STRONTIUM
(Data in metric tons of strontium content, 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%.

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 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 Relations
          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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STRONTIUM

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

<table>
<thead>
<tr>
<th></th>
<th>Mine production</th>
<th>Reserves5</th>
<th>Reserve base5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1999</td>
<td>2000a</td>
<td></td>
</tr>
<tr>
<td>United States</td>
<td>—</td>
<td>—</td>
<td>1,400,000</td>
</tr>
<tr>
<td>Algeria</td>
<td>5,400</td>
<td>5,400</td>
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</tr>
<tr>
<td>Argentina</td>
<td>3,000</td>
<td>3,000</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>35,000</td>
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<td>Iran</td>
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</tr>
<tr>
<td>Mexico</td>
<td>120,000</td>
<td>120,000</td>
<td>Other:</td>
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<tr>
<td>Pakistan</td>
<td>600</td>
<td>600</td>
<td>11,000,000</td>
</tr>
<tr>
<td>Spain</td>
<td>95,000</td>
<td>95,000</td>
<td></td>
</tr>
<tr>
<td>Tajikistan</td>
<td>NA</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Turkey</td>
<td>25,000</td>
<td>25,000</td>
<td></td>
</tr>
<tr>
<td>World total</td>
<td>304,000</td>
<td>304,000</td>
<td>12,000,000</td>
</tr>
</tbody>
</table>

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.

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4Estimated. 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.