CHROMIUM

(Data in thousand metric tons, gross weight unless otherwise noted)

Domestic Production and Use: In 2005, the United States consumed about 11% of world chromite ore production in various forms of imported materials, such as chromite ore, chromium chemicals, chromium ferroalloys, and chromium metal. Imported chromite was consumed by one chemical firm to produce chromium chemicals. Consumption of chromium ferroalloys and metal was predominantly for the production of stainless and heat-resisting steel and superalloys, respectively. The value of chromium material consumption was about $397 million.

Salient Statistics—United States:[1]	2001	2002	2003	2004	2005[e]
Production, from scrap	141	174	180	168	170
Imports for consumption	239	263	317	326	330
Exports	43	29	46	35	40
Government stockpile releases	9	62	83	94	90
Consumption:					
Reported (excludes scrap)	208	241	245	268	270
Apparent[2] (includes scrap)	344	479	532	555	550
Unit value, average annual import (dollars per metric ton):					
Chromite ore (gross weight)	61	60	54	114	110
Ferrochromium (chromium content)	709	646	835	1,320	1,300
Chromium metal (gross weight)	6,116	5,767	5,272	5,815	5,800
Stocks, yearend, held by U.S consumers	17	8	10	8	10
Net import reliance[3] as a percentage of apparent consumption	60	61	67	70	69

Recycling: In 2005, chromium contained in reported stainless steel scrap receipts accounted for 29% of apparent consumption.

Import Sources (2001-04): Chromium contained in chromite ore and chromium ferroalloys and metal: South Africa, 53%; Kazakhstan, 29%; Zimbabwe, 8%; Russia, 5%; and other, 5%.

Tariff:[4] Item	Number	Normal Trade Relations 12-31-05
Ore and concentrate	2610.00.0000	Free.
Ferrochromium:		
Carbon more than 4%	7202.41.0000	1.9% ad val.
Carbon more than 3%	7202.49.1000	1.9% ad val.
Other:		
Carbon more than 0.5%	7202.49.5010	3.1% ad val.
Other	7202.49.5090	3.1% ad val.
Ferrochromium silicon	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: 23% (Domestic), 15% (Foreign).

Government Stockpile: The Defense Logistics Agency, U.S. Department of Defense, implemented the Annual Materials Plan for fiscal year (FY) 2005, which was in effect until September 30, 2005. Quantity available for sale was to be limited to sales authority or inventory. The Agency reported sales in FY 2005 of 81,040 tons of high-carbon ferrochromium, 49,296 tons of refractory-grade chromite ore, 42,754 tons of chemical-grade chromite ore, 11,573 tons of low-carbon ferrochromium, and 279 tons of chromium metal. Ferrochromium silicon and metallurgical-grade chromite ore stocks have been exhausted. The last of the ferrochromium silicon stocks were shipped in June 2002; metallurgical-grade chromite ore, in December 2003. At the current rate of disposal, chemical grade chromite ore stock will be exhausted in FY 2006; refractory grade chromite ore, FY 2006; high-carbon ferrochromium, FY 2009; low-carbon ferrochromium, FY 2020; and chromium metal, FY 2027.

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Stockpile Status—9-30-05[5]

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 2005	Disposals FY 2005	Average chromium content
Chromite ore:						
Chemical-grade	—	3.6	—	90.7	42.8	28.6%
Refractory-grade	—	71.6	—	90.7	49.3	[e]23.9%
Ferrochromium:						
High-carbon	327	0.89	327	[6]99.8	81.0	71.4%
Low-carbon	176	4.7	176	([6])	11.6	71.4%
Chromium metal	6.21	0.2	6.21	0.454	0.279	100%

Events, Trends, and Issues: The rising cost of ferrochromium production and a strengthening South African rand, along with increased demand for ferrochromium and limited supply of stainless steel scrap, caused the price of ferrochromium to reach historically high levels in 2005. As yearend approached, ferrochromium prices declined in the second and third quarters; supply was abundant, as stainless steel producers (except in China, which was starting up newly installed production capacity) announced production cutbacks of about 1 million tons, and the South African rand weakened with respect to the U.S. dollar. World stainless steel production, the source of ferrochromium demand, is expected to continue to increase. China's importance as a consumer of raw materials increased owing to its strong economic growth in 2003 and 2004 and the expansion of stainless steel production capacity in 2004 and 2005. The high price of ferrochromium permitted China and India, two of the world's higher-cost ferrochromium producers, to continue to export that metal commodity to the world market. The cost of nickel reached a 16-year high. High chromium and nickel prices resulted in higher stainless steel prices, which stimulated the use of less costly stainless steel grades, other metals, or nonmetallic materials. If stainless users shift to less costly stainless grades, nickel demand would fall without depressing chromium demand. If stainless consumers shift to other alloys, metals, or materials, demand for both chromium and nickel would decrease. Near the end of 2005, both world stainless steel production and the nickel-containing ratio of that production were less than those of 2004, an indication that consumers are shifting to less-costly stainless steel grades. In 2006 or 2007, when China's stainless steel production capacity has been projected to exceed its demand, China's current suppliers (Asian and European countries) will have to export their production to other countries, a situation that could result in abundant supply.

World Mine Production, Reserves, and Reserve Base:

	Mine production[7]		Reserves[8]	Reserve base[8]
	2004	2005[e]	(shipping grade)[9]	
United States	—	—	—	NA
India	2,950	3,000	25,000	57,000
Kazakhstan	3,270	3,300	290,000	470,000
South Africa	7,630	8,000	160,000	270,000
Other countries	3,620	3,700	NA	NA
World total (rounded)	17,500	18,000	NA	NA

World Resources: World resources are greater than 12 billion tons of shipping-grade chromite, sufficient to meet conceivable demand for centuries. About 95% of the world's chromium resources is geographically concentrated in Kazakhstan and southern Africa; U.S. 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 metallurgical uses.

[e]Estimated. NA Not available. — Zero.

[1]Data in thousand metric tons of contained chromium unless otherwise noted.

[2]Calculated consumption of chromium; equal to production (from mines and scrap) + imports – exports + stock adjustments.

[3]Defined as imports – exports + adjustments for Government and industry stock changes.

[4]In addition to the tariff items listed, certain imported chromium materials (see United States Code, title 26, sections 4661, 4662, and 4672) are subject to excise tax.

[5]See Appendix B for definitions.

[6]Disposal plan for ferrochromium without distinction between high-carbon and low-carbon ferrochromium; total included in high-carbon.

[7]Mine production units are thousand metric tons, gross weight, of marketable chromite ore.

[8]See Appendix C for definitions. Reserves and reserve base data are not comparable between countries because the criteria used to determine the resources of India (Indian Bureau of Mines), Kazakhstan (open literature reports in trade journals and at conferences), and South Africa (JORC compliant, company annual reports) were different.

[9]Shipping-grade chromite ore is deposit quantity and grade normalized to 45% Cr_2O_3.