IRON OXIDE PIGMENTS

(Data in metric tons unless otherwise noted)

Domestic Production and Use: Iron oxide pigments (IOPs) were mined domestically by two companies in Alabama and Georgia. Mine production, which was withheld to avoid disclosing company proprietary data, remained about the same in 2021 as that in 2020. Five companies, including the two producers of natural IOPs, processed and sold about 18,000 tons of finished natural and synthetic IOPs with an estimated value of $13 million. About 48% of natural and synthetic finished IOPs were used in concrete and other construction materials; 17% in industrial chemicals; 14% in foundry sands and other foundry uses; 5% each in animal feed and paint and coatings; 3% each in plastics and glass and ceramics; and the remaining 5% in other uses.

Salient Statistics—United States:	**2017**	**2018**	**2019**	**2020**	**2021[e]**
Mine production, crude	W	W	W	W	W
Sold or used, finished natural and synthetic IOPs	47,300	48,200	19,200	18,300	18,000
Imports for consumption	179,000	179,000	159,000	173,000	190,000
Exports, pigment grade	13,500	11,100	11,200	9,300	9,400
Consumption, apparent[1]	213,000	216,000	167,000	182,000	200,000
Price, average value, dollars per kilogram[2]	1.46	1.58	0.69	0.72	0.70
Employment, mine and mill, number	60	60	55	47	47
Net import reliance[3] as a percentage of apparent consumption	78	78	89	90	91

Recycling: None.

Import Sources (2017–20): Natural: Cyprus, 40%; Spain, 31%; France, 14%; Austria, 13%; and other, 2%. Synthetic: China, 46%; Germany, 33%; Brazil, 7%; and other, 14%. Total: China, 45%; Germany, 32%; Brazil, 7%; and other, 16%.

Tariff: Item	**Number**	**Normal Trade Relations 12–31–21**
Natural:		
Micaceous iron oxides	2530.90.2000	2.9% ad valorem.
Earth colors	2530.90.8015	Free.
Iron oxides and hydroxides containing 70% or more by weight Fe_2O_3:		
Synthetic:		
Black	2821.10.0010	3.7% ad valorem.
Red	2821.10.0020	3.7% ad valorem.
Yellow	2821.10.0030	3.7% ad valorem.
Other	2821.10.0040	3.7% ad valorem.
Earth colors	2821.20.0000	5.5% ad valorem.

Depletion Allowance: 14% (domestic and foreign).

Government Stockpile: None.

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Events, Trends, and Issues: In 2021, domestic mine production of crude and finished natural IOPs remained approximately the same as 2020 production. Imports of natural and synthetic pigments were estimated to have increased by 10% in 2021, owing in part to low mortgage interest rates and increased demand for single-family homes as the global COVID-19 pandemic made multifamily homes less desirable. In the United States, residential construction, in which IOPs are commonly used to color concrete block and brick, ready-mixed concrete, and roofing tiles, increased during the first 9 months of 2021 compared with that in the same period in 2020. Housing starts increased by about 20% in 2021 compared with those in 2020.

Exports of pigment-grade IOPs increased by 3% during the first 9 months of 2021 compared with those during the same period in 2020, mostly owing to an increase in exports to Argentina, Poland, and South Africa. Approximately 80% of pigment-grade IOPs exports went to Mexico, China, Germany, Thailand, Belgium, and Brazil, in descending order of quantity. Exports of other grades of iron oxides and hydroxides decreased by 25% during the first 9 months of 2021 compared with those in the same period in 2020. About 89% of exports of other grades of iron oxides and hydroxides went to Mexico, Canada, Ireland, Belgium, and the Republic of Korea, in descending order of quantity.

World Mine Production and Reserves:

	Mine production		Reserves[4]
	2020	2021[e]	
United States	W	W	Moderate
Cyprus (umber)	3,500	3,500	Moderate
France	6,000	6,000	NA
Germany[5]	400,000	400,000	Moderate
India (ocher)	2,500,000	2,500,000	37,000,000
Italy	30,000	30,000	NA
Pakistan (ocher)	120,000	120,000	100,000
Spain (ocher and red iron oxide)	9,000	9,000	Large
World total (rounded)	[6]NA	[6]NA	Large

World Resources:[4] Domestic and world resources for production of IOPs are adequate. Adequate resources are available worldwide for the manufacture of synthetic IOPs.

Substitutes: Milled IOPs are thought to be the most commonly used natural minerals for pigments. Because IOPs are color stable, low cost, and nontoxic, they can be economically used for imparting black, brown, red, and yellow coloring in large and relatively low-value applications. Other minerals may be used as colorants, but they generally cannot compete with IOPs because of their higher costs and more limited availability. Synthetic IOPs are widely used as colorants and compete with natural IOPs in many color applications. Organic colorants are used for some colorant applications, but many of the organic compounds fade over time from exposure to sunlight.

[e]Estimated. NA Not available. W Withheld to avoid disclosing company proprietary data.

[1]Defined as sold or used finished natural and synthetic iron oxide pigments + imports – exports.

[2]Average unit value for finished iron oxide pigments sold or used by U.S. producers.

[3]Defined as imports – exports.

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

[5]Includes natural and synthetic iron oxide pigments.

[6]A significant number of other countries, including Austria, Azerbaijan, Brazil, China, Honduras, Iran, Kazakhstan, Lithuania, Paraguay, Russia, South Africa, Turkey, Ukraine, and the United Kingdom, are thought to produce iron oxide pigments, but output was not reported, and no basis was available to make reliable estimates of production.