

Mineral Industry Surveys

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CHROMIUM IN DECEMBER 2007

On the basis of gross weight, consumption of chromium ferroalloys and metal in December 2007 decreased 7% compared with revised consumption in November 2007; consumption in the fourth quarter 2007 decreased slightly compared with consumption in the third quarter 2007 and increased 8% compared with consumption in the fourth quarter 2006, according to the U.S. Geological Survey.

Included in this Mineral Industry Surveys are U.S. salient chromium statistics, U.S. Government stockpile inventory of

chromium materials in December 2007, consumption by end use and consumer stocks of chromium ferroalloys and metal at the end of December 2007, and U.S. foreign trade data for selected chromium-containing materials in November 2007.

Monthly price information for high-carbon ferrochromium, low-carbon ferrochromium, ferrochromium silicon, and chromium metal are included in this Mineral Industry Surveys.

TABLE 1
U.S. SALIENT CHROMIUM STATISTICS¹

(Metric tons, gross weight)

	2006	2007				January-December ²
	January-December	Third quarter	October	November	December	
Production:						
Stainless steel production ³	2,460,000	426,000	170,000	187,000	160,000	2,170,000 ⁴
Components of U.S. supply:						
Stainless steel scrap receipts	1,050,000	217,000	78,100	74,100	70,600	953,000
Stainless steel scrap consumption	1,500,000	338,000	119,000	119,000	110,000	1,430,000
Imports for consumption:						
Chromite ore	150,000	42,900	3,540	33,200	(5)	133,000 ⁶
Ferrochromium:						
More than 4% carbon	393,000	78,300	36,900	36,100	(5)	352,000 ⁶
More than 3% carbon but not more than 4% carbon	--	--	--	131	(5)	131 ⁶
More than 0.5%, but not more than 3% carbon	29	714	200	830	(5)	6,240 ⁶
Not more than 0.5% carbon	28,100	7,420	2,570	2,290	(5)	28,300 ⁶
Ferrochromium silicon	38,300	12,800	2,760	4,000	(5)	37,300 ⁶
Total ferroalloy imports	459,000	99,200	42,400	43,300	(5)	424,000 ⁶
Chromium metal ⁷	10,900	3,340	1,050	547	(5)	10,900 ⁶
Stainless steel	872,000	198,000	59,800	58,200	(5)	751,000 ⁶
Stainless steel scrap	180,000	15,200	9,570	10,000	(5)	105,000 ⁶
Distribution of U.S. supply:						
Consumption, industry, chromium ferroalloys and metal	553,000	109,000	37,000	35,500	32,800	447,000
Exports:						
Chromite ore	53,900	2,120	6,340	525	(5)	37,000 ⁶
Chromium ferroalloys:						
High-carbon ferrochromium	18,800	4,270	482	693	(5)	24,000 ⁶
Low-carbon ferrochromium	16,600	2,120	452	873	(5)	15,400 ⁶
Ferrochromium silicon	248	44	--	11	(5)	308 ⁶
Total ferroalloy exports	35,700	6,430	933	1,580	(5)	39,700 ⁶
Chromium metal	1,020	320	74	125	(5)	1,140 ⁶
Stainless steel	410,000	102,000	38,900	34,100	(5)	439,000 ⁶
Stainless steel scrap	506,000	209,000	79,000	83,100	(5)	799,000 ⁶
Stocks at end of period:						
Consumer, industry, chromium ferroalloys and metal	XX	XX	11,700	12,200	13,500	XX
Government stockpile:						
Chromium ferroalloys	XX	XX	169,000	162,000	155,000	XX
Chromium metal	XX	XX	5,090	5,030	4,970	XX

XX Not applicable. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²May include revised data that are not broken out by specific month.

³Data on stainless steel production reported by American Iron and Steel Institute; monthly, quarterly, and year-to-date production of stainless and heat-resisting raw steel.

⁴May include revised data that are not broken out by specific month.

⁵Data to be published in a subsequent issue.

⁶January through November data only.

⁷Includes waste and scrap and other.

TABLE 2
U.S. REPORTED CONSUMPTION AND STOCKS OF CHROMIUM PRODUCTS IN 2007^{1,2}

(Metric tons, gross weight unless otherwise noted)

