditions
Tightly closed. Keep away from heat and sources of ignition. Never allow product to get in contact with water during storage. Handle and store under inert gas.

Storage class
Storage class (TRGS 510): 4.3: Hazardous materials, which set free flammable gases upon contact with water

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated
SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

8.2 Exposure controls

Personal protective equipment

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

**Body Protection**
protective clothing

**Respiratory protection**
required when dusts are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.
Recommended Filter type: Filter type P2

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

**Control of environmental exposure**
Do not let product enter drains. Risk of explosion.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>a)</strong> Physical state</td>
<td>Ingots</td>
<td></td>
</tr>
<tr>
<td><strong>b)</strong> Color</td>
<td>No data available</td>
<td></td>
</tr>
<tr>
<td><strong>c)</strong> Odor</td>
<td>No data available</td>
<td></td>
</tr>
<tr>
<td><strong>d)</strong> Melting point/freezing point</td>
<td>Melting point/range: 38 - 39 °C - lit.</td>
<td></td>
</tr>
<tr>
<td><strong>e)</strong> Initial boiling point and boiling range</td>
<td>686 °C - lit.</td>
<td></td>
</tr>
<tr>
<td><strong>f)</strong> Flammability (solid, gas)</td>
<td>No data available</td>
<td></td>
</tr>
<tr>
<td><strong>g)</strong> Upper/lower flammability or explosive limits</td>
<td>No data available</td>
<td></td>
</tr>
<tr>
<td><strong>h)</strong> Flash point</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td><strong>i)</strong> Autoignition temperature</td>
<td>No data available</td>
<td></td>
</tr>
</tbody>
</table>
j) Decomposition temperature  No data available
k) pH  No data available
l) Viscosity  Viscosity, kinematic: No data available
Viscosity, dynamic: No data available
m) Water solubility  No data available
n) Partition coefficient:  n-octanol/water  Not applicable for inorganic substances
o) Vapor pressure  No data available
p) Density  1,53 g/mL at 25 °C - lit.
   Relative density  No data available
q) Relative vapor density  No data available
r) Particle characteristics  No data available
s) Explosive properties  No data available
t) Oxidizing properties  none

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
Reacts violently with water.

10.2 Chemical stability
Sensitive to moisture

10.3 Possibility of hazardous reactions
Risk of explosion with:
   Alcohols
   aluminium halides
   ammonium compounds
   Ammonium salts
   metallic salts
   Heavy metal salts
   Lead oxides
   Bromine
   azides
   halogenated benzene compounds
   Halogenated hydrocarbon
   organic halides
   Bromoform
   hydrogen bromide
   Chlorine
   chlorates
   metallic chlorides
   Chloroform
chromium(VI) oxide
Diazonium compounds
Diethyl ether
halogen oxides
Nitrobenzene
organic nitro compounds
iodides
alkylnitrates
nitrites
Moisture.
Fluorine
Hydrogen fluoride
halogens
hydrazines
Hydrazine hydrate
iodine
halogen-halogen compounds
methyl iodine
Peroxides
Cobalt compounds
Carbon dioxide (CO2)
halogen compounds
Nitro compounds
Nitromethane
Organic Substances
perchlorates
phosphorus halides
phosphorous oxichloride
mercury compounds
mercury oxide
nitric acid (conc.)
hydrochloric acid
Oxygen
Acid chlorides
Acids
sulfur
Sulfur dichloride
Sulfur compounds
Halogenated compounds
Carbonyl sulfide
silver oxide
silver salt
silicon compounds
boron compounds
tetrachloromethane
Water
hydrogen peroxide
tin (II) chloride
Exothermic reaction with:
Hydrogen chloride gas
Dimethylformamide
ethanol
Mercury
selenium
Tellurium
Risk of ignition or formation of inflammable gases or vapours with:
hydroxylamine
Potassium
Activated charcoal
organic solvents
Air
nitrosyl compounds
nitril compounds
sulphur dioxide
hydrogen sulphide
nitrogen oxides
trichloroethene
Carbon monoxide
with
Water

10.4 Conditions to avoid
Air sensitive.
Air Do not allow water to enter container.
Moisture.

10.5 Incompatible materials
No data available

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
Oral: No data available
Inhalation: No data available
Dermal: No data available

Skin corrosion/irritation
Causes severe burns.

Serious eye damage/eye irritation
Causes serious eye damage.

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity
No data available

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available
Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

Endocrine disrupting properties

Product:
Assessment: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

RTECS: VL8500000
Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Cough, Shortness of breath, Headache, Nausea, Vomiting
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity
No data available

12.2 Persistence and degradability
The methods for determining biodegradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties
Product:
Assessment: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects
No data available
SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

14.1 UN number
ADR/RID: 1423  IMDG: 1423  IATA: 1423

14.2 UN proper shipping name
ADR/RID: RUBIDIUM
IMDG: RUBIDIUM
IATA: Rubidium
Passenger Aircraft: Not permitted for transport

14.3 Transport hazard class(es)
ADR/RID: 4.3  IMDG: 4.3  IATA: 4.3

14.4 Packaging group
ADR/RID: I  IMDG: I  IATA: I

14.5 Environmental hazards
ADR/RID: no  IMDG Marine pollutant: no  IATA: no

14.6 Special precautions for user
No data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

National legislation

Other regulations
Take note of Dir 94/33/EC on the protection of young people at work.

15.2 Chemical Safety Assessment
For this product a chemical safety assessment was not carried out

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.
EUH014 Reacts violently with water.
H260 In contact with water releases flammable gases which may ignite spontaneously.
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.

**Further information**
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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