

STRONTIUM

(Data in metric tons of contained strontium,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, 76%; ferrite ceramic magnets, 10%; pyrotechnics and signals, 5%; and other applications, 9%.

Salient Statistics—United States:	1994	1995	1996	1997	1998^e
Production, strontium minerals	—	—	—	—	—
Imports for consumption:					
Strontium minerals	16,000	12,700	11,600	12,500	12,000
Strontium compounds	20,000	20,800	20,500	26,000	25,000
Exports, compounds	1,120	1,160	712	599	570
Shipments from Government stockpile excesses	—	—	—	—	—
Consumption, apparent, celestite and compounds	34,900	32,300	31,400	37,900	36,400
Price, average value of mineral imports					
at port of exportation, dollars per ton	68	71	67	72	60
Net import reliance ² as a percent of apparent consumption	100	100	100	100	100

Recycling: None.

Import Sources (1994-97): Strontium minerals: Mexico, 100%. Strontium compounds: Mexico, 88%; Germany, 11%; and other, 1%. Total imports: Mexico, 93%; and Germany, 7%.

Tariff:	Item	Number	Normal Trade Relations (NTR)	Mexico	Non-NTR³
			12/31/98	12/31/98	12/31/98
	Celestite	2530.90.0010	Free	Free	0.3¢/kg.
	Strontium metal	2805.22.1000	3.7% ad val.	Free	25% ad val.
	Compounds:				
	Strontium carbonate	2836.92.0000	4.2% ad val.	Free	25% ad val.
	Strontium nitrate	2834.29.2000	4.2% ad val.	Free	25% ad val.
	Strontium oxide, hydroxide, peroxide	2816.20.0000	4.2% ad val.	Free	25% ad val.

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

Government Stockpile:

Material	Stockpile Status—9-30-98⁴				
	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 1998	Disposals FY 1998
Celestite	5,100	—	5,100	—	—

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Events, Trends, and Issues: Although there is celestite in the National Defense Stockpile, none of it is stockpile grade; its total value is listed as zero. The stockpile goal was reduced to zero in 1969, and at that time the stockpile contained both 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 1999 Annual Materials Plan, announced at the end of September 1998 by the Defense National Stockpile Center, did not list any quantity of celestite to be offered for disposal. Because the remaining material does not meet the quality specifications of celestite purchasers, it will be difficult to dispose of the material into the traditional markets. It might be attractive as a low-cost replacement for barite in drilling mud applications.

World Mine Production, Reserves, and Reserve Base:⁵

	Mine production		Reserves ⁶	Reserve base ⁶
	<u>1997</u>	<u>1998^e</u>		
United States	—	—	—	1,360,000
Algeria	5,400	5,400		
Argentina	4,000	4,000		
China	35,000	35,000		
Iran	20,000	20,000		
Mexico	145,000	145,000	Other:	Other:
Pakistan	2,000	2,000	6,800,000	10,600,000
Spain	100,000	100,000		
Tajikistan	NA	NA		
Turkey	<u>30,000</u>	<u>30,000</u>		
World total (may be rounded)	<u>⁷340,000</u>	<u>⁷340,000</u>	<u>6,800,000</u>	<u>12,000,000</u>

World Resources: Resources in the United States are several times the reserve base. World resources, although not thoroughly evaluated, are thought to exceed 1 billion tons.

Substitutes: Although it is possible to substitute 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.

³See Appendix B.

⁴See Appendix C for definitions.

⁵Metric tons of strontium minerals.

⁶See Appendix D for definitions.

⁷Excludes Tajikistan.