	November	December	January- December ³
Consumption by end use:			
Alloy uses:			
Iron alloys:			
Steel:			
Carbon steel	315	293	4,160
High-strength low-alloy steel	220	309	3,020
Stainless and heat-resisting steel	29,500	27,200	376,000
Full alloy steel	1,730	1,330	17,500
Electrical steel	W	W	W
Tool steel	408	378	5,090
Unspecified steel	W	W	W
Cast irons	W	W	W
Superalloys	403	419	7,300
Other alloys ⁴	62	41	678
Total	35,500	32,800	447,000
Total, chromium content	21,000	19,200	262,000
Consumption by material:			
Low-carbon ferrochromium	2,390	2,080	29,300
High-carbon ferrochromium	30,200	28,000	380,000
Ferrochromium silicon	W	W	W
Chromium metal	206	204	3,840
Chromite ore	W	W	W
Chromium-aluminum alloy	W	W	W
Other chromium materials	W	W	W
Total	35,500	32,800	447,000
Total, chromium content	21,000	19,200	262,000
Consumer stocks:			
Low-carbon ferrochromium	1,860	1,770	XX
High-carbon ferrochromium	9,040	10,400	XX
Ferrochromium silicon	1,050	1,160	XX
Chromium metal	146	143	XX
Chromite ore	W	W	XX
Chromium-aluminum alloy	W	W	XX
Other chromium materials	14	11	XX
Total	12,200	13,500	XX
Total, chromium content	7,202	7,940	XX

W Withheld to avoid disclosing company proprietary data; included in "Total." XX Not applicable.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes estimates.

³May include revised data.

⁴Includes welding and alloy hard-facing rods and materials; wear- and corrosion-resistant alloys; and aluminum, copper, magnetic, nickel, and other alloys.

TABLE 3
U.S. GOVERNMENT STOCKPILE INVENTORY OF
CHROMIUM MATERIALS^{1,2}

(Metric tons)

Period	Chromium ferroalloys		Chromium metal
	High-carbon ferro-chromium	Low-carbon ferro-chromium	
2006, December	229,000	118,000	5,280
2007:			
January	223,000	111,000	5,280
February	215,000	108,000	5,280
March	204,000	98,900	5,280
April	191,000	94,900	5,280
May	177,000	91,300	5,280
June	177,000	86,700	5,280
July	177,000	86,700	5,150
August	170,000	92,200	5,150
September	113,000	61,000	5,150
October	108,000	60,500	5,090
November	104,000	57,800	5,030
December	99,400	55,400	4,970

¹Data are rounded to no more than three significant digits.

²These Government stocks are reported by the Defense National Stockpile Center in Inventory of Stockpile Materials R-1, which reports uncommitted inventory. Uncommitted inventory is that inventory for which there is no sales contract. Committed inventory is that inventory for which there is a sales contract, however, the material has not yet been shipped. For chromium materials, the R-1 report includes chromium materials that (1) meet specifications and are held in excess of goal and (2) do not meet specifications and are held in excess of goal. The R-1 report excludes chromium materials that are committed and awaiting shipment.

Source: Defense National Stockpile Center.

TABLE 4
U.S. EXPORTS OF CHROMITE ORE, CHROMIUM FERROALLOYS, AND METAL¹

Period	Chromite ore		Chromium ferroalloys ²			Chromium metal ^{3,4}	
	Gross weight (metric tons)	Value (thousands)	Gross weight (metric tons)	Chromium content (metric tons)	Value (thousands)	Gross weight (metric tons)	Value (thousands)
2006:							
November	22,700	\$1,240	2,560	1,610	\$3,650	85	\$1,720
December	286	116	7,380	4,410	8,550	62	1,490
January-December	53,900	10,200	35,700	21,300	38,100	1,020	21,300
2007:							
January	455	185	5,410	3,330	6,050	107	1,990
February	821	361	16,300	11,100	15,500	115	1,600
March	899	368	1,320	745	1,620	80	1,600
April	12,000	748	1,820	1,070	2,310	140	2,490
May	13,100	1,150	4,060	2,540	5,740	105	1,440
June	790	308	1,830	1,040	2,680	75	1,520
July	844	350	1,130	657	1,760	102	1,760
August	874	364	1,270	747	1,960	123	2,690
September	406	231	4,030	2,470	6,760	95	1,670
October	6,340	812	933	568	1,620	74	1,390
November	525	400	1,580	831	2,600	125	3,850
January-November	37,000	5,280	39,700	25,100	48,600	1,140	22,000

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes low- and high-carbon ferrochromium and ferrochromium silicon.

³Includes chromium metal, waste and scrap, and unwrought powders.

⁴May include revised data that are not broken out by specific month.

Source: U.S. Census Bureau.

