SAND AND GRAVEL (INDUSTRIAL)[1]

(Data in thousand metric tons unless otherwise noted)

Domestic Production and Use: In 2020, industrial sand and gravel valued at about $3.2 billion was produced by about 180 companies from about 280 operations in 34 States. The value of production of industrial sand and gravel in 2020 decreased by 40% compared with that of the previous year, owing primarily to reduced demand for hydraulic-fracturing sand and metallurgical uses. Demand declined as a result of restrictions put in place in response to the global COVID-19 pandemic coupled with ongoing weak demand from the oil and gas sector. Leading producing States were Texas, Wisconsin, Illinois, Missouri, Minnesota, Oklahoma, Mississippi, North Carolina, Louisiana, and Iowa, in descending order of tonnage produced. Combined production from these States accounted for about 81% of total domestic sales and use. About 58% of the U.S. tonnage was used as hydraulic-fracturing sand and well-packing and cementing sand; as glassmaking sand and as other whole-grain silica, 12% each; as foundry sand, 4%; as ceramics, whole-grain fillers for building products, and recreational sand, 3% each; and as other ground silica, 2%. 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:	**2016**	**2017**	**2018**	**2019**	**2020[e]**
Sold or used	79,400	103,000	123,000	114,000	71,000
Imports for consumption	281	366	392	389	380
Exports	2,780	4,680	6,550	5,620	3,700
Consumption, apparent[2]	76,900	98,700	117,000	109,000	68,000
Price, average value, dollars per ton	35.40	52.00	56.40	47.30	45.00
Employment, quarry and mill, number[e]	3,500	4,000	4,000	3,500	2,000
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 (2016–19): Canada, 85%; Taiwan and Vietnam, 3% each; and other, 9%.

Tariff: Item	**Number**	**Normal Trade Relations 12–31–20**
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 68 million tons in 2020, a 38% decrease from that of the previous year. The primary causes of the decline were decreased natural gas and petroleum well drilling in North America and oil well completion activity. These decreases were exacerbated by COVID-19 pandemic restrictions, which resulted in a significant decline in consumption of petroleum products, which in turn prompted a decrease in demand for hydraulic-fracturing sand in 2020 compared with that of the previous year. Imports of industrial sand and gravel in 2020 were about 380,000 tons—slightly less than those of 2019. 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 remained a net exporter of industrial sand and gravel, although U.S. exports of industrial sand and gravel decreased by 34% in 2020 compared with those of 2019, also a result of the global pandemic.

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 industrial sand and gravel (sometimes also referred to as silica sand and gravel) production in most nations because of the wide range of terminology and specifications used by different countries. The United States remained a major exporter of industrial sand and gravel, shipping it to almost every region of the world. High global demand for U.S. industrial sand and gravel can be attributed to the high quality and advanced processing techniques used in the United States for many grades of industrial sand and gravel, meeting specifications for virtually any use.

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SAND AND GRAVEL (INDUSTRIAL)

The duration and outcome of the COVID-19 pandemic remains uncertain, but it is likely that the performance of the industrial sand and gravel industry will continue to be negatively affected, although natural gas and petroleum well drilling activity began to recover in the latter part of the year, indicating that demand for hydraulic-fracturing sand may increase also. The effects of the pandemic were felt throughout the industry with employment declining in the industry and several companies filing for Chapter 11 bankruptcy protection during the year.

Additionally, the industrial sand and gravel industry continued to be concerned with safety and health regulations and environmental restrictions in 2020, especially those concerning crystalline silica exposure. In 2016, the Occupational Safety and Health Administration (OSHA) finalized 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. 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		Reserves[5]
	2019	2020[e]	
United States	114,000	71,000	Large. Industrial sand and gravel deposits are widespread.
Australia	3,000	2,900	
Bulgaria	7,650	7,300	
Canada	2,800	2,700	
France	9,310	8,800	
Germany	7,500	7,100	
India	11,900	11,000	
Indonesia	5,540	2,600	
Italy	14,000	13,000	
Japan	2,270	2,200	
Korea, Republic of	4,250	1,300	
Malaysia	10,000	9,500	
Mexico	2,360	2,300	
Netherlands	54,000	51,000	
New Zealand	1,620	1,500	
Poland	5,110	4,800	
South Africa	2,300	1,900	
Spain	35,500	34,000	
Turkey	9,100	8,600	
United Kingdom	4,000	3,800	
Other countries	18,900	18,000	
World total (rounded)	325,000	265,000	

World Resources:[5] 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]Deceased.

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