

# Mineral Industry Surveys

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#### **CHROMIUM IN OCTOBER 2020**

Estimated consumption of chromium, on a gross weight basis, in October 2020 was unchanged compared with estimated consumption of chromium in September 2020, and decreased by 27% compared with reported consumption in October 2019. Estimated consumer stocks were unchanged compared with those of the previous month and decreased by 49% compared with those of October 2019 (tables 1, 2).

Stainless steel production decreased slightly in October 2020 compared with production in September 2020, and decreased by 11% compared with production in October 2019 (table 1). Government stockpile inventories for chromium metal have remained essentially unchanged since February 2017. Government stockpile inventories of ferroalloyshave

remained unchanged since August 2020 and decreased by 9% compared with those of October 2019 (table 3).

Imports of chromite ore, chromium ferroalloys, chromium metal, and stainless steel commonly fluctuate from month to month (table 1). In October 2020, imports of all grades of chromium ferroalloys almost doubled compared with imports of chromium ferroalloys in September 2020 and increased by 46% compared with those in in October 2019. Stainless steel imports in October 2020 increased by 45% compared with imports in September 2020 and decreased slightly compared with those in October 2019 (fig. 1, table 1).

Exports of chromite ore, chromium ferroalloys, chromium metal, and stainless steel also frequently fluctuate from month

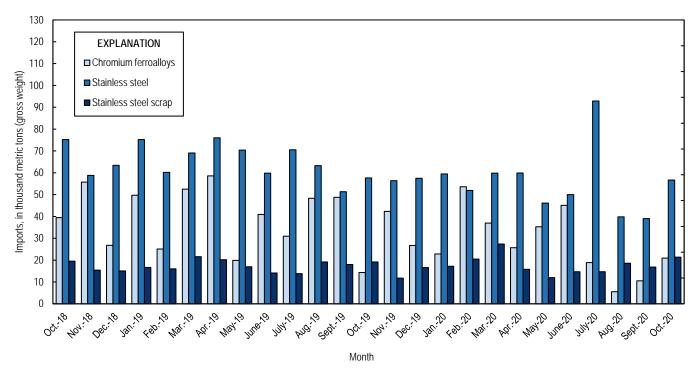


Figure 1. Chromium ferroalloys and stainless steel imports from October 2018 through October 2020. Source: U.S. Census Bureau.

to month (table 1, table 4). Exports of chromium ferroalloys increased by 25% in October 2020 compared with exports in September 2020 and decreased by 21% compared with exports in October 2019. Stainless steel exports in October 2020 increased by 16% compared with exports in September 2020 and decreased by 13% compared with those of October 2019 (table 1).

In October 2020, the leading import sources for ferrochromium (FeCr) into the United States were, in descending order of quantity by gross weight, South Africa, Kazakhstan, and Brazil (table 6), whereas the leading import sources for chromium metal were the United Kingdom, Russia, and France (table 7).

The U.S. chromium metal (99% Cr) average price was \$2.93 per pound in October 2020, a 4% decrease from the average price in September 2020, and a 17% decrease compared with the average price in October 2019 (CRU Group, 2020). The U.S. high-carbon FeCr (62%–70% chromium) average price was 92.44 cents per pound of contained chromium in October 2020, essentially unchanged from the average price in September 2020, and a 13% increase from the average price in October 2019 (fig. 2) (CRU Group, 2020b).

#### **Industry News**

Universal Stainless and Alloy Products, Inc. (Bridgeville, PA) announced plants were idled for 3 to 4 weeks during the second quarter of 2020 in response to decreases in demand from the aerospace and oil and gas markets related to the COVID-19 pandemic. Rolling shutdowns were also implemented at various sites to cut costs (CRU Group, 2020a).

Hubei Zhenhua Chemical Co., Ltd. (China) announced the acquisition of Chongqing Minfeng Chemical Co., Ltd., a chromium chemical producer in Chongqing, China. Once approved by the China Securities Regulatory Commission, Hubei Zhenhua Chemical Co., Ltd. would become the largest chromium chemical production company in the country, accounting for 65% of China's total output (Nils Backeberg,

Manager – Steel Alloys, Roskill Information Services Ltd., written commun., December 10, 2020; Tong and Backeberg, 2020).