TABLE 5
U.S. IMPORTS FOR CONSUMPTION OF CHROMITE ORE, FERROCHROMIUM, AND CHROMIUM METAL¹

(Metric tons)

	2006	2007			
	January-December ²	September	October	November	January- November ^{2, 3}
Chromite ore:					
Not more than 40%:					
Gross weight	117	--	20	--	35
Chromic oxide content	45	--	7	--	13
More than 40% but less than 46% chromic oxide:					
Gross weight	3,810	--	144	134	26,400
Chromic oxide content	1,750	--	66	61	12,100
46% or more chromic oxide:					
Gross weight	146,000	1,750	3,380	33,100	107,000
Chromic oxide content	76,300	805	1,620	15,300	49,400
Total, all grades:					
Gross weight	150,000	1,750	3,540	33,200	133,000
Chromic oxide content	78,100	805	1,700	15,300	61,500
Ferrochromium:					
Low-carbon: ⁴					
Not more than 0.5%:					
Gross weight	28,100	3,740	2,570	2,290	28,300
Chromium content	19,300	1,920	1,770	1,570	18,700
More than 0.5% but not more than 3%:					
Gross weight	29	--	200	830	6,240
Chromium content	23	--	108	448	3,560
Total, low-carbon:					
Gross weight	28,100	3,740	2,770	3,120	34,500
Chromium content	19,300	1,920	1,880	2,020	22,300
Medium-carbon: ⁵					
Gross weight	--	--	--	131	131
Chromium content	--	--	--	71	71
High-carbon: ⁶					
Gross weight	393,000	31,000	36,900	36,100	352,000
Chromium content	230,000	16,000	22,100	21,900	198,000
Total, all grades:					
Gross weight	421,000	34,700	39,600	39,300	387,000
Chromium content	249,000	17,900	23,900	23,900	221,000
Chromium metal:					
Unwrought powders	1,250	63	23	59	760
Waste and scrap	90	35	72	66	340
Other than waste and scrap and unwrought powders	9,540	751	953	422	9,820
Total, all grades:	10,900	849	1,050	547	10,900

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²May include revised data.

³May include revised data that are not broken out by specific month.

⁴Ferrochromium containing not more than 3% carbon.

⁵Ferrochromium containing more than 3% carbon but not more than 4% carbon.

⁶Ferrochromium containing more than 4% carbon.

Source: U.S. Census Bureau.

TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF FERROCHROMIUM IN 2007,
BY GRADE AND BY COUNTRY¹

Grade and country	November			January-November ²		
	Gross weight (metric tons)	Chromium content (metric tons)	Value ³ (thousands)	Gross weight (metric tons)	Chromium content (metric tons)	Value ³ (thousands)
High-carbon ferrochromium:⁴						
India	1,010	643	\$1,840	1,480	926	\$2,300
Kazakhstan	16,700	11,600	34,700	96,000	67,000	137,000
Mexico	--	---	---	20	14	32
Netherlands	1,140	719	2,070	1,140	719	2,070
Russia	2,890	1,820	5,220	18,500	11,600	22,600
South Africa	14,300	7,050	12,100	214,000	106,000	159,000
Sweden	--	--	--	41	28	105
Switzerland	--	--	--	3,500	1,680	2,130
Tajikistan	--	--	--	5	3	9
United Kingdom	1	(5)	3	1	(5)	3
Zimbabwe	--	--	--	17,100	10,200	23,700
Total	36,100	21,900	56,000	352,000	198,000	349,000
Medium-carbon ferrochromium, ⁶ Russia	131	71	70	131	71	70
Low-carbon ferrochromium:⁷						
Not more than 0.5% carbon:						
Brazil	--	--	--	5	3	10
China	--	--	--	225	148	479
France	--	--	--	6	4	21
Germany	200	145	538	5,400	3,790	12,200
Japan	858	570	1,260	5,200	3,480	9,440
Kazakhstan	697	482	1,980	3,190	2,220	6,580
Russia	498	345	1,400	13,300	8,500	25,300
South Africa	--	--	--	718	427	1,050
Sweden	38	27	166	218	153	622
Turkey	--	--	--	8	5	26
Total	2,290	1,570	5,340	28,300	18,700	55,700
More than 0.5% but not more than 3%:						
Kazakhstan	--	--	--	1,110	777	2,090
South Africa	830	448	1,090	5,130	2,780	5,430
Total	830	448	1,090	6,240	3,560	7,520
All grades:						
Brazil	--	--	--	5	3	10
China	--	--	--	225	148	479
France	--	--	--	6	4	21
Germany	200	145	538	5,400	3,790	12,200
India	1,010	643	1,840	1,480	926	2,300
Japan	858	570	1,260	5,200	3,480	9,440
Kazakhstan	17,400	12,100	36,700	100,000	69,900	146,000
Mexico	---	---	---	20	14	32
Netherlands	1,140	719	2,070	1,140	719	2,070
Russia	3,520	2,240	6,690	31,900	20,200	48,000
South Africa	15,100	7,500	13,200	220,000	110,000	166,000
Sweden	38	27	166	258	181	728
Switzerland	---	---	---	3,500	1,680	2,130
Tajikistan	---	---	---	5	3	9
Turkey	---	---	---	8	5	26
United Kingdom	1	(5)	3	1	(5)	3
Zimbabwe	---	---	---	17,100	10,200	23,700
Total	39,300	23,900	62,500	387,000	221,000	412,000

See footnotes at end of table.

