SAND AND GRAVEL (INDUSTRIAL)[1]

(Data in thousand metric tons unless otherwise noted)

Domestic Production and Use: In 2019, industrial sand and gravel valued at about $5.7 billion was produced by about 191 companies from 308 operations in 35 States. The value of production of industrial sand and gravel in 2019 decreased by 17% compared with that of the previous year, owing primarily to reduced demand for hydraulic-fracturing sand. The likely cause was decreased activity in the oil and gas sector during the year. Leading producing States were Wisconsin, Texas, Illinois, Missouri, Minnesota, Oklahoma, Mississippi, North Carolina, Iowa, and Louisiana, in descending order of tonnage produced. Combined production from these States accounted for 85% of the domestic total. About 73% of the U.S. tonnage was used as hydraulic-fracturing sand and well-packing and cementing sand; as glassmaking sand and other whole-grain silica, 7% each; as foundry sand, 3%; as ceramics, other ground silica, and whole-grain fillers for building products, 2% each; and recreational sand, 1%. Abrasives, chemicals, fillers, filtration sand, metallurgical flux, roofing granules, silica gravel, and traction sand, combined, accounted for the remaining 3% of industrial sand and gravel end uses.

Salient Statistics—United States:	2015	2016	2017	2018	2019[e]
Sold or used	102,000	79,400	103,000	121,000	110,000
Imports for consumption	289	281	366	392	390
Exports	3,910	2,780	4,680	6,560	5,900
Consumption, apparent[2]	98,400	76,900	98,700	115,000	100,000
Price, average value, dollars per ton	47.30	35.40	52.00	56.40	50.40
Employment, quarry and mill, number[e]	3,500	3,500	4,000	4,000	4,000
Net import reliance[3] 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. About 34% of glass containers are recycled.

Import Sources (2015–18): Canada, 86%; Taiwan, 4%; Vietnam, 4%; and other, 6%.

Tariff: Item	Number	Normal Trade Relations 12–31–19
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: U.S. apparent consumption of industrial sand and gravel was estimated to be 100 million tons in 2019, a 13% decrease from that of the previous year. Decreased oil and gas drilling in North America and oil well completion activity triggered a corresponding decrease in the production of hydraulic-fracturing sand in 2019 compared with that of the previous year. However, in any given year, more efficient hydraulic-fracturing techniques, which require more silica sand use per well (mostly for secondary recovery at mature wells) along with lower unit cost compared with other proppants, tends to maintain demand for hydraulic-fracturing sand. Imports of industrial sand and gravel in 2019 were about 390,000 tons—nearly the same as those of 2018. 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). The United States remains a net exporter of industrial sand and gravel; U.S. exports of industrial sand and gravel decreased by about 10% in 2019 compared with those of 2018.

The United States was the world's leading producer and consumer of industrial sand and gravel based on estimated world production figures. It is difficult to collect definitive data on silica sand and gravel production in most nations because of the wide range of terminology and specifications found among different countries. 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 many grades of silica sand and gravel, meeting virtually every specification.

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SAND AND GRAVEL (INDUSTRIAL)

The industrial sand and gravel industry continued to be concerned with safety and health regulations and environmental restrictions in 2019, especially those concerning crystalline silica exposure. Beginning in 2016, the Occupational Safety and Health Administration (OSHA) finalized new regulations to further restrict exposure to crystalline silica at quarry sites and in other industries that use materials containing it. Phased implementation of the new regulations was scheduled to take effect through 2021, affecting various industries that use materials containing silica. Most provisions of the new regulations became enforceable on June 23, 2018, for general industry and maritime operations. On August 14, 2019, OSHA requested comment and information to enable the agency to consider new developments and enhanced control methods for equipment that generates exposures to silica. Local shortages of industrial sand and gravel were expected to continue to increase owing to land development priorities, local zoning regulations, and logistical issues, including ongoing development and permitting of operations producing hydraulic-fracturing sand. Natural gas and petroleum operations that use hydraulic fracturing may also undergo increased scrutiny. These factors may result in future sand and gravel operations being located farther from high-population centers.

World Mine Production and Reserves:

	Mine production[e]		Reserves[4]
	2018	2019	
United States	121,000	110,000	Large. Industrial sand and gravel deposits are widespread.
Australia	3,000	3,000	
Bulgaria	7,250	7,300	
Canada	2,500	2,500	
France	9,310	9,300	
Germany	7,500	7,500	
India	11,900	12,000	
Indonesia	5,540	5,500	
Italy	14,000	14,000	
Japan	2,520	2,500	
Korea, Republic of	4,300	4,500	
Malaysia	10,000	10,000	
Mexico	2,360	2,400	
Netherlands	54,000	54,000	
New Zealand	2,320	2,300	
Poland	5,120	5,000	
South Africa	2,400	2,400	
Spain	35,500	36,000	
Turkey	13,500	14,000	
United Kingdom	4,000	4,000	
Other countries	17,200	21,300	
World total (rounded)	335,000	330,000	

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 sandstone, 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. Although costlier and mostly used in deeper wells, alternative materials that can be used as proppants are sintered bauxite and kaolin-based ceramic proppants.

[e]Estimated. E Net exporter.

[1]See also Sand and Gravel (Construction).

[2]Defined as production (sold or used) + imports – exports.

[3]Defined as imports – exports.

[4]See Appendix C for resource and reserve definitions and information concerning data sources.