The Cabinet of South Africa approved an export tax on chromite ore as part of an effort to support the domestic ferrochromium industry. The Cabinet also proposed energy efficient technologies for ferrochromium smelters and the use of cogeneration and self-generation power capabilities to manage potential power outages. The details of the export tax were not provided in the Cabinet statement (Department of Government Communication and Information System, 2020).

#### **References Cited**

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Tong, Tong and Backeberg, Nils, 2020, Chromium—Further consolidation of chromium chemicals sector in China: London, United Kingdom, Roskill Information Services Ltd., October 2. (Accessed October 5, 2020, at https://roskill.com/news/chromium-further-consolidation-of-chromium-chemicals-sector-in-china/.)

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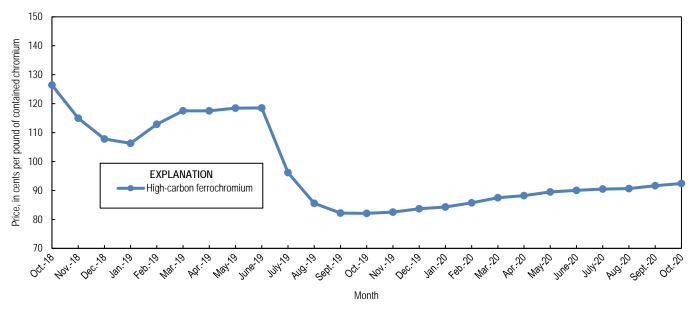


Figure 2. Average monthly prices for U.S. high-carbon ferrochromium from October 2018 through October 2020. Source: CRU Group.

 $\label{eq:table 1} \textbf{TABLE 1} \\ \textbf{U.S. SALIENT CHROMIUM STATISTICS}^1$ 

(Metric tons, gross weight)

	2019	2019 202			
	January-				January-
	December <sup>p</sup>	August	September	October	October <sup>2</sup>
Production, stainless steel <sup>3</sup>	2,590,000	172,000	184,000	182,000	1,760,000
Components of U.S. supply:	•				
Stainless steel scrap receipts	810,000	62,600 e	67,000 <sup>e</sup>	42,200	591,000 e
Stainless steel scrap consumption	1,240,000	94,300 e	101,000 e	63,100	895,000 e
Imports for consumption:	•				
Chromite ore	152,000	712	3,710	2,050	64,100
Ferrochromium:					
More than 4% carbon	393,000	4,250	8,540	14,600	229,000
More than 3% but not more than 4% carbon	1,210	34			212
More than 0.5% but not more than 3% carbon	2,090		350	109	2,630
Not more than 0.5% carbon	44,300	1,010	1,580	1,590	28,000
Ferrochromium silicon	17,600	243		4,530	15,700
Total ferroalloy imports	458,000	5,540	10,500	20,900	275,000
Chromium metal <sup>4</sup>	14,400	308	338	608	10,900
Stainless steel	767,000	39,800	39,000	56,700	555,000
Stainless steel scrap	204,000	18,600	16,800	21,400	179,000
Distribution of U.S. supply:	<del>.</del>				
Consumption, industry, chromium ferroalloys and metal	389,000	27,000 e	26,000 e	26,000 e	282,000 e
Exports:	<del>.</del>				
Chromite ore	2,300	305	19	139	1,480
Chromium ferroalloys:					
High-carbon ferrochromium	1,300	100	42	260	696
Low-carbon ferrochromium	437	49	125		385
Ferrochromium silicon	22		41		164
Total ferroalloy exports	1,760	149	208	260	1,250
Chromium metal	431	42	33	23	340
Stainless steel	436,000	23,400	27,000	31,400	266,000
Stainless steel scrap	469,000	30,000	21,900	22,800	258,000
Stocks at end of period:	•				
Consumer, industry, chromium ferroalloys and metal	7,530	7,100 e	7,000 e	7,000 e	7,000 e
Government stockpile:	•				
Chromium ferroalloys	66,100	60,700	60,700	60,700	60,700
Chromium metal	3,850	3,830	3,830	3,830	3,830

<sup>&</sup>lt;sup>e</sup>Estimated. <sup>p</sup>Preliminary. -- Zero.

