

MATERIAL SAFETY DATA SHEET

NFPA	HMIS	Personal Protective Equipment						
	<table border="1" style="margin: auto;"> <tr><td style="background-color: #0056b3; color: white;">Health Hazard</td><td style="text-align: center;">2</td></tr> <tr><td style="background-color: #ff0000; color: white;">Fire Hazard</td><td style="text-align: center;">0</td></tr> <tr><td style="background-color: #ffff00; color: black;">Reactivity</td><td style="text-align: center;">0</td></tr> </table>	Health Hazard	2	Fire Hazard	0	Reactivity	0	
Health Hazard	2							
Fire Hazard	0							
Reactivity	0							
See Section 8.								

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product code:	R1364
Product Name:	RUBIDIUM FLUORIDE, ULTRAPURE
Chemical Name:	Rubidium fluoride
Synonyms:	Rubidium monofluoride
Recommended use:	No information available.
CAS #:	13446-74-7
Formula:	Not applicable
RTECS #	VL8740000
CI#:	Not available
Supplier:	Spectrum Chemicals and Laboratory Products, Inc. 14422 South San Pedro St. Gardena, CA 90248 (310) 516-8000
Emergency Telephone Number:	CHEMTREC: 1-800-424-9300
Contact Person:	Martin LaBenz (West Coast)
Contact Person:	Chris Terpak (East Coast)

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW			
WARNING!. Harmful if swallowed. Irritating to eyes. Irritating to skin. Irritating to respiratory system.			
Odor: None.	Physical state: Solid.	Appearance: Crystalline powder. Powder.	Color: White.

OSHA Regulatory Status

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

2. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

Principal Routes of Exposure:

Inhalation. Ingestion.

Acute Potential Health Effects:**Skin Contact:**

Contact causes skin irritation.

Eye Contact:

Causes eye irritation. May cause eye injury.

Inhalation:

Irritating to respiratory system.

Ingestion:

Ingestion may cause gastrointestinal irritation, nausea, vomiting, and diarrhoea. May cause abdominal pain. May cause difficulty swallowing. May cause salivation. May cause central nervous system effects. May affect respiration. May affect electrolyte balance. It may affect the kidneys. May affect the cardiovascular system.

Chronic Potential Health Effects:

Target Organs: Kidneys. Bones. Teeth.

Carcinogen Status: No information available

Mutagenic Effects: No information available

Teratogenic Effects: No information available

Aggravated Medical Conditions: Impaired kidney function.

See Section 11 for additional Toxicological Information

POTENTIAL ENVIRONMENTAL EFFECTS

No information available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Weight %
Rubidium Fluoride	13446-74-7	100

4. FIRST AID MEASURES

General Advice:

Poison information centres in each State capital city can provide additional assistance for scheduled poisons (13 1126).

Skin Contact:

Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention. If skin irritation persists, call a physician.

Eye Contact:

Flush eye with water for 15 minutes. Get medical attention.

Inhalation:	Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.
Ingestion:	Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Obtain medical attention.
Notes to Physician:	Treat symptomatically

5. FIRE-FIGHTING MEASURES

Flammable Properties

Flashpoint (°C/°F):	Not applicable
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Tested according to: Not applicable

Lower Explosion Limit (%):	No information available
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Upper Explosion Limit (%):	No information available
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Autoignition Temperature (°C/°F):	No information available
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Suitable Extinguishing Media: The product is not flammable. If it is involved in a fire, extinguish the fire using an agent suitable for the type of surrounding fire.

Unsuitable Extinguishing Media: No information available.

Hazardous Combustion Products: No information available.

Specific hazards: The product is not flammable. This material is an inorganic dust/powder and will not create nor support conditions that would result in a dust explosion or fire.

Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

Specific Methods: No information available.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:

Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Avoid dust formation.

Environmental Precautions:

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Do not let this chemical enter the environment.

Methods for Cleaning Up:

Sweep up and shovel into suitable containers for disposal. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Handling

Technical Measures/Precautions:

Provide sufficient air exchange and/or exhaust in work rooms. Avoid dust formation. Keep away from incompatible materials.

Safe Handling Advice:

Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Do not ingest. Do not breathe vapours/dust. Avoid dust formation. Keep away from heat and sources of ignition. Handle in accordance with good industrial hygiene and safety practice.

Storage

Technical Measures/Storage Conditions:

Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Store away from incompatible materials.

Incompatible Products:

Oxidizing agents. Acids.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures to reduce exposure:

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protective Equipment

Eye protection: Safety glasses. Safety glasses with side-shields.

