

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	Rubidium (100%), Enriched Rubidium
Chemical Formula	Rb
Molecular Weight	85.47
CAS No.	7440-17-7
EINECS No.	31-126-6
Supplier Address*	ISOFLEX USA PO Box 29475 San Francisco CA 94129 United States
Telephone	+1 415-440-4433
Fax	+1 415-563-4433
Emergency Phone Number (both supplier and manufacturer)	Infotrac/ +1 800-535-5053 *May include subsidiaries or affiliate companies/divisions
Email	iusa@isoflex.com
Website	www.isoflex.com
Preparation Information	ISOFLEX USA Product Safety +1 415-440-4433

2. HAZARDS IDENTIFICATION

Emergency Overview:

Hazard Symbol: C (Corrosive) F (Highly Flammable). Risk Phrases: **R 14/15** - Reacts violently with water, liberating extremely flammable gases. **R 34** - Causes burns. Pyrophoric Material: Material may ignite spontaneously on contact with air. Contact with water releases explosive hydrogen. Causes severe skin burns and eye damage.

NFPA Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 3 Flammability = 4 Reactivity = 2 Special Hazard: W



HMIS Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 3 Flammability = 4 Physical Hazard = 2

HEALTH HAZARD	3
FLAMMABILITY	4
PHYSICAL HAZARD	2

Potential Health Effects

<i>Skin</i>	Severe thermal burns, corrosion and ulceration of the skin may occur on direct contact.
<i>Eye</i>	Severe thermal burns, corrosion and ulceration of the eyes may occur on direct contact.
<i>Ingestion</i>	Ingestion will cause burns and perforations of the gastrointestinal tract.

See TOXICOLOGICAL INFORMATION below for specific effects.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name:	Rubidium
CAS No.	7440-17-7
Chemical Formula:	Rb
Molecular Weight:	85.47

4. FIRST AID MEASURES

<i>General Information</i>	Immediately remove any clothing soiled by the product. Get medical aid!
<i>Dermal Exposure</i>	Immediately wash with water and soap and rinse thoroughly. Get medical aid!
<i>Oral Exposure</i>	Seek medical attention immediately! Keep the victim calm. Give the victim water (only if conscious). Induce vomiting only if directed by medical personnel.
<i>Inhalation Exposure</i>	Remove from exposure to fresh air immediately. Supply fresh air. If required, provide artificially. Seek immediate medical advice!
<i>Eye Exposure</i>	Rinse opened eye for several minutes under running water. Seek medical attention.

5. FIREFIGHTING MEASURES

<i>Autoignition Temperature</i>	Not applicable
<i>Flash Point</i>	Not applicable
<i>Explosion Limits - Lower</i>	Not available
<i>Explosion Limits - Upper</i>	Not available
<i>Suitable Extinguishing Media</i>	DO NOT USE WATER. Use Class D metal fire agent, dry salt or sand.
<i>Unsuitable Extinguishing Agents</i>	Water, carbon dioxide & halogenated extinguisher. Contact with water releases explosive hydrogen. Burning material may release toxic fumes.

Firefighting

<i>Protective Equipment</i>	As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Runoff from fire control or dilution water may cause pollution.
<i>Special Hazards</i>	Material may ignite spontaneously on contact with air.

6. ACCIDENTAL RELEASE MEASURES

<i>Personal Precautions</i>	Wear protective equipment as indicated in Section 8. Keep unprotected persons away. Ensure adequate ventilation. Keep away from ignition sources.
<i>Environmental Precautions</i>	Do not allow material to be released to the environment without proper governmental permits.
<i>Methods for Cleaning Up</i>	Pick up mechanically. Dispose of contaminated material as waste according to Section 13. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation. Do not flush with water or aqueous cleansing agents.

7. HANDLING AND STORAGE

<i>Handling</i>	The material will react with air and moisture. Handle this material under an inert atmosphere of nitrogen or argon. Ensure good ventilation at the workplace. Keep container tightly sealed.
<i>Storage</i>	Store in a cool, dry place in tightly closed containers. Keep container tightly sealed. Store away from water/moisture. Store away from oxidizing agents. Do not store together with acids. Store away from halogens. Store this material under an inert atmosphere of nitrogen or argon.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<i>Engineering Controls</i>	Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute
<i>General Hygiene Measures</i>	Usual precautionary measures for handling chemicals should be followed. Keep away from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing immediately. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin.
Personal Protective Equipment	
<i>Eye</i>	Safety glasses, tightly sealed goggles, full face protection
<i>Hand</i>	Impervious gloves
<i>Body</i>	Wear appropriate protective clothing to prevent skin exposure.
<i>Respirators</i>	Use NIOSH/MSHA-approved respirator when high concentrations are present.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical State	Solid
Color	Silver-colored
Odor	Odorless

