RUBIDIUM

(Data in kilograms of rubidium content unless otherwise noted)

<u>Domestic Production and Use:</u> Rubidium is not mined in the United States. On a global scale, rubidium may occur with lithium or cesium minerals in pegmatites or evaporite minerals. There are only a small number of U.S. companies that process imported rubidium ore. Rubidium and rubidium compounds, in limited amounts, may be used for DNA separation, fiber optics, inorganic chemicals, lamps, night vision devices, and as standards for atomic absorption analysis. Both rubidium and cesium are used in atomic clocks. Rubidium-82, a decay product of strontium-82, is used in imaging technology in the diagnosis of heart conditions, and the isotopic decay of rubidium-87 to strontium-87 is an important tool in geochronology.

<u>Salient Statistics—United States</u>: One mine in Canada is the major source of U.S. supplies of rubidium, and its production data are proprietary. Consumption, import, and export data are not available. The U.S. rubidium market is small, and annual consumption amounts to only a few thousand kilograms. The metal is not traded and, therefore, no market price is available. However, unlisted prices for rubidium and rubidium compounds are known to have remained relatively stable. In 2004, 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 \$1,085.20.

Recycling: None.

<u>Import Sources (2000-03)</u>: The United States is 100% import reliant. Canada is the chief source of rubidium ore imported by the United States.

<u>Tariff</u>: Item Number Normal Trade Relations

12-31-04

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: Consumption and use of rubidium and its compounds are not commercially significant, and there are no environmental or human health issues associated with its use or processing. No change in use patterns is predicted, and current technology does not indicate a new rubidium market.

World Mine Production, Reserves, and Reserve Base: Rubidium is found in trace amounts in some potassium-bearing minerals such as feldspar and mica that formed during the crystallization of pegmatites. These exceptionally coarse-grained rocks form late in the crystallization of granitic magma and may have concentrations of unusual and rare minerals such as lepidolite, a lithium-bearing mica. This mineral is the principal ore mineral of rubidium and may contain up to 3.15% rubidium. Rubidium may also be obtained as a byproduct from pollucite, a cesium aluminosilicate mineral 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 (pegmatite). Rubidium occurrences have also been reported in brines in northern Chile and in China and also in salt beds in France, Germany, and New Mexico.

World Resources: Rubidium is present in minor amounts in lepidolite in pegmatites in Maine and South Dakota. Lepidolite, which is also an important source of lithium, may occur with pollucite, the ore mineral of cesium, in zoned pegmatites. These minerals are mined chiefly in Canada; however, there are pegmatite occurrences in Afghanistan, Namibia, Peru, Zambia, and other countries. World resources of rubidium are unknown, but supplies of rubidium-bearing lepidolite are adequate for current use patterns.

<u>Substitutes</u>: Rubidium and cesium may be used interchangeably in atomic clocks and other applications because the properties of rubidium and its compounds are similar to those of cesium and its compounds. Cesium, however, is less expensive.