

CLAYS

(Data in thousand metric tons unless otherwise noted)

Domestic Production and Use: Production of clays (sold or used) in the United States was estimated to be 26 million tons valued at \$1.7 billion in 2022, with about 120 companies operating clay and shale mines in 38 States. The leading 20 companies produced approximately 69% of the U.S. tonnage and 83% of the value for all types of clay. Principal domestic uses for specific clays were estimated to be as follows: ball clay—52% floor and wall tile and 19% sanitaryware; bentonite—49% pet waste absorbents and 23% drilling mud; common clay—46% brick, 26% lightweight aggregate, and 23% cement; fuller's earth—83% absorbents (including oil and grease absorbents, pet waste absorbents, and miscellaneous absorbents); and kaolin—52% fillers, extenders, and binders and 25% ceramics. Fire clay uses were withheld to avoid disclosing company proprietary data.

Exports of clay and shale were estimated to have decreased by 4% in 2022 from those in 2021 after increasing by 18% in 2021 from exports in 2020. In 2022, the United States exported an estimated 890,000 tons of bentonite; Canada, Japan, and Mexico, in decreasing order, were the leading destinations. About 2.1 million tons of kaolin was exported mainly as a paper coating and filler; a component in ceramic bodies; and fillers and extenders in paint, plastic, and rubber products; Mexico, China, and Japan, in decreasing order, were the leading destinations. Lesser quantities of ball clay, fire clay, and fuller's earth were exported for ceramic, refractory, and absorbent uses, respectively.

Salient Statistics—United States:

	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022^e</u>
Production (sold or used):					
Ball clay	1,110	^e 1,060	1,090	^e 1,200	1,200
Bentonite	4,570	4,520	4,250	4,590	4,500
Common clay	13,300	13,300	13,000	12,800	13,000
Fire clay	567	603	635	675	720
Fuller's earth ^{e, 1}	1,880	1,990	1,980	2,130	2,100
Kaolin ^e	<u>5,350</u>	<u>5,060</u>	<u>4,570</u>	<u>4,300</u>	<u>4,600</u>
Total ^{1, 2}	26,800	26,500	25,500	25,700	26,000
Imports for consumption:					
Artificially activated clays and earths	23	31	31	41	59
Kaolin	330	293	224	149	170
Other	<u>68</u>	<u>66</u>	<u>28</u>	<u>47</u>	<u>61</u>
Total ²	421	389	284	237	290
Exports:					
Artificially activated clays and earths	149	138	127	140	130
Ball clay	90	85	68	139	170
Bentonite	845	906	728	862	890
Clays, not elsewhere classified	244	204	185	186	200
Fire clay ³	250	194	190	210	180
Fuller's earth	70	73	77	83	84
Kaolin	<u>2,390</u>	<u>2,280</u>	<u>1,990</u>	<u>2,340</u>	<u>2,100</u>
Total ²	4,030	3,880	3,360	3,960	3,800
Consumption, apparent ⁴	23,200	23,000	22,400	22,000	22,000
Price, average unit value, ex-works, dollars per metric ton:					
Ball clay	55	56	58	58	58
Bentonite	98	98	97	100	97
Common clay	17	18	17	17	17
Fire clay	12	14	12	12	12
Fuller's earth ¹	88	88	89	88	92
Kaolin	160	162	160	154	160
Employment (excludes office workers), number: ^e					
Mine (may not include contract workers)	1,110	1,110	1,060	1,060	1,100
Mill	4,310	4,310	4,260	4,240	4,300
Net import reliance ⁵ as a percentage of apparent consumption	E	E	E	E	E

Recycling: Insignificant.

Import Sources (2018–21): All clay types combined: Brazil, 68%; Mexico, 12%; China, 5%; and other, 15%.

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Tariff:	Item	Number	Normal Trade Relations 12-31-22
	Kaolin and other kaolinic clays, whether or not calcined	2507.00.0000	Free.
	Bentonite	2508.10.0000	Free.
	Fire clay	2508.30.0000	Free.
	Common blue clay and other ball clays	2508.40.0110	Free.
	Decolorizing earths and fuller's earth	2508.40.0120	Free.
	Other clays	2508.40.0150	Free.
	Chamotte or dinas earth	2508.70.0000	Free.
	Activated clays and activated earths	3802.90.2000	2.5% ad valorem.
	Expanded clays and other mixtures	6806.20.0000	Free.

Depletion Allowance: Ball clay, bentonite, fire clay, fuller's earth, and kaolin, 14% (domestic and foreign); clay used in the manufacture of common brick, lightweight aggregate, and sewer pipe, 7.5% (domestic and foreign); clay used in the manufacture of drain and roofing tile, flowerpots, and kindred products, 5% (domestic and foreign); clay from which alumina and aluminum compounds are extracted, 22% (domestic).

Government Stockpile: None.

Events, Trends, and Issues: In March 2022, a Georgia kaolin producer completed the sale of certain North American assets and mining resources that support the paper and packaging markets to another kaolin producer with headquarters in Georgia. Additionally, another kaolin producer with North American headquarters in Georgia completed an acquisition in September 2022, which included four production sites and related mines, reserves, and two processing facilities in central Georgia.

World Mine Production and Reserves:⁶ Global reserves are large, but country-specific data were not available.

	Mine production					
	Bentonite		Fuller's earth		Kaolin	
	2021	2022 ^e	2021	2022 ^e	2021	2022 ^e
United States	4,590	4,500	12,130	12,100	4,300	4,600
Brazil (beneficiated)	220	220	—	—	1,200	1,200
China	2,100	2,100	—	—	8,400	8,400
Czechia	230	230	—	—	73,100	73,100
Denmark	1,000	1,000	—	—	—	—
Greece	71,300	71,300	34	34	—	—
India	3,000	3,000	730	730	78,400	78,400
Iran	700	700	—	—	1,900	1,900
Mexico	79	79	110	110	240	240
Senegal	—	—	117	120	—	—
Spain	210	210	560	560	7270	7270
Turkey	2,020	2,000	112	110	1,750	1,700
Ukraine	180	180	—	—	2,330	600
Uzbekistan	50	50	—	—	5,000	5,000
Other countries	3,300	3,300	252	250	12,500	13,000
World total (rounded) ²	19,000	19,000	14,040	14,000	49,300	48,000

World Resources:⁶ Resources of all clays are extremely large.

Substitutes: Clays compete with calcium carbonate in filler and extender applications; diatomite, organic pet litters, polymers, silica gel, and zeolites as absorbents; and various siding and roofing types in building construction.

^eEstimated. E Net exporter. — Zero.

¹Does not include U.S. production of attapulgite.

²Data may not add to totals shown because of independent rounding.

³Includes refractory-grade kaolin.

⁴Defined as production (sold or used) + imports – exports.

⁵Defined as imports – exports.

⁶See Appendix C for resource and reserve definitions and information concerning data sources.

⁷Includes production of crude ore.