

SAND AND GRAVEL (INDUSTRIAL)¹

(Data in thousand metric tons unless otherwise noted)

Domestic Production and Use: Industrial sand and gravel valued at about \$2.6 billion was produced by 120 companies from 177 operations in 31 States. Leading States were, in order of tonnage produced, Wisconsin, Illinois, Texas, Minnesota, Oklahoma, Arkansas, Michigan, and Iowa. Combined production from these States accounted for 74% of the domestic total. About 62% of the U.S. tonnage was used as hydraulic fracturing sand and well-packing and cementing sand, 16% as glassmaking sand, 9% as foundry sand, 3% as whole-grain fillers and building products, 2% as other whole-grain silica, 2% as ground and unground sand for chemicals, 1% as recreational sand, and 5% for other uses.

Salient Statistics—United States:	2009	2010	2011	2012	2013^e
Production	27,500	32,300	43,800	50,700	52,500
Imports for consumption	95	132	316	306	144
Exports	2,150	3,950	4,330	4,360	4,400
Consumption, apparent	25,500	28,500	39,800	46,600	48,200
Price, average value, dollars per ton	34.25	35.63	45.74	52.80	49.60
Employment, quarry and mill, number ^e	1,400	1,400	1,400	1,400	1,400
Net import reliance ² as a percentage of apparent consumption	E	E	E	E	E

Recycling: Some foundry sand is recycled, and recycled cullet (pieces of glass) represents a significant proportion of reused silica.

Import Sources (2009–12): Canada, 65%; Mexico, 31%; and other, 4%.

Tariff: Item	Number	Normal Trade Relations 12–31–13
Sand containing 95% or more silica and not more than 0.6% iron oxide	2505.10.1000	Free.

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

Government Stockpile: None.

Events, Trends, and Issues: Domestic sales of industrial sand and gravel increased in 2013 compared with those of 2012. Mine output was sufficient to accommodate many uses, which included ceramics, chemicals, fillers (ground and whole grain), container, filtration, flat and specialty glass, foundry, and recreational uses. Increased demand for hydraulic fracturing sand to support production of natural gas and petroleum from shale deposits has led to production capacity upgrades and ongoing permitting and opening of numerous new mines. U.S. apparent consumption was about 48.2 million tons in 2013, a 3% increase from that of the previous year. Imports of industrial sand and gravel in 2013 decreased to about 144,000 tons from 306,000 tons in 2012. Imports of silica are generally of two types—small shipments of very high-purity silica or a few large shipments of lower grade silica shipped only under special circumstances (for example, very low freight rates). Exports of industrial sand and gravel in 2013 were about the same as in 2012.

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The United States was the world's leading producer and consumer of industrial sand and gravel based on estimated world production figures. It was difficult to collect definitive data on silica sand and gravel production in most nations because of the wide range of terminology and specifications from country to country. The United States remained a major exporter of silica sand and gravel, shipping it to almost every region of the world. The high level of exports was attributed to the high-quality and advanced processing techniques used in the United States for a large variety of grades of silica sand and gravel, meeting virtually every specification.

The industrial sand and gravel industry continued to be concerned with safety and health regulations and environmental restrictions in 2013. Local shortages of industrial sand and gravel were expected to continue to increase owing to local zoning regulations and land development alternatives, including ongoing development and permitting of operations producing hydraulic fracturing sand. Operations that use hydraulic fracturing sand to produce hydrocarbons may also undergo increased scrutiny. These situations are expected to cause future sand and gravel operations to be located farther from high-population centers.

World Mine Production and Reserves:

	Mine production ^e		Reserves ³
	<u>2012</u>	<u>2013</u>	
United States	50,700	52,500	Large. Industrial sand and gravel deposits are widespread.
Australia	5,300	5,600	
Canada	1,590	1,600	
Chile	1,270	1,200	
Czech Republic	1,340	1,300	
Finland	2,400	2,400	
France	6,290	6,300	
Gambia	1,200	1,200	
Germany	7,500	7,400	
India	1,900	1,900	
Italy	16,400	16,400	
Japan	3,200	3,200	
Malaysia	1,200	1,000	
Mexico	3,590	3,600	
Moldova	2,970	3,000	
Norway	1,000	1,500	
Poland	2,570	2,600	
South Africa	2,600	2,200	
Spain	5,000	5,000	
Turkey	7,000	7,000	
United Kingdom	3,760	3,800	
Other countries	<u>10,000</u>	<u>10,100</u>	
World total (rounded)	139,000	141,000	

World Resources: Sand and gravel resources of the world are large. 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 sources of industrial silica sand, occur throughout the world.

Substitutes: Alternative materials that can be used for glassmaking and for foundry and molding sands are chromite, olivine, staurolite, and zircon sands.

^eEstimated. E Net exporter.

¹See also Sand and Gravel (Construction).

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

³[See Appendix C for resource/reserve definitions and information concerning data sources.](#)