

## RUBIDIUM

(Data in kilograms of rubidium content unless otherwise noted)

**Domestic Production and Use:** Rubidium is not mined in the United States; however, there are rubidium occurrences in Maine and South Dakota. This metal may occur with cesium or lithium minerals such as pollucite or lepidolite, respectively, commonly in association with pegmatites. There are also occurrences with evaporite minerals. There are only a few U.S. companies that process rubidium concentrate, all of which is imported from Canada. The use of rubidium and its compounds is limited, and applications include DNA separation, fiber optics, inorganic chemicals, lamps, night vision devices, and as standards for atomic absorption analysis. Rubidium and cesium are used in atomic clocks. Rubidium-82 is a decay product of strontium-82 and is used in imaging technology for diagnosis of heart conditions. The decay of radioactive rubidium-87 to strontium-87 is an important tool in geochronology.

**Salient Statistics—United States:** U.S. supplies of rubidium come from only one mine in Canada, as a byproduct. Production data from this mine are not available. Similarly, consumption, export, and import data are not available. Annual U.S. rubidium consumption is small and may only amount to a few thousand kilograms. No market price is available because the metal is not traded. Rubidium and rubidium compound prices are unlisted but have remained stable. In 2005, 1-gram ampoules of 99.75%-grade rubidium (metal) were offered at \$56.50 each, and the price for 100 grams of the same material was \$1,085.00.

**Recycling:** None.

**Import Sources (2001-04):** The United States is 100% import reliant. Canada is the chief source of rubidium ore imported by the United States.

<b><u>Tariff: Item</u></b>	<b>Number</b>	<b>Normal Trade Relations</b>
		<b><u>12-31-05</u></b>
Alkali metals, other	2805.19.9000	5.5% ad val.

**Depletion Allowance:** 14% (Domestic and foreign).

**Government Stockpile:** None.

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**Events, Trends, and Issues:** There have been no environmental or human health issues associated with the processing or use of rubidium; however, the combustion of coal may release small amounts of rubidium to the atmosphere. Consumption and use of this metal and its compounds are not commercially significant, and no change in use patterns is anticipated. Rubidium halide cathodes are being researched for use in low-pressure, mercury-free lamps.

**World Mine Production, Reserves, and Reserve Base:**<sup>1</sup> Rubidium may be found in trace amounts in potassium-bearing minerals such as feldspar and mica that formed during the crystallization of pegmatites. Zoned pegmatites and their associated rubidium-bearing minerals, lepidolite and pollucite, are the chief sources of rubidium. These very coarse-grained granitic rocks, which form late in the crystallization of a silicic magma, may concentrate rare minerals such as lepidolite, a lithium-bearing mica. This mineral is also the principal ore mineral of rubidium and may contain up to 3.15% rubidium. Rubidium may also be obtained as a byproduct from another pegmatite mineral, pollucite, which is a cesium aluminosilicate that may contain up to 1.35% rubidium. There are no minerals in which rubidium is the predominant metallic element. Canada is the world's leading producer of rubidium, and supplies of rubidium-bearing lepidolite from Canada are adequate for current use patterns.

**World Resources:** World resources of rubidium are unknown. In addition to several significant occurrences of rubidium-bearing pegmatites in Canada, there are pegmatite occurrences in Afghanistan, Namibia, Peru, Zambia, and other countries. Rubidium occurrences have been reported in brines in northern Chile and in China and also in salt beds in France, Germany, and the United States (New Mexico and Utah).

**Substitutes:** Rubidium and cesium may be used interchangeably in most applications because the properties of rubidium are similar to those of cesium. Cesium is less expensive.

<sup>1</sup>[See Appendix C for definitions.](#)