

CHROMIUM

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

Domestic Production and Use: In 2018, the United States was expected to consume about 6% 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 firm to produce chromium chemicals. One company produced chromium metal. Stainless-steel and heat-resisting-steel producers were the leading consumers of ferrochromium. Stainless steels and superalloys require chromium. The value of chromium material consumption in 2017 was \$1.0 billion as measured by the value of net imports, excluding stainless steel, and was expected to be about \$1.1 billion in 2018.

Salient Statistics—United States:	2014	2015	2016	2017	2018^e
Production:					
Mine	—	—	—	—	—
Recycling ¹	157	154	152	158	160
Imports for consumption	708	535	547	633	650
Exports	257	238	253	256	260
Shipments from Government stockpile	15	9	5	8	3
Consumption:					
Reported (includes recycling)	417	406	393	412	400
Apparent (includes recycling) ²	622	461	451	542	550
Unit value, average annual import (dollars per ton):					
Chromite ore (gross weight)	243	216	198	259	280
Ferrochromium (chromium content) ³	2,514	2,593	2,227	3,212	2,600
Chromium metal (gross weight)	11,048	11,386	9,827	9,682	9,000
Stocks, yearend, held by U.S. consumers	8	8	8	8	8
Net import reliance ⁴ as a percentage of apparent consumption	75	67	66	71	71

Recycling: In 2018, recycled chromium (contained in reported stainless steel scrap receipts) accounted for 29% of apparent consumption.

Import Sources (2014–17): Chromite (mineral): South Africa, 97%; Canada, 3%; and other, <1%. Chromium-containing scrap:⁵ Canada, 51%; Mexico, 41%; and other, 8%. Chromium (primary metal):⁶ South Africa, 36%; Kazakhstan, 10%; Russia, 7%; and other, 47%. Total imports: South Africa, 38%; Kazakhstan, 8%; Russia, 6%; and other, 48%.

Tariff:⁷ Item	Number	Normal Trade Relations 12–31–18
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.
Chromium oxides and hydroxides:		
Chromium trioxide	2819.10.0000	3.7% ad val.
Other	2819.90.0000	3.7% ad val.
Sodium dichromate	2841.30.0000	2.4% ad val.
Potassium dichromate	2841.50.1000	1.5% ad val.
Other chromates and dichromates	2841.50.9100	3.1% ad val.
Carbides of chromium	2849.90.2000	4.2% ad val.
Ferrochromium:		
Carbon more than 4%	7202.41.0000	1.9% ad val.
Carbon more than 3%	7202.49.1000	1.9% ad val.
Carbon more than 0.5%	7202.49.5010	3.1% ad val.
Other	7202.49.5090	3.1% ad val.
Ferrosilicon chromium	7202.50.0000	10% ad val.
Chromium metal:		
Unwrought, powder	8112.21.0000	3% ad val.
Waste and scrap	8112.22.0000	Free.
Other	8112.29.0000	3% ad val.

Depletion Allowance: 22% (Domestic), 14% (Foreign).

Prepared by **Ruth F. Schulte [(703) 648–4963, rschulte@usgs.gov]**

CHROMIUM

Government Stockpile:⁸

Material ⁹	Inventory As of 9–30–18	FY2018		FY 2019	
		Potential Acquisitions	Potential Disposals ¹⁰	Potential Acquisitions	Potential Disposals ¹⁰
Ferrochromium:					
High-carbon	44.5	—	¹¹ 21.3	—	¹¹ 21.3
Low carbon	27.6	—	—	—	—
Chromium metal	3.85	—	0.181	—	0.181

Events, Trends, and Issues: Chromium is consumed in the form of ferrochromium to produce stainless steel. China was the leading chromium-consuming country. China was also the leading stainless-steel- and ferrochromium-producing country. South Africa was the leading chromite ore producer. World stainless steel producers depend directly or indirectly on chromium supply. Ferrochromium production is electrical-energy intensive, so constrained electrical power supply results in constrained ferrochromium production.

In May 2018, the U.S. Department of the Interior, in coordination with other executive branch agencies, published a list of 35 critical minerals (83 FR 23295), including chromium. This list was developed to serve as an initial focus, pursuant to Executive Order 13817, “A Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals” (82 FR 60835).

From August 2017 to August 2018, ferrochromium prices did not change for charge grade and increased slightly for high carbon. Prices have remained relatively high compared with those prior to October 2016.

World Mine Production and Reserves: Reserves for India were revised based on Government reports.

	Mine production ¹²		Reserves ¹³ (shipping grade) ¹⁴
	<u>2017</u>	<u>2018^e</u>	
United States	—	—	620
India	3,500	3,500	100,000
Kazakhstan	4,580	4,600	230,000
South Africa	16,500	16,000	200,000
Turkey	6,500	6,500	26,000
Other countries	<u>4,580</u>	<u>4,500</u>	NA
World total (rounded)	35,700	36,000	560,000

World Resources: World resources are greater than 12 billion tons of shipping-grade chromite, sufficient to meet conceivable demand for centuries. The world’s 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.

²Defined as production (from mines and recycling) + imports – exports + adjustments for Government and industry stock changes.

³Excludes ferrochromium silicon.

⁴Defined as imports – exports + adjustments for Government and industry stock changes.

⁵Includes chromium metal scrap and stainless steel scrap.

⁶Includes chromium metal, ferrochromium, and stainless steel.

⁷In 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.

⁸See Appendix B for definitions.

⁹Units are thousand tons of material by gross weight.

¹⁰Disposals are defined as any barter, rotation, sale, or upgrade of National Defense Stockpile stock.

¹¹High-carbon and low-carbon ferrochromium, combined.

¹²Mine production units are thousand tons, gross weight, of marketable chromite ore.

¹³See Appendix C for resource and reserve definitions and information concerning data sources.

¹⁴Reserves units are thousand 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.