<sup>&</sup>lt;sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>&</sup>lt;sup>2</sup>May include revised data that are not broken out by specific month(s).

<sup>&</sup>lt;sup>3</sup>Data 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.

<sup>&</sup>lt;sup>4</sup>Includes waste and scrap and other.

 ${\it TABLE~2} \\ {\it U.S. REPORTED~CONSUMPTION~AND~STOCKS~OF~CHROMIUM~PRODUCTS}^{1,\,2}$ 

(Metric tons, gross weight unless otherwise noted)

		2020	
	<del></del>		January-
	September	October	October <sup>3</sup>
Consumption by end use:			
Steel:			
Carbon steel	W	W	W
High-strength low-alloy steel	130 e	130 e	1,360 e
Stainless and heat-resisting steel	22,000 e	22,000 e	244,000 e
Unspecified steel <sup>4</sup>	3,000 e	3,000 e	33,000 e
Superalloys	200 e	200 <sup>e</sup>	2,000 e
Other alloys and uses <sup>5</sup>	W	W	W
Total	26,000 e	26,000 e	282,000 e
Total, chromium content	15,000 e	15,000 e	160,000 e
Consumption by material:			
Low-carbon ferrochromium	1,500 e	1,500 e	17,000 e
High-carbon ferrochromium	23,000 e	23,000 e	256,000 e
Ferrochromium silicon	W	W	W
Chromium metal	130 e	130 e	1,360 e
Chromite ore	120 e	120 e	1,240 e
Chromium-aluminum alloy	W	W	W
Other chromium materials	W	W	W
Total	26,000 e	26,000 e	282,000 e
Total, chromium content	15,000 e	15,000 <sup>e</sup>	160,000 <sup>e</sup>
Consumer stocks:			
Low-carbon ferrochromium	730 <sup>e</sup>	730 <sup>e</sup>	730 <sup>e</sup>
High-carbon ferrochromium	2,000 e	2,000 e	2,000 e
Ferrochromium silicon	W	W	W
Chromium metal	20 e	20 e	20 e
Chromium-aluminum alloy	W	W	W
Other chromium materials <sup>6</sup>	4,000 e	4,000 e	4,000 e
Total	7,000 e	7,000 e	7,000 e
Total, chromium content	3,700 e	3,700 e	3,700 e

<sup>&</sup>lt;sup>e</sup>Estimated. W Withheld to avoid disclosing company proprietary data; included in "Total."

<sup>&</sup>lt;sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>&</sup>lt;sup>2</sup>Includes estimates.

<sup>&</sup>lt;sup>3</sup>May include revised data that are not broken out by specific month(s).

<sup>&</sup>lt;sup>4</sup>Includes electrical, full alloy, tool, and unspecified steel end uses.

<sup>&</sup>lt;sup>5</sup>Includes cast irons, welding and alloy hard-facing rods and materials, wear- and corrosion-resistant alloys, and aluminum, copper, magnetic, nickel, and other alloys.

<sup>&</sup>lt;sup>6</sup>Includes chromite ore as foundry sand.

 $\label{eq:table 3} \mbox{U.S. GOVERNMENT STOCKPILE INVENTORY OF } \mbox{CHROMIUM MATERIALS}^1$ 

(metric tons)

	Chromium	ferroalloys	
	High-carbon	Low-carbon	
	ferro-	ferro-	Chromium
	chromium	chromium	metal
2019:			
October	39,600	27,400	3,850
November	38,700	27,400	3,850
December	38,700	27,400	3,850
2020:			
January	37,800	27,400	3,850
February	37,100	27,400	3,850
March	36,700	27,100	3,850
April	36,700	27,100	3,850
May	36,000	26,800	3,850
June	35,700	26,800	3,840
July	35,100	26,800	3,840
August	33,900	26,800	3,830
September	33,900	26,800	3,830
October	33,900	26,800	3,830

<sup>&</sup>lt;sup>1</sup>Data are rounded to no more than three significant digits.

Source: Defense Logistics Agency, DLA Strategic Materials.