TABLE 6--Continued
U.S. IMPORTS FOR CONSUMPTION OF FERROCHROMIUM IN 2007,
BY GRADE AND BY COUNTRY¹

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown. Chromium ferroalloys comprise ferrochromium and ferrochromium silicon.

²May include revised data.

³Customs import value generally represents a value in the foreign country and therefore excludes U.S. import duties, freight, insurance, and other charges incurred in bringing the merchandise into the United States.

⁴Ferrochromium containing more than 4% carbon.

⁵Less than ½ unit.

⁶Ferrochromium containing more than 3% carbon but not more than 4% carbon.

⁷Ferrochromium containing not more than 3% carbon.

Source: U.S. Census Bureau.

TABLE 7
U.S. IMPORTS FOR CONSUMPTION OF CHROMIUM METAL IN 2007,
BY GRADE AND BY COUNTRY¹

Grade and country	November		January-November ²	
	Gross weight (metric tons)	Value ³ (thousands)	Gross weight (metric tons)	Value ³ (thousands)
Unwrought powders:				
China	3	\$23	121	\$2,230
France	--	--	8	68
Germany	--	--	42	269
Japan	(4)	4	48	1,700
Russia	36	244	251	2,310
Singapore	--	--	1	11
Spain	--	--	31	171
United Kingdom	20	285	258	2,350
Total	59	556	760	9,100
Waste and scrap:				
Germany	--	--	18	102
Japan	--	--	35	294
Korea, Republic of	--	--	(4)	8
Malaysia	--	--	11	47
Mexico	50	276	254	1,350
Singapore	2	23	7	124
Taiwan	14	170	16	198
Total	66	469	340	2,130
Other than waste and scrap and unwrought powders:				
China	20	159	1,780	14,400
France	114	1,180	2,360	21,100
Germany	43	257	144	1,810
Hong Kong	--	--	(4)	8
Italy	--	--	(4)	19
Japan	1	27	21	204
Russia	109	1,140	3,870	27,500
Switzerland	--	--	(4)	5
United Kingdom	134	1,230	1,650	13,300
Total	422	4,000	9,820	78,300
All grades:				
China	23	182	1,900	16,600
France	114	1,180	2,370	21,100
Germany	43	257	204	2,180
Hong Kong	--	--	(4)	8
Italy	--	--	(4)	19
Japan	1	30	103	2,200
Korea, Republic of	--	--	(4)	8
Malaysia	--	--	11	47
Mexico	50	276	254	1,350
Russia	145	1,390	4,120	29,800
Singapore	2	23	7	135
Spain	--	--	31	171
Switzerland	--	--	(4)	5
Taiwan	14	170	16	198
United Kingdom	154	1,520	1,900	15,600
Total	547	5,020	10,900	89,500

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²May include revised data.

³Customs import value generally represents a value in the foreign country and therefore excludes U.S. import duties, freight, insurance, and other charges incurred in bringing the merchandise into the United States.

⁴Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 8
U.S. STAINLESS STEEL TRADE, BY PRODUCT, IN 2007¹

Stainless steel product	November		January-November	
	Gross weight (metric tons)	Value ² (thousands)	Gross weight (metric tons)	Value ² (thousands)
Exports:				
Ingot	1,320	\$7,620	14,200	\$90,000
Flat-rolled (width > 600 mm)	18,400	57,100	244,000	729,000
Flat-rolled (width < 600 mm)	6,440	31,200	87,500	465,000
Bars and rods in irregular coils	271	1,400	7,080	35,800
Other bars and rods	2,770	20,800	35,300	259,000
Wire	667	5,000	8,140	58,200
Tubes, pipes, hollow profiles	4,230	31,800	42,100	311,000
Total	34,100	155,000	439,000	1,950,000
Stainless steel scrap	83,100	131,000	799,000	1,510,000
Grand total	117,000	286,000	1,240,000	3,450,000
Imports:				
Ingot	11,300	49,500	120,000	586,000
Flat-rolled (width > 600 mm)	22,300	75,800	312,000	1,350,000
Flat-rolled (width < 600 mm)	3,150	18,200	40,000	218,000
Bars and rods in irregular coils	1,850	8,100	25,900	130,000
Other bars and rods	7,140	36,300	92,700	519,000
Wire	3,140	19,100	39,300	255,000
Tubes, pipes, hollow profiles	9,340	84,600	122,000	972,000
Total	58,200	292,000	751,000	4,030,000
Stainless steel scrap	10,000	18,400	105,000	168,000
Grand total	68,200	310,000	856,000	4,190,000

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Export value is free alongside ship (f.a.s.). Import value is Customs import value, which generally represents a value in the foreign country and therefore excludes U.S. import duties, freight, insurance, and other charges incurred in bringing the merchandise into the United States.

