

SAND AND GRAVEL (INDUSTRIAL)

(Data in thousand metric tons, unless otherwise noted)¹

Domestic Production and Use: Industrial sand and gravel valued at about \$512 million was produced by 82 companies from 146 operations in 37 States. Leading States, in order of volume, were Illinois, Michigan, California, New Jersey, and Wisconsin. Combined production from these States represented 44% 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 remainder for many other uses.

<u>Salient Statistics—United States:</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997^e</u>
Production	26,200	27,300	28,200	27,800	28,300
Imports for consumption	44	24	65	7	36
Exports	1,750	1,880	1,870	1,430	800
Consumption, apparent	24,500	25,400	26,400	26,400	27,500
Price, average value, dollars per ton	17.33	17.86	17.82	17.88	18.10
Stocks, yearend	NA	NA	NA	NA	NA
Employment, quarry and mill, number ^e	1,500	1,500	1,450	1,450	1,450
Net import reliance ² 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 (1993-96): Australia, 82%; Guyana, 7%; Canada, 5%; Sweden, 4%; and other, 2%.

<u>Tariff: Item</u>	<u>Number</u>	<u>Most favored nation (MFN)</u> <u>12/31/97</u>	<u>Non-MFN³</u> <u>12/31/97</u>
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 August 1997, exports of industrial sand and gravel were estimated to have decreased nearly 45%, compared to 1996. Most of this decrease was attributed to a reduction in Canadian demand. 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).

Industrial sand and gravel sold or used increased about 1.8% in 1997 compared with 1996. It is estimated that 1998 domestic production and U.S. apparent consumption will be about 29 million tons and 27 million tons, respectively.

The industrial sand and gravel industry continued to be concerned with safety and health regulations and environmental restrictions in 1997. 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:

	Mine production ^o		Reserves and reserve base ⁴
	1996	1997	
United States	27,800	28,300	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	7,000	6,750	
Belgium	2,300	2,200	
Brazil	2,700	2,700	
Canada	1,670	1,600	
France	6,500	6,800	
Germany	7,500	7,000	
India	1,250	1,280	
Italy	3,000	3,000	
Japan	3,560	3,500	
Mexico	1,470	1,500	
Netherlands	24,000	24,000	
Paraguay	7,000	7,000	
South Africa	2,170	2,000	
Spain	2,800	2,700	
Sweden	1,500	1,500	
United Kingdom	2,000	2,200	
Other countries	<u>10,300</u>	<u>8,500</u>	
World total (rounded)	117,000	115,000	

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.

^oEstimated. E Net exporter. NA Not available.

¹See Appendix A for conversion to short tons.

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

³See Appendix B.

⁴See Appendix D for definitions.