 ${\it TABLE~4} \\ {\it U.S.~EXPORTS~OF~CHROMITE~ORE,~CHROMIUM~FERROALLOYS,~AND~METAL}^1$ 

	Chrom	ite ore	Ch	Chromium ferroalloys <sup>2</sup>			m metal <sup>3</sup>
	Gross		Gross	Chromium	_	Gross	
	weight	Value	weight	content	Value	weight	Value
	(metric tons)	(thousands)	(metric tons)	(metric tons)	(thousands)	(metric tons)	(thousands)
2019:							
October	61	\$56	328	184	\$525	39	\$1,340
November	141	110	179	107	319	23	889
December	120	86	83	50	107	31	718
January-December <sup>4</sup>	2,300	1,940	1,760	942	2,810	431	13,100
2020:	=						
January	147	82	66	36	91	37	733
February	176	104	66	40	118	24	658
March	140	79	106	63	207	35	972
April	115	83	118	61	182	31	550
May	155	90	85	41	106	35	1,050
June	186	133	56	34	72	33	529
July	96	68	133	71	180	46	1,770
August	305	97	149	90	233	42	927
September	19	8	208	115	324	33	727
October	139	120	260	157	316	23	942
January-October <sup>4</sup>	1,480	865	1,250	709	1,830	340	8,850

<sup>&</sup>lt;sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>&</sup>lt;sup>2</sup>Includes low- and high-carbon ferrochromium and ferrochromium silicon.

<sup>&</sup>lt;sup>3</sup>Includes chromium metal, waste and scrap, and unwrought powders.

<sup>&</sup>lt;sup>4</sup>May include revised data that are not broken out by specific month(s).

## TABLE 5 U.S. IMPORTS FOR CONSUMPTION OF CHROMITE ORE, FERROCHROMIUM, AND CHROMIUM METAL $^1$

#### (Metric tons)

	2019		2020	
	January-	<u></u>		January-
	December	September	October	October <sup>2</sup>
Chromite ore:				
Not more than 40% chromic oxide:	<del></del>			
Gross weight	973	647	199	2,040
Chromic oxide content	360	119	78	521
More than 40% but less than 46% chromic oxide:				
Gross weight	4,170	493	1,660	8,680
Chromic oxide content	1,810	215	743	3,790
46% or more chromic oxide:				
Gross weight	147,000	2,570	191	53,400
Chromic oxide content	90,400	1,210	138	44,600
Total, all grades:				
Gross weight	152,000	3,710	2,050	64,100
Chromic oxide content	92,500	1,550	959	48,900
Ferrochromium:				
Low-carbon: <sup>3</sup>				
Not more than 0.5% carbon:				
Gross weight	44,300	1,580	1,590	28,000
Chromium content	30,900	1,000	1,020	18,800
More than 0.5% but not more than 3% carbon:				
Gross weight	2,090	350	109	2,630
Chromium content	1,330	244	78	1,750
Total, low-carbon:	<del></del>			
Gross weight	46,400	1,930	1,700	30,600
Chromium content	32,200	1,250	1,100	20,600
Medium-carbon: <sup>4</sup>				
Gross weight	1,210			212
Chromium content	802			116
High-carbon: <sup>5</sup>				
Gross weight	393,000	8,540	14,600	229,000
Chromium content	215,000	4,650	8,180	127,000
Total, all grades:	<del></del>	•		
Gross weight	440,000	10,500	16,300	260,000
Chromium content	248,000	5,900	9,280	148,000
Chromium metal:		•	•	-
Unwrought powders	11,500	215	450	9,180
Waste and scrap	221	14	27	153
Other than waste and scrap and unwrought powders	2,680	110	130	1,570
Total, all grades	14,400	338	608	10,900

<sup>--</sup> Zero.

<sup>&</sup>lt;sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>&</sup>lt;sup>2</sup>May include revised data that are not broken out by specific month(s).

<sup>&</sup>lt;sup>3</sup>Ferrochromium containing not more than 3% carbon.

 $<sup>^4\</sup>mathrm{Ferrochromium}$  containing more than 3% carbon but not more than 4% carbon.