Source: U.S. Census Bureau.

TABLE 9
2007 CHROMITE ORE PRICES AVERAGE MONTHLY AND ANNUAL PRICES¹

(Dollars per metric ton, gross weight unless otherwise noted)

Month	Turkey ²		South Africa ³						Philippines ⁴	Sand ⁵
	1	2	1	2	3	4	5	6		
2007:										
January	244	239	150 - 160	149 - 160	165 - 173	185 - 210	225 - 245	100 - 145	125 - 140	170 - 170
February	260	280	181 - 191	178 - 188	165 - 173	185 - 210	225 - 245	100 - 145	125 - 140	170 - 170
March	300	320	250 - 262	250 - 262	165 - 173	185 - 210	225 - 245	100 - 145	125 - 140	170 - 170
April	365	385	260 - 270	260 - 270	150 - 165	180 - 200	245 - 265	110 - 125	125 - 140	170 - 170
May	393	413	263 - 273	263 - 273	185 - 195	200 - 220	255 - 275	110 - 125	125 - 140	170 - 175
June	420	440	270 - 280	270 - 280	210 - 220	240 - 260	255 - 275	110 - 125	125 - 140	170 - 175
July	405	425	245 - 260	245 - 260	240 - 260	280 - 295	255 - 275	220 - 240	125 - 140	170 - 175
August	364	392	218 - 232	222 - 238	240 - 260	280 - 295	255 - 275	220 - 240	125 - 140	170 - 175
September	363	393	225 - 240	235 - 250	265 - 270	285 - 295	345 - 345	220 - 240	125 - 140	170 - 175
October	390	420	258 - 269	258 - 269	300 - 300	320 - 320	410 - 410	220 - 240	125 - 140	170 - 175
November	403	435	263 - 275	263 - 275	330 - 340	340 - 340	430 - 430	210 - 230	125 - 140	170 - 175
December	425	450	268 - 278	268 - 278	270 - 350	300 - 350	455 - 455	240 - 290	125 - 140	170 - 175
Yearly avg.	361	383	237 - 249	238 - 250	224 - 240	248 - 267	298 - 312	163 - 191	125 - 140	170 - 173

¹Data obtained from Ryan's Notes refer to monthly averages of weekly reports; data obtained from Industrial Minerals refer to monthly reports.

²Source for Turkey 1 is Ryan's Notes; Turkey 1 is called 38% - 40% Cr₂O₃ before 07/07/06 and 40% - 42%, cost and freight (cfr) China on and after 07/07/06 by Ryan's Notes. Source for Turkey 2 is Ryan's Notes; Turkey 2 is called 44% Cr₂O₃, cfr China by Ryan's Notes.

³Source for South Africa 1 is Ryan's Notes; South Africa 1 is called 39% Cr₂O₃, free on board (f.o.b.) South Africa by Ryan's Notes. Source for South Africa 2 is Ryan's Notes; South Africa 2 is called 44% Cr₂O₃, f.o.b. South Africa by Ryan's Notes. Source for South Africa 3 is Industrial Minerals; South Africa 3 is called chemical grade, 46% Cr₂O₃, wet bulk, f.o.b. by Industrial Minerals. Source for South Africa 4 is Industrial Minerals; South Africa 4 is called foundry grade, 46% Cr₂O₃, wet bulk, f.o.b. by Industrial Minerals. Source for South Africa 5 is Industrial Minerals; South Africa 5 is called refractory grade, 46% Cr₂O₃, wet bulk, f.o.b. by Industrial Minerals. Source for South Africa 6 is Industrial Minerals; South Africa 6 is called Northwest, metallurgical grade, friable lumpy, basis 40% Cr₂O₃, f.o.b. by Industrial Minerals.

⁴Source for Philippines is Industrial Minerals; Philippines is called refractory grade, f.o.b. by Industrial Minerals.

⁵Source for Sand is Industrial Minerals; Sand is called molding grade, 98% < 30 mesh, delivered UK by Industrial Minerals; reported in British pounds.