Safety Data

pH:	Not available
Flammability:	Contact with water liberates extremely flammable gases
Vapor Pressure:	Not determined
Vapor Density:	Not determined
Evaporation Rate:	Not applicable
Viscosity:	Not available
Boiling Point:	688 °C
Freezing/Melting Point::	38.9 °C
Decomposition Temperature:	Not determined
Solubility in Water:	Reacts violently
Specific Gravity/Density:	1.532 g/cc
Chemical Formula:	Rb
Molecular Weight:	85.47

10. STABILITY AND REACTIVITY

<i>Chemical Stability</i>	Moisture sensitive, pyrophoric
<i>Conditions to Avoid (Dangerous Reactions)</i>	Water/moisture, oxidizing agents, air, alcohols, acids, halogens, carbon dioxide
<i>Hazardous Decomposition Products</i>	Flammable hydrogen with moisture, caustic oxide with air. Decomposition will not occur if used and stored according to specifications.
<i>Hazardous Polymerization</i>	No hazardous polymerization

11. TOXICOLOGICAL INFORMATION

<i>RTECS No.</i>	VL8500000
<i>LD50 Intraperitoneal (mouse)</i>	1,200 mg/kg
<i>Signs and Symptoms of Exposure</i>	To the best of our knowledge, the acute and chronic toxicity of this substance is not fully known.
<i>General Toxicity</i>	The toxicity of rubidium compounds is generally due to the anion. Rubidium has been reported to replace potassium in animal studies. Indications are that overexposure could lead to muscle and red blood cell accumulation with possible neuromuscular effects, hyper-irritability and muscle spasms. No cases of industrial injury have been reported.
<i>Additional Information</i>	Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach. Eye contact may result in permanent damage and complete vision loss. May cause skin burns or irritation depending on the severity of the exposure.
<i>Reaction with Moisture</i>	Rubidium reacts readily with moisture to form rubidium hydroxide which is severely corrosive to tissue. Corrosive materials are acutely destructive to the respiratory tract, eyes, skin and digestive tract. Eye contact may result in permanent damage and complete vision loss. Inhalation may result in respiratory effects such as inflammation, edema, and chemical pneumonitis. May cause coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting

Acute Effects

<i>Inhalation</i>	Inhalation is not a likely mode of entry.
<i>Skin</i>	Severe thermal burns, corrosion and ulceration of the skin may occur on direct contact.
<i>Eye</i>	Severe thermal burns, corrosion and ulceration of the eyes may occur on direct contact.
<i>Ingestion</i>	Ingestion will cause burns and perforations of the gastrointestinal tract.
<i>Chronic Effects</i>	No information available on long-term chronic effects.

Carcinogenicity

No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

<i>Epidemiology</i>	No information available
<i>Teratogenicity</i>	No information available
<i>Reproductive Effects</i>	No information available
<i>Neurotoxicity</i>	No information available
<i>Mutagenicity</i>	No information available
<i>Other Studies</i>	See actual entry in RTECS for complete information

12. ECOLOGICAL INFORMATION

<i>Toxicity</i>	No data available
<i>Persistence and Degradability</i>	No data available
<i>Bioaccumulative Potential</i>	No data available
<i>Mobility in Soil</i>	No data available
<i>Results of PBT and vPvB Assessment</i>	PBT/vPvB assessment not available as chemical safety assessment not required/not conducted
<i>Other Adverse Effects</i>	No data available

13. DISPOSAL CONSIDERATIONS

<i>Product</i>	Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state, local or national regulations to ensure proper disposal.
<i>Contaminated Packaging</i>	Dispose of as unused product.