<sup>&</sup>lt;sup>5</sup>Ferrochromium containing more than 4% carbon.

TABLE 6 U.S. IMPORTS FOR CONSUMPTION OF FERROCHROMIUM IN 2020, BY GRADE AND COUNTRY OR LOCALITY  $^{\rm I}$ 

		October		January–October <sup>2</sup>			
	Gross	Chromium		Gross	Chromium		
	weight	content	Value <sup>3</sup>	weight	content	Value <sup>3</sup>	
Grade and country or locality	(metric tons)	(metric tons)	(thousands)	(metric tons)	(metric tons)	(thousands)	
High-carbon ferrochromium: <sup>4</sup>							
Albania	145	102	\$161	2,960	1,970	\$3,440	
Brazil	600	322	340	2,770	1,500	1,900	
Canada				6	3	9	
India	162	94	145	5,990	3,600	4,880	
Kazakhstan	4,650	3,210	5,880	48,800	33,900	55,300	
Oman				968	499	630	
Russia				21,900	13,200	20,700	
South Africa	8,600	4,140	7,160	127,000	62,100	105,000	
Sweden				768	515	951	
Turkey	489	312	475	2,100	1,350	2,260	
Zimbabwe				15,400	8,790	9,740	
Total	14,600	8,180	14,200	229,000	127,000	205,000	
Medium-carbon ferrochromium: <sup>5</sup>				_			
Russia				76	41	119	
Turkey				126	68	68	
United Kingdom				10	8	23	
Total				212	116	210	
Low-carbon ferrochromium: <sup>6</sup>							
More than 0.5% but not more than 3% carbon							
Brazil				1,020	631	1,700	
India				200	123	372	
Kazakhstan	109	78	278	1,290	912	3,090	
Russia	100		279	120	85	284	
Total	109	78	278	2,630	1,750	5,440	
Not more than 0.5% carbon:	<del></del>			1 220	725	2.610	
Belgium Brazil	 575	303	782	1,220 1,600	735 939	3,610 2,340	
China	<del></del>			1,000	939	2,340	
Germany	401	280	1,340	3,330	2,280	10,700	
India	401	280	1,340	5,530 596	375	1,140	
Japan				579	415	2,280	
Kazakhstan	343	249	903	7,130	5,120	18,000	
Russia	242	169	546	12,700	8,400	26,500	
Turkey	32	22	106	810	564	2,060	
Total	1,590	1,020	3,670	28,000	18,800	66,600	
All grades:	1,570	1,020	3,070	20,000	10,000	00,000	
Albania	145	102	161	2,960	1,970	3,440	
Belgium				1,220	735	3,610	
Brazil	1,180	624	1,120	5,390	3,070	5,950	
Canada			-,	6	3	9	
China				9	6	29	
Germany	401	280	1,340	3,330	2,280	10,700	
India	162	94	145	6,790	4,100	6,400	
Japan				579	415	2,280	
Kazakhstan	5,100	3,540	7,060	57,300	39,900	76,300	
Oman				968	499	630	
Russia	242	169	546	34,800	21,800	47,600	
South Africa	8,600	4,140	7,160	127,000	62,100	105,000	
Sweden				768	515	951	
Turkey	521	333	581	3,030	1,980	4,390	
		223	201	2,020	1,,,,,,	.,.,.	

(See footnotes at end of table.)

### $\mbox{TABLE 6--Continued} \\ \mbox{U.S. IMPORTS FOR CONSUMPTION OF FERROCHROMIUM IN 2020, BY GRADE AND COUNTRY OR LOCALITY}^1$

			October			January–October <sup>2</sup>	2
		Gross	Gross Chromium		Gross	Chromium	
		weight	content	Value <sup>3</sup>	weight	content	Value <sup>3</sup>
	Grade and country or locality	(metric tons)	(metric tons)	(thousands)	(metric tons)	(metric tons)	(thousands)
Zimbabwe					15,400	8,790	9,740
Total		16,300	9,280	18,100	260,000	148,000	277,000

<sup>--</sup> Zero.

<sup>&</sup>lt;sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>&</sup>lt;sup>2</sup>May include revised data that are not broken out by specific month(s).

