

CHROMIUM

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

Domestic Production and Use: In 2017, 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 2016 was \$637 million as measured by the value of net imports, excluding stainless steel, and was expected to be about \$679 million in 2017.

Salient Statistics—United States:	2013	2014	2015	2016	2017^e
Production:					
Mine	—	—	—	—	—
Recycling ¹	150	157	161	170	160
Imports for consumption	557	683	511	528	600
Exports	240	256	236	253	250
Government stockpile releases	10	15	9	5	7
Consumption:					
Reported (includes recycling)	402	417	413	416	420
Apparent (includes recycling) ²	477	598	445	451	510
Unit value, average annual import (dollars per ton):					
Chromite ore (gross weight)	309	243	216	198	320
Ferrochromium (chromium content) ³	2,162	2,208	2,251	1,750	2,600
Chromium metal (gross weight)	11,147	11,002	11,235	9,926	9,500
Stocks, yearend, held by U.S. consumers	8	8	8	8	8
Net import reliance ⁴ as a percentage of apparent consumption	69	74	64	62	69

Recycling: In 2017, recycled chromium (contained in reported stainless steel scrap receipts) accounted for 31% of apparent consumption.

Import Sources (2013–16): Chromite (mineral): South Africa, 98%; Canada, 2%; and other, <1%. Chromium-containing scrap⁵: Canada, 49%; Mexico, 44%; and other, 7%. Chromium (primary metal)⁶: South Africa, 35%; Kazakhstan, 12%; Russia, 7%; and other, 46%. Total imports: South Africa, 38%; Kazakhstan, 10%; Russia, 6%; and other, 46%.

Tariff:⁷ Item	Number	Normal Trade Relations 12–31–17
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 **Sheryl A. Singerling** [Contact Ruth F. Schulte, (703) 648–4963, rschulte@usgs.gov]

CHROMIUM

Government Stockpile: For FY 2018, the Defense Logistics Agency (DLA) Strategic Materials announced maximum disposal limits for chromium materials of about 21,300 tons of ferrochromium and 181 tons of chromium metal. No acquisitions were planned.

Stockpile Status—9–30–17⁸

Material ⁹	Inventory	Disposal Plan FY 2017	Disposals FY 2017
Ferrochromium:			
High-carbon	50.0	¹⁰ 21.3	7.26
Low-carbon	29.1	—	1.64
Chromium metal	3.86	0.181	0.045

Events, Trends, and Issues: Chromium is consumed in the form of ferrochromium to produce stainless steel. China was the leading chromium-consuming and stainless-steel-producing country. South Africa was the leading chromite ore and ferrochromium producer upon which world stainless steel producers depend directly or indirectly for chromium supply, based on production data. Ferrochromium production is electrical-energy intensive, so constrained electrical power supply results in constrained ferrochromium production. The recent commissioning of new ferrochromium furnaces in South Africa and China has the potential to increase ferrochromium production by 630,000 tons per year.

From October 2016 to July 2017, ferrochromium prices increased by 48% for charge grade and 64% for high carbon. This increase was the result of an increase in the demand for stainless steel, particularly in China, and a lack of chromium inventory. Since then, the prices have remained relatively high.

DLA Strategic Materials planned to continue selling ferrochromium in fiscal year 2018 until it reached its limit; however, DLA Strategic Materials would need congressional authority to continue sales into fiscal year 2019.

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

	Mine production ¹¹		Reserves ¹² (shipping grade) ¹³
	2016	2017 ^e	
United States	—	—	620
India	3,200	3,200	54,000
Kazakhstan	5,380	5,400	230,000
South Africa	14,700	15,000	200,000
Turkey	2,800	2,800	26,000
Other countries	<u>4,160</u>	<u>4,200</u>	<u>NA</u>
World total (rounded)	30,200	31,000	510,000

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.

⁸Estimated. 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.

¹⁰High-carbon and low-carbon ferrochromium, combined.

¹¹Mine production units are thousand tons, gross weight, of marketable chromite ore.

¹²See [Appendix C](#) for resource and reserve definitions and information concerning data sources.

¹³Reserves units are thousand tons of shipping-grade chromite ore, which is deposit quantity and grade normalized to 45% Cr₂O₃.