14. TRANSPORT INFORMATION

<i>Proper Shipping Name (Technical Name)</i>	Rubidium
<i>Identification No.</i>	UN1423
<i>Packing Group</i>	I
<i>Label</i>	4.3

15. REGULATORY INFORMATION

<i>Hazard Symbols</i>	C Corrosive, F Highly flammable
<i>Risk Phrases</i>	14/15 Reacts violently with water, liberating extremely flammable gases. 34 Causes burns.
<i>Safety Phrases</i>	7/8 Keep container tightly closed and dry. 20 When using, do not eat or drink. 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. 30 Never add water to this product. 33 Take precautionary measures against static discharges. 36/37/39 Wear suitable protective clothing, gloves and eye/face protection. 43 In case of fire, use sand or powdered extinguishing agent. Never use water. 45 In case of accident or if you feel unwell, seek medical advice immediately.
<i>National Regulations</i>	All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.
<i>REACH No.</i>	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.
SARA 302 Components	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components	This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
SARA 311/312 Hazards	Reactivity Hazard, Acute Health Hazard
Massachusetts Right to Know Components	No components are subject to the Massachusetts Right to Know Act.
Pennsylvania Right to Know Components	Rubidium / CAS No. 7440-17-7 / Revision Date 2007-03-01
New Jersey Right to Know Components	Rubidium / CAS No. 7440-17-7 / Revision Date 2007-03-01
California Prop. 65 Components	This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

<i>Prepared By</i>	ISOFLEX USA PO Box 29475 San Francisco CA 94129 United States
<i>Issuing Date</i>	January 12, 2014
<i>Revision Date</i>	July 29, 2021
<i>Revision Number</i>	2
<i>Revision Note</i>	Required format update

ISOFLEX USA's Commonly Used Abbreviations and Acronyms*

ACGIH	American Conference of Governmental Industrial Hygienists
ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road
ALARA	As Low As Is Reasonably Achievable
AMU	Atomic Mass Unit
ANSI	American National Standards Institute
BLS	Basic Life Support
CAM	Continuous Air Monitor
CAS	Chemical Abstracts Service (division of the American Chemical Society)
CEN	European Committee for Standardization
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CLP	Classification, Labelling and Packaging (European Union)
CPR	Controlled Products Regulations (Canada)
CWA	Clean Water Act (USA)
DAC	Derived Air Concentration (USA)
DOE	United States Department of Energy (USA)
DOT	United States Department of Transportation (USA)
DSL	Domestic Substances List (Canada)
EC50	Half Maximal Effective Concentration
EINECS	European Inventory of Existing Commercial Chemical Substances
EHS	Environmentally Hazardous Substance
ELINCS	European List of Notified Chemical Substances
EMS	Emergency Response Procedures for Ships Carrying Dangerous Goods
EPA	Environmental Protection Agency (USA)
EPCRA	Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986
GHS	Globally Harmonized System
HMIS	Hazardous Materials Identification System (USA)
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	Intermediate Bulk Containers
ICAO	International Civil Aviation Organization
IDLH	Immediately Dangerous to Life or Health
IMDG	International Maritime Code for Dangerous Goods
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
LDLO	Lethal Dose Low
LOEC	Lowest-Observed-Effective Concentration
MARPOL	International Convention for the Prevention of Pollution from Ships
MSHA	Mine Safety and Health Administration (USA)
NCRP	National Council on Radiation Protection & Measurements (USA)
NDSL	Non-Domestic Substances List (Canada)
NFPA	National Fire Protection Association (USA)
NIOSH	National Institute for Occupational Safety and Health (USA)

NOEC	No Observed Effect Concentration
N.O.S.	Not Otherwise Specified
NRC	Nuclear Regulatory Commission (USA)
NTP	National Toxicology Program (USA)
OSHA	Occupational Safety and Health Administration (USA)
PBT	Persistent Bioaccumulative and Toxic Chemical
PEL	Permissible Exposure Limit
PIH	Poisonous by Inhalation Hazard
RCRA	Resource Conservation and Recovery Act (USA)
RCT	Radiation Control Technician
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals (Europe)
RID	Regulations Concerning the International Transport of Dangerous Goods by Rail
RTECS	Registry of Toxic Effects of Chemical Substances
SARA	Superfund Amendments and Reauthorization Act (USA)
TDG	Transportation of Dangerous Goods (Canada)
TIH	Toxic by Inhalation Hazard
TLV	Threshold Limit Value
TPQ	Threshold Planning Quantity
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average
UN	United Nations (Number)
VOC	Volatile Organic Compound
vPvB	Very Persistent Very Bioaccumulative Chemical
WGK	Wassergefährdungsklassen (Germany: Water Hazard Classes)
WHMIS	Workplace Hazardous Materials Information System

*One or more of the above-listed items may not appear in this document.

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