CHROMIUM

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

Domestic Production and Use: In 2004, the United States consumed about 10% 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 $264 million.

Salient Statistics—United States:[1]	2000	2001	2002	2003	2004[e]
Production, from scrap	139	122	137	129	130
Imports for consumption	453	239	263	317	300
Exports	86	43	29	46	50
Government stockpile releases	85	9	101	70	70
Consumption:					
Reported (excludes scrap)	220	196	237	247	300
Apparent[2] (includes scrap)	590	327	473	468	450
Price, chromite, yearend:					
South African, dollars per metric ton, South Africa[3]	63	NA	NA	NA	NA
Turkish, dollars per metric ton, Turkey[3]	141	NA	NA	NA	NA
Unit value, average annual import (dollars per metric ton):					
Chromite ore (gross weight)	64	61	60	54	100
Ferrochromium (chromium content)	797	709	646	835	1,150
Chromium metal (gross weight)	5,976	6,116	5,767	5,272	5,380
Stocks, yearend, held by U.S consumers	16	17	8	10	7
Net import reliance[4] as a percentage of apparent consumption	77	63	69	73	72

Recycling: In 2004, chromium contained in reported stainless steel scrap receipts accounted for 28% of apparent consumption.

Import Sources (2000-03): Chromium contained in chromite ore and chromium ferroalloys and metal: South Africa, 51%; Kazakhstan, 28%; Zimbabwe, 8%; Russia, 5%; and other, 8%.

Tariff:[5] Item	Number	Normal Trade Relations 12-31-04
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, submitted the Annual Materials Plan for fiscal year (FY) 2005 in February 2004. Quantity available for sale will be limited to sales authority or inventory. The Agency reported sales in FY 2004 of 70,760 tons of chemical-grade chromite ore, 13,608 tons of refractory-grade chromite ore, 54,852 tons of high-carbon ferrochromium, 14,025 tons of low-carbon ferrochromium, and 499 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.

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Stockpile Status—9-30-04[6]

Material	Uncommitted inventory	Committed inventory	Authorized for disposal	Disposal plan FY 2004	Disposals FY 2004	Average chromium content
Chromite ore:						
Chemical-grade	—	46.3	—	90.7	32.2	28.6%
Metallurgical-grade	—	—	—	—	51.9	28.6%
Refractory-grade	—	121	—	90.7	35.1	[e]23.9%
Ferrochromium:						
High-carbon	408	3.63	408	99.8	72.1	71.4%
Low-carbon	192	22.4	192	—	4.24	71.4%
Chromium metal	6.67	—	6.67	0.454	0.475	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 2003. The price of ferrochromium continued to rise in 2004. As yearend approached, prices showed signs of leveling off or decreasing as the conditions that influenced price started to change. The South African rand continued strengthening with respect to the U.S. dollar; the price of metallurgical coke, used in ferrochromium production, started to decline, however. World stainless steel production is the source of ferrochromium demand. China's importance as a consumer of raw materials increased owing to its strong economic growth in 2003 and 2004. World stainless steel production responded to Chinese demand, which slowed at midyear. 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. It also bolstered Kazakhstani interest in moving into stainless steel production. Kazakhstan is geographically well placed and endowed with mineral and energy resources to meet China's growing demand for stainless steel. The cost of nickel reached a 15-year high. High chromium and nickel prices result in higher stainless steel prices, which may stimulate 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 metals or materials, demand for both chromium and nickel would decrease. A several percent shift to nickel-free stainless steel grades has been noted by industry analysts. The U.S. Environmental Protection Agency regulates chromium releases into the environment. The U.S. Occupational Health and Safety Administration regulates workplace exposure to chromium.

World Mine Production, Reserves, and Reserve Base:

	Mine production[7]		Reserves[8]	Reserve base[8]
	2003	2004[e]	(shipping grade)[9]	
United States	—	—	—	7,000
India	2,210	2,300	25,000	57,000
Kazakhstan	2,930	3,200	290,000	470,000
South Africa	7,410	8,000	100,000	200,000
Other countries	2,950	3,500	390,000	1,100,000
World total (rounded)	15,500	17,000	810,000	1,800,000

World Resources: World resources exceed 12 billion tons of shipping-grade chromite, sufficient to meet conceivable demand for centuries. About 95% of chromium resources is geographically concentrated in southern Africa. Reserves and reserve base are geographically concentrated in Kazakhstan and southern Africa. The lleading U.S. chromium resource is 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 for chromium is production (from mines and scrap) + imports – exports + stock adjustments.

[3]This price series was discontinued in 2001.

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

[5]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.

[6]See Appendix B for definitions.

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

[8]See Appendix C for definitions.

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