TABLE 10
HIGH-CARBON FERROCHROMIUM AVERAGE MONTHLY AND ANNUAL PRICES

(Cents per pound, contained chromium)

Month	United States ¹				
	1	2	3	4	5
2007:					
January	71.00 - 76.00	67.50 - 70.00	65.00 - 66.25	67.25 - 69.00	63 - 65
February	71.00 - 76.00	72.75 - 75.00	68.00 - 70.00	72.00 - 74.00	67 - 70
March	71.00 - 76.00	80.60 - 82.80	75.20 - 77.20	80.00 - 82.60	70 - 74
April	80.50 - 83.00	96.00 - 99.50	86.00 - 92.50	93.50 - 100.25	80 - 85
May	81.00 - 83.00	101.50 - 105.88	88.50 - 97.50	98.25 - 105.25	91 - 97
June	114.40 - 123.20	126.00 - 130.00	101.60 - 114.40	124.00 - 129.40	110 - 120
July	124.00 - 130.75	132.75 - 138.00	100.00 - 112.50	127.00 - 133.25	120 - 130
August	107.00 - 115.00	125.00 - 130.70	102.00 - 115.00	120.20 - 125.60	120 - 130
September	101.25 - 107.50	130.25 - 135.25	107.50 - 116.25	126.75 - 131.00	120 - 130
October	116.25 - 125.00	142.25 - 146.25	113.75 - 120.00	137.00 - 142.75	130 - 140
November	137.90 - 142.50	162.00 - 166.10	121.25 - 132.50	155.00 - 163.75	137 - 143
December	143.00 - 148.00	168.25 - 174.13	140.00 - 155.00	162.75 - 170.50	150 - 165
Yearly avg.	101.99 - 107.70	117.56 - 121.62	97.14 - 105.55	113.31 - 118.57	104 - 112

See footnotes at end of table.

TABLE 10--Continued
HIGH-CARBON FERROCHROMIUM AVERAGE MONTHLY AND ANNUAL PRICES

(Cents per pound, contained chromium)

Monthly average	Europe ²				Japan ³		Hong Kong ⁴		China ⁵
	1	2	3	4	1	2	1	2	
2007:									
January	67 - 71	57 - 60	77 - 79	67 - 71	68 - 70	83	68 - 70	NA	6,900 - 7,060
February	75 - 77	72 - 74	NA - 78	71 - 77	72 - 73	83	68 - 70	NA	7,330 - 7,440
March	75 - 77	78 - 81	NA - 75	83 - 91	79 - 81	83	68 - 70	NA	7,600 - 7,770
April	80 - 82	91 - 95	NA - 79	93 - 103	82 - 85	87	68 - 70	NA	8,290 - 8,450
May	84 - 86	100 - 105	81 - 83	98 - 108	85 - 90	90	77 - 83	NA	8,550 - 8,950
June	84 - 86	132 - 137	85 - 87	120 - 130	105 - 112	90	94 - 104	NA	8,640 - 9,020
July	102 - 104	140 - 145	99 - 101	128 - 138	120 - 125	90	100 - 110	NA	8,440 - 8,600
August	102 - 104	136 - 141	99 - 101	130 - 145	101 - 107	108	100 - 110	NA	8,300 - 8,580
September	102 - 104	135 - 140	99 - 101	131 - 146	94 - 99	108	100 - 110	NA	8,500 - 8,800
October	102 - 104	135 - 140	99 - 101	140 - 150	95 - 100	108	100 - 110	NA	8,830 - 9,200
November	102 - 104	135 - 140	100 - 106	156 - 165	112 - 118	108	100 - 110	NA	9,120 - 9,420
December	102 - 104	150 - 160	107 - 114	170 - 191	120 - 130	108	100 - 110	NA	9,250 - 9,740
Yearly avg.	90 - 92	114 - 119	92 - 92	116 - 126	95 - 99	96	87 - 94	NA	8,300 - 8,580

NA Not available.

¹Source for United States 1 is Platts Metals Week; United States 1 is called charge 50% - 55% chromium, imported, by Platts Metals Week. Source for United States 2 is Platts Metals Week; United States 2 is called 60% - 65% chromium, imported, by Platts Metals Week. Source for United States 3 is Ryan's Notes; United States 3 is called 50% - 52% chromium, imported, by Ryan's Notes. Source for United States 4 is Ryan's Notes; United States 4 is called 60% - 65% chromium, imported, by Ryan's Notes. Source for United States 5 is Metal Bulletin; United States 5 is called 6% - 8% carbon, basis 60% - 65% chromium, max. 2% silicon, by Metal Bulletin.

²Source for Europe 1 is Platts Metals Week; Europe 1 is called 52% chromium, by Platts Metals Week. Source for Europe 2 is Platts Metals Week; Europe 2 is called 62% chromium, by Platts Metals Week. Source for Europe 3 is Metal Bulletin; Europe 3 is called lumpy chromium charge, basis 52% chromium, by Metal Bulletin. Source for Europe 4 is Metal Bulletin; Europe 4 is called 6% - 8% carbon, basis 60% chromium, max. 1.5% silicon, by Metal Bulletin.

³Source for Japan 1 is Platts Metals Week; Japan 1 is called 50% - 55% chromium, spot, cost insurance freight (c.i.f.), by Platts Metals Week. Source for Japan 2 is Platts Metals Week; Japan 2 is called 50% - 55% chromium, regular, c.i.f., by Platts Metals Week.

