

CHROMIUM

(Data in thousand metric tons of contained chromium unless otherwise noted)

Domestic Production and Use: In 2021, the United States was expected to consume 5% of world chromite ore production in various forms of imported materials, such as chromite ore, chromium chemicals, chromium ferroalloys, chromium metal, and stainless steel. Imported chromite ore was consumed by one chemical company to produce chromium chemicals. Stainless-steel and heat-resisting-steel producers were the leading consumers of ferrochromium. Stainless steels and superalloys require the addition of chromium via ferrochromium or chromium-containing scrap. The value of chromium material consumption was expected to be about \$850 million in 2021, as measured by the value of net imports, excluding stainless steel, and was a fourfold increase from \$201 million in 2020.

<u>Salient Statistics—United States:</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021^e</u>
Production:					
Mine	—	—	—	—	—
Recycling ¹	152	139	135	116	120
Imports for consumption ²	634	651	530	457	590
Exports	256	212	149	111	120
Shipments from Government stockpile	8	4	4	5	5
Consumption (includes recycling):					
Reported	516	459	480	379	360
Apparent ³	541	583	520	465	590
Price, average annual unit value of imports, dollars per ton:					
Chromite ore (gross weight)	259	279	248	179	210
Ferrochromium (chromium content) ⁴	2,547	2,549	2,094	1,878	2,400
Chromium metal (gross weight)	9,675	11,344	10,393	7,931	7,500
Stocks, consumer, yearend	6	5	5	6	6
Net import reliance ⁵ as a percentage of apparent consumption	72	76	73	75	80

Recycling: In 2021, recycled chromium (contained in reported stainless-steel scrap receipts) accounted for 20% of apparent consumption.

Import Sources (2017–20): Chromite (ores and concentrates): South Africa, 99%; and Canada, 1%. Chromium-containing scrap:⁶ United Kingdom, 53%; Canada, 28%; Japan, 9%; and other, 10%. Chromium (primary metal):⁷ Russia, 36%; United Kingdom, 23%; France, 21%; China,⁸ 15%; and other, 5%. Total imports: South Africa, 38%; Kazakhstan, 9%; Russia, 7%; Mexico, 6%; and other, 40%.

<u>Tariff:</u>⁹	Item	Number	Normal Trade Relations <u>12–31–21</u>
	Chromium ores and concentrates:		
	Cr ₂ O ₃ not more than 40%	2610.00.0020	Free.
	Cr ₂ O ₃ more than 40% and less than 46%	2610.00.0040	Free.
	Cr ₂ O ₃ more than or equal to 46%	2610.00.0060	Free.
	Ferrochromium:		
	Carbon more than 4%	7202.41.0000	1.9% ad valorem.
	Carbon more than 3%	7202.49.1000	1.9% ad valorem.
	Carbon more than 0.5%	7202.49.5010	3.1% ad valorem.
	Other	7202.49.5090	3.1% ad valorem.
	Ferrosilicon chromium	7202.50.0000	10% ad valorem.
	Chromium metal:		
	Unwrought, powder	8112.21.0000	3% ad valorem.
	Waste and scrap	8112.22.0000	Free.
	Other	8112.29.0000	3% ad valorem.

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Depletion Allowance: 22% (domestic), 14% (foreign).

Government Stockpile:^{10, 11}

Material	Inventory as of 8-30-21	FY 2021		FY 2022	
		Potential acquisitions	Potential disposals	Potential acquisitions	Potential disposals
Ferrochromium:					
High-carbon	25.6	—	¹² 21.8	—	¹² 21.8
Low-carbon	27.4	—	—	—	—
Chromium metal	3.62	—	0.454	—	0.454

Events, Trends, and Issues: Chromium is consumed in the form of ferrochromium to produce stainless steel. South Africa was the leading chromite ore producer. Ore production was estimated to increase in 2021 owing to recovery of the market following the COVID-19 pandemic. China was the leading ferrochromium- and stainless-steel-producing country, and the leading chromium-consuming country. Ferrochromium production is electrical-energy intensive, so stricter environmental standards could affect ferrochromium production in China.

From October 2020 to October 2021, the monthly average high-carbon ferrochromium price more than doubled. The price of chromium metal increased by 85% in October 2021 compared with the monthly average price in October 2020.

World Mine Production and Reserves:

	Mine production¹³		Reserves¹⁴ (shipping grade)¹⁵
	2020	2021^e	
United States	—	—	620
Finland	2,290	2,300	13,000
India	2,500	3,000	100,000
Kazakhstan	7,000	7,000	230,000
South Africa	13,200	18,000	200,000
Turkey	8,000	7,000	26,000
Other countries	<u>3,980</u>	<u>4,100</u>	NA
World total (rounded)	<u>37,000</u>	<u>41,000</u>	<u>570,000</u>

World Resources:¹⁴ World resources are greater than 12 billion tons of shipping-grade chromite, sufficient to meet conceivable demand for centuries. World chromium resources are heavily geographically concentrated (95%) in Kazakhstan and southern Africa; United States chromium resources are mostly in the Stillwater Complex in Montana.

Substitutes: Chromium has no substitute in stainless steel, the leading end use, or in superalloys, the major strategic end use. Chromium-containing scrap can substitute for ferrochromium in some metallurgical uses.

^eEstimated. NA Not available. — Zero.

¹Recycling production is based on reported receipts of all types of stainless-steel scrap.

²Includes chromite ores, ferrochromium, chromium metal, and chromium chemicals.

³Defined as production (from mines and recycling) + imports – exports + adjustments for Government and industry stock changes.

⁴Excludes ferrochromium silicon.

⁵Defined as imports – exports + adjustments for Government and industry stock changes.

⁶Includes chromium metal scrap and stainless-steel scrap.

⁷Includes chromium metal, ferrochromium, and stainless steel.

⁸Includes Hong Kong.

⁹In addition to the tariff items listed, certain imported chromium materials (see 26 U.S.C., sec. 4661, 4662, and 4672) are subject to excise tax.

¹⁰See Appendix B for definitions.

¹¹Units are thousand metric tons of material by gross weight.

¹²High-carbon and low-carbon ferrochromium, combined.

¹³Mine production units are thousand metric tons, gross weight, of marketable chromite ore.

¹⁴See Appendix C for resource and reserve definitions and information concerning data sources.

¹⁵Reserves units are thousand metric tons of shipping-grade chromite ore, which is deposit quantity and grade normalized to 45% Cr₂O₃, except for the United States where grade is normalized to 7% Cr₂O₃ and Finland where grade is normalized to 26% Cr₂O₃.