IRON OXIDE PIGMENTS

(Data in metric tons unless otherwise specified)

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, decreased in 2024 from that in 2023. Five companies with seven processing operations processed and sold about 25,000 tons of finished natural and synthetic IOPs with an estimated value of $51 million. End uses for IOPs include, but are not limited to, concrete and other construction products, paint and coatings, ferrites, plastics, and rubber.

Salient Statistics—United States:	2020	2021	2022	2023	2024[e]
Mine production, crude	W	W	W	W	W
Sold or used, finished natural and synthetic IOPs	18,300	26,900	38,200	25,100	25,000
Imports for consumption	172,000	189,000	225,000	114,000	180,000
Exports, pigment grade	15,700	12,300	13,800	13,100	10,000
Consumption, apparent[1]	174,000	203,000	249,000	126,000	200,000
Price, average unit value, dollars per kilogram[2]	0.72	1.03	1.92	2.03	2.00
Employment, mine and mill, number	47	43	45	44	44
Net import reliance[3] as a percentage of apparent consumption	89	87	85	80	87

Recycling: None.

Import Sources (2020–23): Natural: Cyprus, 55%; France, 19%; Austria, 18%; Belgium, 3%; and other, 5%. Synthetic: China,[4] 43%; Germany, 32%; Brazil, 8%; Canada, 7%; and other, 10%. Total: China,[4] 43%; Germany, 31%; Brazil, 7%; Canada, 7%; and other, 12%.

Tariff: Item	Number	Normal Trade Relations 12–31–24
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.

Prepared by **Ji-Eun Kim [(703) 648–7717, ji-eunkim@usgs.gov]**

IRON OXIDE PIGMENTS

Events, Trends, and Issues: In the United States, new privately owned housing starts (not seasonally adjusted), in which IOPs are commonly used to color concrete block and brick, ready-mixed concrete, and roofing tiles, decreased by 4% during the first 8 months of 2024 compared with those in the same period in 2023. IOPs also are used in paints and coatings for the aerospace, automotive, and marine industries. IOPs' characteristics of chemical and thermal stability, color strength, low cost, and weather resistance make IOPs a primary choice for colorant for coatings and construction materials.

Less than 2% of IOP imports were natural pigments, similar to that in all other years in the past decade. Imports of natural and synthetic pigments were estimated to have increased by 58% in 2024 compared with those in 2023, largely owing to increases in synthetic pigment imports. Exports of pigment-grade IOPs were estimated to have decreased by 24% in 2024 compared with those in 2023. Approximately 37% of pigment-grade IOPs exports went to Mexico; the other leading destination countries for exports were China (23%), Belgium (15%), and Chile (6%).

In May 2024, an IOP-producing company based in Singapore closed its plant in Virginia and redistributed production to plants in Georgia and Asia. The plant in Virginia had been in operation for over 100 years.

World Mine Production and Reserves:

	Mine production[e]		Reserves[5]
	2023	2024	
United States	W	W	Moderate
Cyprus	5,000	20,000	Moderate
France	16,000	17,000	NA
Germany[6]	240,000	250,000	Moderate
India (ocher)	3,200,000	3,300,000	37,000,000
Italy	30,000	31,000	NA
Pakistan (ocher)	95,000	100,000	Large
Spain (ocher and red iron oxide)	16,000	17,000	Large
World total (rounded)	[7]NA	[7]NA	Large

World Resources:[5] 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 estimated 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]Includes Hong Kong.

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

[6]Includes natural and synthetic iron oxide pigments.

[7]Several other countries, including Austria, Azerbaijan, Brazil, China, Honduras, Iran, Kazakhstan, Lithuania, Paraguay, Russia, South Africa, Turkey, Ukraine, and the United Kingdom, may have produced iron oxide pigments, but available information was inadequate to make reliable estimates of output.