

## SAND AND GRAVEL (INDUSTRIAL)

(Data in thousand metric tons, unless otherwise noted)<sup>1</sup>

**Domestic Production and Use:** Industrial sand and gravel valued at about \$532 million was produced by 80 companies from 141 operations in 36 States. Leading States, in order of volume, were Illinois, Michigan, California, Texas, and Wisconsin. Combined production from these States represented 45% of the national total. About 37% of the national tonnage was used as glassmaking sand, 23% as foundry sand, 6% as hydraulic fracturing sand, 5% as abrasive sand, and the remaining 29% for many other uses.

<b>Salient Statistics—United States:</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998<sup>e</sup></b>
Production	27,300	28,200	27,800	28,500	29,000
Imports for consumption	24	65	7	39	41
Exports	1,880	1,870	1,430	980	2,010
Consumption, apparent	25,400	26,400	26,400	27,600	27,000
Price, average value, dollars per ton	17.86	17.82	17.88	18.17	18.27
Stocks, yearend	NA	NA	NA	NA	NA
Employment, quarry and mill, number <sup>e</sup>	1,500	1,450	1,450	1,450	1,400
Net import reliance <sup>2</sup> as a percent of apparent consumption	E	E	E	E	E

**Recycling:** There is some recycling of foundry sand, and recycled cullet (pieces of glass) represents a significant amount of reused silica.

**Import Sources (1994-97):** Australia, 66%; Canada, 11%; Mexico, 9%; Guyana, 7%; and other, 7%.

<b>Tariff: Item</b>	<b>Number</b>	<b>Normal Trade Relations (NTR) 12/31/98</b>	<b>Non-NTR<sup>3</sup> 12/31/98</b>
95% or more silica and not more than 0.6% iron oxide	2505.10.1000	Free	\$1.97/t.

**Depletion Allowance:** Industrial sand or pebbles, 14% (Domestic and Foreign).

**Government Stockpile:** None.

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**Events, Trends, and Issues:** The United States was the world's largest producer and consumer of industrial sand and gravel based on estimated world production figures. However, it was difficult to collect definitive numbers on silica sand and gravel production in most nations because of the wide range of terminologies and specifications for silica from country to country. Attempts to improve the accuracy of data on world industrial sand and gravel production are ongoing, and revisions should be expected.

The United States remained a major exporter of silica sand, shipping sand to almost every region of the world. This was attributed to the high quality and advanced processing techniques of a large variety of grades of silica, meeting virtually every specification for silica sand and gravel. Through September 1998, exports were estimated to have more than doubled compared with 1997. This large increase was mostly attributed to Mexico, which received more than the amount that was exported in 1997. Imports of silica are generally of two types: small-quantity shipments of very-high-purity silica or a few large shipments of lower grade silica that is shipped only when special circumstances were achieved (e.g., very favorable freight rates).

The quantities of industrial sand and gravel sold or used increased about 1.6% in 1998 compared with that of 1997. It is estimated that 1999 domestic production and U.S. apparent consumption will be about 29.5 million tons and 27.5 million tons, respectively.

The industrial sand and gravel industry continued to be concerned with safety and health regulations and environmental restrictions in 1998. Local shortages were expected to continue to increase owing to local zoning regulations and land development alternatives. This is expected to continue to cause a movement of sand and gravel operations away from high-population centers.

### **World Mine Production, Reserves, and Reserve Base:**

	<b>Mine production<sup>o</sup></b>		<b>Reserves and reserve base<sup>4</sup></b>
	<b>1997</b>	<b>1998</b>	
United States	28,500	29,000	Large. Silica is abundant in the Earth's crust. The reserves and reserve base are determined by the location of population centers.
Australia	2,500	2,500	
Austria	6,500	6,500	
Belgium	2,300	2,400	
Brazil	2,700	2,700	
Canada	1,590	1,600	
France	6,500	6,500	
Germany	6,000	6,200	
India	1,500	1,500	
Italy	3,000	3,000	
Japan	3,310	3,100	
Mexico	1,560	1,600	
Netherlands	24,000	24,000	
Paraguay	5,000	5,000	
South Africa	2,480	2,500	
Spain	2,800	2,800	
Sweden	500	750	
United Kingdom	4,800	4,800	
Other countries	<u>13,500</u>	<u>13,500</u>	
World total (rounded)	119,000	120,000	

**World Resources:** Sand and gravel resources of the world are sizable. However, because of their geographic distribution, environmental restrictions, and quality requirements for some uses, extraction of these resources is sometimes uneconomic. Quartz-rich sand and sandstones, the main source of industrial silica sand, occur throughout the world.

**Substitutes:** Silica sand continues to be the major material used for glassmaking and for foundry and molding sands; alternates are zircon, olivine, staurolite, and chromite sands.

<sup>o</sup>Estimated. E Net exporter. NA Not available.

<sup>1</sup>See Appendix A for conversion to short tons.

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

<sup>3</sup>See Appendix B.

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