

**STRONTIUM**(Data in metric tons of strontium content<sup>1</sup> unless otherwise noted)

**Domestic Production and Use:** No strontium minerals have been produced in the United States since 1959. The most common strontium mineral, celestite, which consists primarily of strontium sulfate, was imported exclusively from Mexico. A company in Georgia was the only major U.S. producer of strontium compounds, and analysis of celestite import data indicates that production at this operation has decreased substantially since 2001. Estimates of primary strontium compound end uses in the United States were pyrotechnics and signals, 43%; ferrite ceramic magnets, 26%; master alloys, 10%; pigments and fillers, 7%; electrolytic production of zinc, 6%; and other applications, 8%.

<b>Salient Statistics—United States:</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007<sup>e</sup></b>
Production	—	—	—	—	—
Imports for consumption:					
Strontium minerals	1,020	2,760	799	671	340
Strontium compounds	23,300	14,500	11,700	8,860	7,500
Exports, compounds	693	552	255	716	604
Shipments from Government stockpile excesses	—	—	—	—	—
Consumption, apparent, celestite and compounds	23,600	16,700	12,200	8,820	7,240
Price, average value of mineral imports at port of exportation, dollars per ton	57	53	56	64	68
Net import reliance <sup>2</sup> as a percentage of apparent consumption	100	100	100	100	100

**Recycling:** None.

**Import Sources (2003-06):** Strontium minerals: Mexico, 100%. Strontium compounds: Mexico, 87%; Germany, 7%; and other, 6%. Total imports: Mexico, 88%; Germany, 6%; and other, 6%.

<b>Tariff:</b>	<b>Item</b>	<b>Number</b>	<b>Normal Trade Relations 12-31-07</b>
	Celestite	2530.90.8010	Free.
	Strontium metal	2805.19.1000	3.7% ad val.
	Compounds:		
	Strontium oxide, hydroxide, peroxide	2816.40.1000	4.2% ad val.
	Strontium nitrate	2834.29.2000	4.2% ad val.
	Strontium carbonate	2836.92.0000	4.2% ad val.

**Depletion Allowance:** 22% (Domestic), 14% (Foreign).

## STRONTIUM

**Events, Trends, and Issues:** China is the world's leading producer of strontium carbonate, with plant capacity of 200,000 tons per year, followed by Germany and Mexico, with 70,000 and 127,000 tons per year, respectively. China uses mostly domestic and some imported celestite to supply its strontium carbonate plants; the German producer uses imported celestite; and Mexican producers use domestic ore to supply their plants. Major markets for Chinese strontium carbonate are in Asia and Europe. Chinese celestite reserves are smaller and of lower quality than the ores in other major producing countries, including Mexico, Spain, and Turkey, raising the question of whether Chinese celestite producers will be able to maintain high enough production levels to meet the demand at strontium carbonate plants for an extended period of time, or if additional imports will be required.

The demand for strontium carbonate for faceplate glass for cathode ray tubes (CRTs) continues globally, but disappeared in the United States with the increased popularity of flat-panel television monitors. As a result, production facilities to manufacture CRTs for color televisions have shifted to other countries, causing the closure of all television glass plants in the United States, eliminating what was once the dominant U.S. market. Although CRTs are still available, growth continues in flat-panel technology, which requires much smaller quantities of strontium carbonate, resulting in steadily decreasing demand for strontium carbonate for television displays, especially in North America and Europe. Other end uses now represent larger shares of strontium use, but only because of the decline in the use of CRT glass, not because of significant growth in other uses.

### **World Mine Production, Reserves, and Reserve Base:**<sup>3</sup>

	Mine production		Reserves <sup>4</sup>	Reserve base <sup>4</sup>
	2006	2007 <sup>e</sup>		
United States	—	—	—	1,400,000
Argentina	7,500	7,500	All other:	All other:
China <sup>e</sup>	180,000	190,000	6,800,000	11,000,000
Iran	7,500	7,500		
Mexico	125,000	125,000		
Morocco	2,700	2,700		
Pakistan	1,900	3,500		
Spain	200,000	200,000		
Tajikistan	NA	NA		
Turkey	60,000	60,000		
World total (rounded)	585,000	600,000	6,800,000	12,000,000

**World Resources:** Resources in the United States are several times the reserve base. World resources are thought to exceed 1 billion tons.

**Substitutes:** Although it is possible to substitute other materials for strontium in some of its applications, such a change would adversely affect product performance and/or cost. For example, barium could replace strontium in CRT picture tube glass only after extensive circuit redesign to reduce operating voltages that produce harmful secondary X-rays. Barium replacement of strontium in ferrite ceramic magnets would decrease the maximum energy and temperature characteristics of the magnets. Substituting for strontium in pyrotechnics would be impractical because the desired brilliance and visibility are imparted only by strontium and its compounds.

<sup>e</sup>Estimated. NA Not available. — Zero.

<sup>1</sup>The strontium content of celestite is 43.88%; this factor was used to convert units of celestite.

<sup>2</sup>Defined as imports – exports + adjustments for Government and industry stock changes.

<sup>3</sup>Metric tons of strontium minerals.

<sup>4</sup>See Appendix C for definitions.