⁴Source for Hong Kong 1 is Platts Metals Week; Hong Kong 1 is called 60% chromium, by Platts Metals Week. Hong Kong 1 now labeled as China on October 12, 2008 by Platts Metals Week. Source for Hong Kong 2 is Metal Bulletin; Hong Kong 2 is called 8% carbon, 60% chromium, free on board main Chinese ports, by Metal Bulletin.

⁵Source for China is Metal Bulletin; China is called 6% - 8% carbon, basis 60% chromium, delivered duty paid China RMB/tonne (metric ton), by Metal Bulletin.

TABLE 11
LOW-CARBON FERROCHROMIUM AVERAGE MONTHLY AND ANNUAL PRICES

(Dollars per pound, contained chromium, unless otherwise noted)

Monthly average	United States ¹				
	1	2	3	4	5
2007:					
January	1.19 - 1.24	1.13 - 1.16	1.12 - 1.15	1.19 - 1.22	1.13 - 1.15
February	1.32 - 1.34	1.20 - 1.25	1.19 - 1.23	1.27 - 1.30	1.19 - 1.21
March	1.41 - 1.46	1.22 - 1.26	1.21 - 1.24	1.40 - 1.45	1.21 - 1.24
April	1.50 - 1.55	1.29 - 1.32	1.27 - 1.30	1.46 - 1.51	1.27 - 1.30
May	1.60 - 1.64	1.31 - 1.33	1.30 - 1.32	1.50 - 1.55	1.30 - 1.32
June	1.68 - 1.74	1.47 - 1.52	1.46 - 1.51	1.65 - 1.72	1.50 - 1.55
July	1.70 - 1.81	1.55 - 1.60	1.54 - 1.59	1.69 - 1.80	1.53 - 1.57
August	1.70 - 1.78	1.52 - 1.58	1.51 - 1.57	1.69 - 1.78	1.49 - 1.55
September	1.76 - 1.83	1.57 - 1.62	1.55 - 1.61	1.71 - 1.78	1.55 - 1.61
October	1.93 - 1.98	1.78 - 1.82	1.74 - 1.80	1.89 - 1.94	1.81 - 1.87
November	2.18 - 2.23	2.06 - 2.10	2.05 - 2.09	2.22 - 2.29	2.07 - 2.13
December	2.65 - 2.80	2.37 - 2.48	2.36 - 2.47	2.68 - 2.75	2.32 - 2.37
Yearly avg.	1.72 - 1.78	1.54 - 1.59	1.53 - 1.58	1.69 - 1.75	1.52 - 1.56

See footnotes at end of table.

TABLE 11--Continued
 LOW-CARBON FERROCHROMIUM AVERAGE MONTHLY AND ANNUAL PRICES

(Dollars per pound, contained chromium, unless otherwise noted)

Monthly average	United States ¹				Europe ²		
	6	7	8	9	1	2	3
2007:							
January	1.10 - 1.13	1.16 - 1.18	1.05 - 1.08	1.02 - 1.06	1.03 - 1.13	1.16 - 1.20	1.20 - 1.24
February	1.18 - 1.20	1.21 - 1.27	1.13 - 1.17	1.07 - 1.10	1.03 - 1.13	1.17 - 1.21	1.22 - 1.26
March	1.20 - 1.22	1.25 - 1.35	1.20 - 1.25	1.12 - 1.14	1.03 - 1.13	1.22 - 1.28	1.25 - 1.30
April	1.24 - 1.26	1.35 - 1.40	1.24 - 1.28	1.13 - 1.15	1.14 - 1.22	1.22 - 1.27	1.25 - 1.30
May	1.24 - 1.26	1.45 - 1.53	1.28 - 1.32	1.16 - 1.20	1.25 - 1.30	1.37 - 1.42	1.42 - 1.47
June	1.46 - 1.51	1.62 - 1.70	1.37 - 1.44	1.26 - 1.32	1.49 - 1.57	1.55 - 1.64	1.59 - 1.69
July	1.50 - 1.55	1.70 - 1.90	1.45 - 1.60	1.30 - 1.40	1.65 - 1.75	1.63 - 1.73	1.62 - 1.75
August	1.47 - 1.52	1.70 - 1.90	1.45 - 1.60	1.30 - 1.40	1.62 - 1.72	1.66 - 1.76	1.63 - 1.76
September	1.50 - 1.56	1.70 - 1.90	1.45 - 1.60	1.30 - 1.40	1.60 - 1.70	1.71 - 1.81	1.68 - 1.78
October	1.68 - 1.75	1.85 - 1.95	1.60 - 1.70	1.60 - 1.65	1.68 - 1.80	1.80 - 1.88	1.78 - 1.85
November	1.91 - 1.98	1.86 - 1.95	1.61 - 1.70	1.61 - 1.66	1.98 - 2.10	2.09 - 2.27	2.12 - 2.26
December	0.95 NA	4.59 - 4.71	3.86 - 4.02	4.65 - 4.83	2.50 - 2.70	2.40 - 2.70	2.45 - 2.77
Yearly avg.	0.72 NA	3.62 - 3.70	3.34 - 3.48	4.56 - 4.83	1.50 - 1.61	1.57 - 1.66	1.59 - 1.68

