

STRONTIUM

(Data in metric tons of strontium content¹ unless otherwise noted)

Domestic Production and Use: U.S. production of strontium minerals ceased in 1959. The United States is 100% import reliant on celestite, the most common strontium mineral consisting primarily of strontium sulfate. A company in Georgia was the only major U.S. producer of strontium compounds, and analysis of celestite import data indicate 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, 30%; ferrite ceramic magnets, 30%; master alloys, 10%; pigments and fillers, 10%; electrolytic production of zinc, 10%; and other applications, 10%.

<u>Salient Statistics—United States:</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009^e</u>
Production	—	—	—	—	—
Imports for consumption:					
Strontium minerals	799	671	541	2,030	5,900
Strontium compounds	11,700	8,860	8,550	9,420	5,200
Exports, compounds	255	716	697	745	800
Consumption, apparent, celestite and compounds	12,200	8,820	8,390	10,700	10,000
Price, average value of mineral imports at port of exportation, dollars per ton	56	64	67	64	68
Net import reliance ² as a percentage of apparent consumption	100	100	100	100	100

Recycling: None.

Import Sources (2005-08): Strontium minerals: Mexico, 100%. Strontium compounds: Mexico, 85%; Germany, 9%; and other, 6%. Total imports: Mexico, 93%; Germany, 4%; and other, 3%.

<u>Tariff:</u>	<u>Item</u>	<u>Number</u>	<u>Normal Trade Relations</u>
			<u>12-31-09</u>
	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).

Government Stockpile: None.

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Events, Trends, and Issues: Consumption of strontium minerals has been shifting away from cathode ray tubes (CRTs), the key commercial market for many years, owing to advances in flat-panel technology, which requires much smaller quantities of strontium carbonate. With global shipments of liquid-crystal display televisions expected to double by 2012, strontium demand for CRTs that was initially stable in Asia and Mexico is expected to vanish. Even without strontium carbonate consumption in CRTs, estimated strontium consumption in ceramics and glass manufacture remained one of the top end-use industries through its use in ceramic ferrite magnets and other ceramic and glass applications. The use of strontium nitrate in pyrotechnics was estimated to equal the use of strontium carbonate in ferrite magnets.

In descending order of production, China, Spain, and Mexico are the world's leading producers of celestite; however, decreases in production in Mexico and Spain are expected in the near term. With new Chinese suppliers and decreased demand for CRTs, Spanish production of celestite is expected to decrease, with a key celestite mine and refinery to be closed at the end of 2009. The Iranian celestite industry is expecting strong growth over the next 3 years owing to strong Chinese demand, low cost of container freights, and government subsidies. Production is expected to reach rates between 2,000 and 20,000 tons per year. Turkey had been another leading celestite producer, but continues to experience significant decline in production.

China, Germany, and Mexico are the world's leading producers of strontium carbonate. China utilizes mostly domestic celestite to supply its strontium carbonate plants; the German producer is 100% reliant on imported celestite; and Mexican producers consume domestic ore for their strontium carbonate production. Major markets for Chinese strontium carbonate are Asia and Europe. Chinese celestite reserves are smaller and lower quality than those in other major producing countries, including Mexico and Spain; therefore, China is becoming more reliant on imported celestite.

World Mine Production and Reserves:³

	Mine production		Reserves ⁴
	2008	2009 ^e	
United States	—	—	—
Argentina	5,000	5,500	All other:
China ^e	200,000	200,000	6,800,000
Mexico	96,900	30,000	
Morocco	2,700	2,700	
Pakistan	1,700	1,700	
Spain	188,000	180,000	
Turkey	1,600	—	
World total (rounded)	496,000	420,000	6,800,000

World Resources: World resources of strontium are thought to exceed 1 billion tons.

Substitutes: The substitution of other materials for strontium in some applications is possible; however, such a change would adversely affect product performance and/or cost. For example, 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. — Zero.

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

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

³Metric tons of strontium minerals.

⁴See Appendix C for definitions. Reserve base estimates were discontinued in 2009; see [Introduction](#).