

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 25 million tons valued at \$1.6 billion in 2020, with about 125 companies operating clay and shale mines in 39 States. The leading 20 firms produced approximately 64% of the U.S. tonnage and 84% of the value for all types of clay. Principal uses for specific clays were estimated to be as follows: ball clay—55% floor and wall tile and 18% sanitaryware; bentonite—49% pet waste absorbents and 23% drilling mud; common clay—43% brick, 30% lightweight aggregate, and 23% cement; fire clay—77% heavy clay and lightweight aggregates products (for example, brick, cement, and concrete) and 23% refractory products and miscellaneous uses; fuller's earth—81% absorbents (includes oil and grease absorbents, pet waste absorbents and miscellaneous absorbents); and kaolin—49% paper coating and filling, 10% refractory products, and 8% paint.

Exports of clay and shale were estimated have decreased by 15% in 2020 after decreasing slightly in 2019. In 2020, the United States exported an estimated 760,000 tons of bentonite mainly for pet waste absorbent, drilling mud, foundry sand bond, and iron ore pelletizing applications, with Canada, Japan, and China being the leading destinations. About 1.9 million tons of kaolin were exported mainly as a paper coating and filler; a component in ceramic bodies; and fillers and extenders in paint, plastic, and rubber products, with China, Mexico, and Japan being 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:	2016	2017	2018	2019	2020^e
Production (sold or used):					
Ball clay	1,270	1,270	1,110	1,060	990
Bentonite	4,000	4,430	4,560	4,490	4,300
Common clay	13,000	13,300	12,600	12,600	12,000
Fire clay	534	575	567	603	570
Fuller's earth ¹	1,860	1,840	1,880	1,920	2,000
Kaolin	<u>5,200</u>	<u>5,450</u>	<u>5,350</u>	<u>5,060</u>	<u>4,600</u>
Total ^{1, 2}	25,900	26,900	26,100	25,700	25,000
Imports for consumption:					
Artificially activated clays and earths	26	28	23	31	29
Kaolin	389	316	330	293	190
Other	<u>57</u>	<u>86</u>	<u>68</u>	<u>66</u>	<u>32</u>
Total ²	473	430	421	390	250
Exports:					
Artificially activated clays and earths	143	147	149	138	130
Ball clay	41	83	90	85	57
Bentonite	801	961	845	906	760
Clays, not elsewhere classified	256	244	244	204	180
Fire clay ³	184	225	250	194	180
Fuller's earth	86	78	70	73	75
Kaolin	<u>2,290</u>	<u>2,310</u>	<u>2,390</u>	<u>2,280</u>	<u>1,900</u>
Total ²	3,800	4,040	4,030	3,880	3,300
Consumption, apparent ⁴	22,600	23,300	22,500	22,200	22,000
Price, ex-works, average, dollars per ton:					
Ball clay	39	49	55	56	53
Bentonite	99	99	98	98	98
Common clay	14	15	16	16	16
Fire clay	13	13	12	14	14
Fuller's earth ¹	89	93	88	86	82
Kaolin	159	158	160	162	160
Employment (excludes office workers), number:					
Mine (may not include contract workers)	1,120	1,220	1,110	1,110	1,060
Mill	4,440	4,370	4,310	4,310	4,260
Net import reliance ⁵ as a percentage of apparent consumption	E	E	E	E	E

Recycling: Insignificant.

Import Sources (2016–19): All clay types combined: Brazil, 72%; Mexico, 8%; China, 7%; and other, 13%.

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Tariff:	Item	Number	Normal Trade Relations 12-31-20
	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 val.
	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, flower pots, 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: As in recent years, U.S. sales of clay in 2020 continued to slightly decrease. Owing to the global COVID-19 pandemic, production of all types of clays, except for fuller's earth, decreased in 2020. Housing construction decreased in the spring because of the pandemic, before rebounding during the latter part of the year. The percentage of new building construction using brick continues to decrease in favor of other materials.

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

	Mine production					
	Bentonite		Fuller's earth		Kaolin	
	2019	2020 ^e	2019	2020 ^e	2019	2020 ^e
United States	4,490	4,300	1,920	12,000	5,060	4,600
Brazil (beneficiated)	610	610	—	—	1,700	1,700
China	2,000	2,000	—	—	5,000	5,000
Czechia	357	360	—	—	73,450	73,400
Germany	395	390	—	—	5,200	5,200
Greece	71,300	71,300	37	37	—	—
India	1,700	1,700	6	6	74,000	74,000
Iran	360	360	—	—	790	790
Mexico	250	250	110	110	140	140
Senegal	—	—	117	120	—	—
Spain	160	160	626	620	7450	7450
Turkey	1,300	1,300	20	27	1,500	1,500
Ukraine	180	180	—	—	1,840	1,800
Uzbekistan	—	—	—	—	4,500	4,500
Other countries	3,150	3,200	344	350	10,700	11,000
World total (rounded)	16,300	16,000	13,180	13,300	44,300	44,000

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.