

STRONTIUM

(Data in metric tons of strontium content,¹ 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. Primary strontium compounds were used in the faceplate glass of color television picture tubes, 75%; ferrite ceramic magnets, 10%; pyrotechnics and signals, 6%; and other applications, 9%.

Salient Statistics—United States:	1996	1997	1998	1999	2000^e
Production, strontium minerals	—	—	—	—	—
Imports for consumption:					
Strontium minerals	11,600	12,500	10,600	13,700	12,000
Strontium compounds	20,500	26,000	25,000	26,800	31,000
Exports, compounds	712	599	875	2,890	4,700
Shipments from Government stockpile excesses	—	—	—	—	—
Consumption, apparent, celestite and compounds	31,400	37,900	34,700	37,600	38,000
Price, average value of mineral imports					
at port of exportation, dollars per ton	67	72	60	73	63
Net import reliance ² as a percent of apparent consumption	100	100	100	100	100

Recycling: None.

Import Sources (1996-99): Strontium minerals: Mexico, 100%. Strontium compounds: Mexico, 91%; Germany, 7%; and other, 2%. Total imports: Mexico, 94%; Germany, 5%; and other, 1%.

Tariff:	Item	Number	Normal Trade Relations³
			12/31/00
	Celestite	2530.90.0010	Free.
	Strontium metal	2805.22.1000	3.7% ad val.
	Compounds:		
	Strontium carbonate	2836.92.0000	4.2% ad val.
	Strontium nitrate	2834.29.2000	4.2% ad val.
	Strontium oxide, hydroxide, peroxide	2816.20.0000	4.2% ad val.

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

Government Stockpile: Although 5,100 tons of celestite is in the National Defense Stockpile, none of it is stockpile grade; its total value is listed as zero. The stockpile goal for celestite was reduced to zero in 1969, and at that time, the stockpile contained stockpile- and nonstockpile-grade material. Since then, all the stockpile-grade celestite has been sold. Although the nonstockpile-grade celestite has been offered for sale, none has been sold since 1979. The fiscal year 2001 Annual Materials Plan, announced at the end of September 2000 by the Defense National Stockpile Center, listed 3,270 tons of celestite to be offered for disposal. Because the remaining material does not meet the quality specifications of celestite purchasers, the material will be difficult to dispose of in the traditional markets. It might be attractive as a low-cost replacement for barite in drilling mud applications.

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Events, Trends, and Issues: With celestite production second only to Mexico, Spain has historically exported its celestite output. The new strontium carbonate plant that was completed in 2000 created additional celestite demand for domestic processing. With a large celestite deposit, Algeria was looking for partners to expand production and to build a strontium carbonate plant for the export market.

World Mine Production, Reserves, and Reserve Base:⁴

	Mine production		Reserves ⁵	Reserve base ⁵
	<u>1999</u>	<u>2000^e</u>		
United States	—	—	—	1,400,000
Algeria	5,400	5,400		
Argentina	3,000	3,000		
China	35,000	35,000		
Iran	20,000	20,000		
Mexico	120,000	120,000	Other:	Other:
Pakistan	600	600	6,800,000	11,000,000
Spain	95,000	95,000		
Tajikistan	NA	NA		
Turkey	25,000	25,000		
World total (may be rounded)	<u>⁶304,000</u>	<u>⁶304,000</u>	<u>6,800,000</u>	<u>12,000,000</u>

World Resources: Resources in the United States are several times the reserve base. Although not thoroughly evaluated, 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 color television 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.

^eEstimated. NA Not available.

¹The strontium content of celestite is 43.88%; this amount was used to convert units of celestite.

²Defined as imports - exports + adjustments for Government and industry stock changes.

³No tariff for Mexico for items shown.

⁴Metric tons of strontium minerals.

⁵See Appendix C for definitions.

⁶Excludes Tajikistan.