Skin and body protection: Long sleeved clothing. Chemical resistant apron. Gloves.

Respiratory protection: Wear respirator with dust filter.

Hygiene measures: Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke.

National occupational exposure limits

United States

U.S Occupational Exposure Limits:

Components	OSHA	NIOSH	ACGIH	AIHA WHEEL
Rubidium Fluoride - 13446-74-7	2.5 mg/m ³ TWA (as Fluorine)	2.5 mg/m ³ TWA (as Fluorine)	2.5 mg/m ³ TWA (as Fluorine)	Not determined

Canada

Canada Occupational Exposure Limits:

Components	Alberta	British Columbia	Quebec	Ontario
Rubidium Fluoride 13446-74-7	2.5 mg/m ³ TWA (as Fluorine)	2.5 mg/m ³ TWA (as Fluorine)	2.5 mg/m ³ TWA (as Fluorine)	2.5 mg/m ³ TWA (as Fluorine)

Australia and Mexico

Occupational Exposure Limits for Australia and Mexico:

Components	Australia	Mexico
Rubidium Fluoride 13446-74-7	2.5 mg/m ³ TWA (as Fluorine)	Not determined

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Solid.	Appearance: Crystalline powder. Powder.	Color: White.
Odor: None.	Taste No information available	Molecular/Formula weight: 104.47
Flash point (°C): Not applicable	Lower Explosion Limit (%): No information available	Upper Explosion Limit (%): No information available
Autoignition Temperature (°C/°F): No information available	pH: No information available	Boiling point/range(°C/°F): 1410 °C/2570 °F
Melting point/range(°C/°F): 795 °C/1463 °F	Decomposition temperature(°C/°F): No information available	Specific gravity: No information available
Density (g/cm³): 3.557 @ 25 deg. C	Bulk density: No information available	Vapor pressure @ 20°C (kPa): No information available
Vapor density: No information available	Evaporation rate: No information available	VOC content (g/L): No information available
Odor threshold (ppm): No information available	Partition coefficient (n-octanol/water): No information available	Miscibility: No information available
Solubility: Soluble in Water		

10. STABILITY AND REACTIVITY

Stability:	Stable at normal conditions
Conditions to avoid:	Avoid dust formation. Incompatible materials.
Materials to avoid:	Oxidising agents. Acids.
Hazardous decomposition products:	No information available.
Possibility of Hazardous Reactions:	Reacts with strong mineral acids for form Hydrogen Fluoride.
Polymerization:	Hazardous polymerisation does not occur
Corrosivity:	No information available
Special Remarks on Corrosivity:	No information available

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Component Information

Rubidium Fluoride - 13446-74-7

LD50/oral/rat =

No information available

LD50/oral/mouse = No information available

LD50/dermal/rabbit =

No information available

LD50/dermal/rat = No information available

LC50/inhalation/rat = No information available

LC50/inhalation/mouse = No information available

Other LD50 information = No information available

Product Information

LC50/inhalation/rat = No information available

LC50/Inhalation/mouse = No information available

LD50/dermal/rabbit =

No information available

LD50/dermal/rat = No information available

LD50/oral/rat =

No information available

LD50/oral/mouse = No information available

Local Effects

Skin irritation: Causes skin irritation.

Eye irritation: Causes eye irritation.

Inhalation: Irritating to respiratory system.

Ingestion: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. May cause abdominal pain. May cause salivation. May cause dysphagia (difficulty swallowing; pain while swallowing). May affect respiration (shallow respiration). May affect urinary system (kidneys). May cause hypoglycemia (low blood sugar), which is characterized by symptoms such as blurred vision, chills, cold sweat, dizziness, drowsiness, shaking, rapid heart rate, confusion, weakness, headache, fainting, hunger, tingling of the hands or feet. May affect electrolytes. May cause hyperkalemia. May cause hypocalcemia. May cause hypomagnesemia. Acute ingestion of Rubidium may cause elevated blood potassium levels (hyperkalemia) due to an enhanced Potassium efflux into the into the blood. This can result in hyperirritability of the muscles and muscle spasms. Acute ingestion of fluorides may cause (nervous system effects) neurological symptoms such as headache, tremors, convulsions, seizures/convulsions, tetanic contractons, muscle spasms, muscle weakness. May affect the cardiovascular system.

Sensitization: No information available

Chronic Toxicity

Chronic Toxicity Chronic fluoride poisoning can cause anorexia, weight loss, bone changes (brittle bones) or deformations and dental defects. It may also affect blood and cause anemia. Chronic ingestion of high levels of fluorides may affect the kidneys.