¹Source for United States 1 is Platts Metals Week; United States 1 is called 0.05% carbon, imported, by Platts Metals Week. Source for United States 2 is Platts Metals Week; United States 2 called 0.10% carbon, imported, by Platts Metals Week. Source for United States 3 is Platts Metals Week; United States 3 is called 0.15% carbon, imported, by Platts Metals Week. Source for United States 4 is Ryan's Notes; United States 4 is called 0.05% carbon, imported, by Ryan's Notes. Source for United States 5 is Ryan's Notes; United States 5 is called 0.1% carbon, imported, by Ryan's Notes. Source for United States 6 is Ryan's Notes; United States 6 is called 0.15% carbon, imported, by Ryan's Notes. Source for United States 7 is Metal Bulletin; United States 7 is called 0.05% carbon, imported, 65% min. chromium, free on board (f.o.b.) Pittsburgh, by Metal Bulletin. Source for United States 8 is Metal Bulletin; United States 8 is called 0.10% carbon, 62% min. chromium, f.o.b. Pittsburgh, by Metal Bulletin. Source for United States 9 is Metal Bulletin; United States 9 is called 0.15% carbon, 60% min. chromium, f.o.b. Pittsburgh, by Metal Bulletin.

²Source for Europe 1 is Platts Metals Week; Europe 1 is called 0.1% carbon, by Platts Metals Week. Source for Europe 2 is Metal Bulletin; Europe 2 is called 0.1% carbon, average 68% - 70% chromium, by Metal Bulletin. Source for Europe 3 is Metal Bulletin; Europe 3 is called 0.06% carbon max., 65% chromium, by Metal Bulletin.

TABLE 12
FERROCHROMIUM SILICON AND CHROMIUM METAL AVERAGE MONTHLY AND ANNUAL PRICES

(Dollars per pound, gross weight, unless otherwise noted)

Month	Ferrochromium silicon ¹	Chromium metal			
		United States		Europe	
		Electrolytic ²	Aluminothermic ³	Aluminothermic ⁴	
				1	2
2007:					
January	0.5063	4.50	3.00 - 3.05	2.81 - 2.95	4.65 - 4.83
February	0.5245	4.50	3.14 - 3.19	2.86 - 2.95	4.65 - 4.83
March	0.5591	NA	3.40 - 3.48	3.11 - 3.20	4.65 - 4.83
April	0.6195	NA	3.64 - 3.73	3.38 - 3.52	3.49 - 4.83
May	0.6455	NA	3.65 - 3.75	3.46 - 3.56	4.65 - 4.83
June	0.7810	NA	3.65 - 3.75	3.47 - 3.61	4.65 - 4.83
July	0.7955	NA	3.65 - 3.75	3.45 - 3.63	4.65 - 4.83
August	0.7584	NA	3.65 - 3.74	3.45 - 3.63	4.65 - 4.83
September	0.7810	NA	3.65 - 3.70	3.44 - 3.61	4.65 - 4.83
October	0.8213	NA	3.65 - 3.70	3.45 - 3.59	4.65 - 4.83
November	0.9120	NA	3.83 - 3.94	3.49 - 3.61	4.65 - 4.83
December	0.9473	NA	4.59 - 4.71	3.86 - 4.02	4.65 - 4.83
Yearly avg.	0.7197	NA	3.62 - 3.70	3.34 - 3.48	4.56 - 4.83

NA Not available.

¹Source for ferrochromium silicon, North American transaction is Ryan's Notes.

²Source for United States Electrolytic is Ryan's Notes; United States Electrolytic is called North American producer chrome metal, by Ryan's Notes.

³Source for United States Aluminothermic is Ryan's Notes; United States Aluminothermic is called aluminothermic imported chrome metal, by Ryan's Notes.

⁴Source for Europe Aluminothermic 1 is Metal Bulletin; Europe Aluminothermic 1 is called aluminothermic, min. 99% metal, by Metal Bulletin; price converted from dollars per metric ton to dollars per pound. Source for Europe Aluminothermic 2 is Metal Bulletin; Europe Aluminothermic 2 is called western un-degassed AT, min. 99.4% metal, by Metal Bulletin; price converted from dollars per kilogram to dollars per pound.