Carcinogenic effects: Not considered carcinogenic

Components	NTP	IARC	OSHA	ACGIH - Carcinogens	Australia Prohibited Carcinogenic Substances	Australia Notifiable Carcinogenic Substances
Rubidium Fluoride	Not determined	Group 3 - Not classifiable as to its carcinogenicity to humans (listed as Fluorides, inorganic)	Not determined	A4 - Not classifiable as a human carcinogen (listed as Fluorides)	Not Present	Not present

Mutagenic Effects: No information available

Reproductive Effects: May cause adverse reproductive effects based on animal test data

Teratogenic Effects: No information available

Target Organs: Kidneys. Bones. Teeth.

12. ECOLOGICAL INFORMATION

ECOTOXICITY

Toxicity to terrestrial and aquatic plants and animals: No information available

Ecotoxicity effects: No data available

Aquatic toxicity: No information available

Mobility: No information available

Persistence and degradability: No information available

Bioaccumulative potential: No information available

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products:

Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:

Empty containers should be taken for local recycling, recovery or waste disposal

Components	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Rubidium Fluoride	None	None	None	None

14. TRANSPORT INFORMATION

DOT

UN-No: Not regulated

Proper Shipping Name: No information available

Hazard Class: No information available

Packing Group: None

Subsidiary Risk: Not applicable

Marine Pollutant: No data available

ERG No: No information available

DOT RQ (lbs): No information available

TDG (Canada)

Proper Shipping Name: No information available
UN-No: Not Regulated
Hazard Class: No information available
Packing Group: No information available
Subsidiary Risk: No information available
Description: No information available

ADR

Proper Shipping Name: No information available
UN-No: Not Regulated
Hazard Class: No information available
Packing Group: No information available
Subsidiary Risk: No information available
Classification Code: No information available
Description: No information available
CEFIC Tremcard No: No information available

IMO / IMDG

Proper Shipping Name: No information available
UN-No: Not Regulated
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
Description: No information available
IMDG Page: No information available
Marine Pollutant No information available
MFAG: No information available
Maximum Quantity: No information available

RID

Proper Shipping Name: No information available
UN-No: Not Regulated
Hazard Class: No information available
Packing Group: No information available
Subsidiary Risk: No information available
Classification Code: No information available
Description: No information available

ICAO

UN-No: Not Regulated
Hazard Class: No information available
Proper Shipping Name: No information available
Packing Group: No information available
Subsidiary Risk: No information available
Description: No information available

IATA

Proper Shipping Name: No information available
UN-No: Not Regulated
Hazard Class: No information available
Packing Group: No information available
Subsidiary Risk: No information available
Description: No information available

15. REGULATORY INFORMATION

International Inventories

Product code: R1364

Product name: RUBIDIUM FLUORIDE,
ULTRAPURE

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Components	U.S. TSCA	Philippines (PICCS)	KOREA KECL	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
Rubidium Fluoride	Present	Not present	KE-30650	Not present	Not present	Present	236-603-2

U.S. Regulations

Rubidium Fluoride

RI RTK - Hazardous Substances List: Present (Listed as Fluorides)

Minnesota - Hazardous Substance List: Present (Listed as Fluorides, inorganic)

California Directors List of Hazardous Substances: Present (Listed as Fluorides, inorganic)

California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.

Chemicals Known to the State of California to Cause Cancer:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Components	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
Rubidium Fluoride	Not Listed	Not Listed	Not Listed	Not Listed

CERCLA/SARA

Components	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting <i>de minimis</i>
Rubidium Fluoride	None	None	None	None	None

U.S. TSCA

Components	TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)	TSCA 8(d) -Health and Safety Reporting
Rubidium Fluoride	Not Applicable	Not Applicable

Canada

WHMIS hazard class:

D2B Toxic materials

Rubidium Fluoride

D2B

Canada Controlled Products Regulation:

This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

Components	WHMIS Ingredient Disclosure List -
Rubidium Fluoride	1% (fluorides)

Inventory

Components	Canada (DSL)	Canada (NDSL)
Rubidium Fluoride	Not Listed	Present

EU Classification

R20/21/22 - Harmful by inhalation, in contact with skin and if swallowed.

R36/37/38 - Irritating to eyes, respiratory system and skin.

S -phrase(s)

S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection.

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:

Xi - Irritant.

Xn - Harmful.



16. OTHER INFORMATION

The MSDS format complies with ANSI Z400.1-2004 standards.

Preparation Date	18-Feb-2011
Reason for revision:	Not applicable
Prepared by:	Sonia Owen
Literature reference:	No information available

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. The physical properties reported in this MSDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.