<sup>&</sup>lt;sup>3</sup>Customs 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.

<sup>&</sup>lt;sup>4</sup>Ferrochromium containing more than 4% carbon.

<sup>&</sup>lt;sup>5</sup>Ferrochromium containing more than 3% carbon but not more than 4% carbon.

<sup>&</sup>lt;sup>6</sup>Ferrochromium containing not more than 3% carbon.

 $\label{thm:table 7} U.S. \ IMPORTS FOR CONSUMPTION OF CHROMIUM METAL IN 2020, \\ BY GRADE AND BY COUNTRY OR LOCALITY^1$ 

	Octo		January–October <sup>2</sup>		
	Gross weight	Value <sup>3</sup>	Gross weight	Value <sup>3</sup>	
Grade and country or locality	(metric tons)	(thousands)	(metric tons)	(thousands)	
Unwrought powders:					
Belgium			24	\$139	
China	59	\$641	1,140	10,700	
Estonia			10	75	
France	152	1,250	2,080	17,600	
Germany	26	142	305	2,390	
India	20	172	115	1,030	
Japan			(4)	24	
Russia	56	454	3,290	21,400	
Spain			94	482	
Switzerland	<del></del>		20	149	
United Kingdom	138	1,130	2,100	21,200	
Total	450	3,790	9,180	75,100	
Waste and scrap:		2,1.2.0	2,222	,	
Canada			15	43	
France			11	34	
Japan	<del></del>		13	86	
United Kingdom		167	114	718	
Total	27	167	153	881	
Other than waste and scrap and unwrought powders:		107	133	001	
Canada			(4)	5	
China	(4)	6	22	285	
France			(4)	12	
Germany	(4)	8	44	409	
-		47	5	254	
Japan Liechtenstein		47	(4)	234	
			(4)	32	
Malaysia Russia		736	1,280	7,300	
Spain	<del></del>		38	194	
Taiwan		5			
	(4)		(4)	1.070	
United Kingdom	18	268	179	1,870	
Total	130	1,070	1,570	10,400	
All grades:			2.4	120	
Belgium	<del></del>		24	139	
Canada			15	48	
China	59	647	1,160	10,900	
Estonia			10	75	
France	152	1,250	2,090	17,700	
Germany	26	150	349	2,800	
India	20	172	115	1,030	
Japan	1	47	18	364	
Liechtenstein			(4)	3	
Malaysia			(4)	32	
Russia	166	1,190	4,570	28,700	
Spain	<del></del>		132	676	
Switzerland			20	149	
Taiwan	(4)	5	(4)	5	
United Kingdom	183	1,570	2,390	23,800	
Total	608	5,030	10,900	86,400	

<sup>--</sup> Zero

<sup>&</sup>lt;sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>&</sup>lt;sup>2</sup>May include revised data that are not broken out by specific month(s).

<sup>&</sup>lt;sup>3</sup>Customs 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.

<sup>&</sup>lt;sup>4</sup>Less than ½ unit.

TABLE 8 U.S. STAINLESS STEEL TRADE, BY PRODUCT, IN  $2020^1$ 

	October		January–	October <sup>2</sup>
	Gross weight	Value <sup>3</sup>	Gross weight	Value <sup>3</sup>
Stainless steel product	(metric tons)	(thousands)	(metric tons)	(thousands)
Exports:				
Ingot	721	\$4,560	9,520	\$58,200
Flat-rolled (width > 600 mm)	19,800	50,300	159,000	434,000
Flat-rolled (width < 600 mm)	5,620	26,200	46,400	248,000
Bars and rods in irregular coils	56	247	1,710	9,680
Other bars and rods	2,090	19,400	20,900	219,000
Wire	692	9,670	6,010	88,900
Tubes, pipes, hollow profiles	2,450	25,000	22,600	255,000
Total	31,400	135,000	266,000	1,310,000
Stainless steel scrap	22,800	23,600	258,000	218,000
Grand total	54,200	159,000	523,000	1,530,000
Imports:	_			_
Ingot	17,600	31,000	130,000	328,000
Flat-rolled (width > 600 mm)	15,900	37,300	172,000	409,000
Flat-rolled (width < 600 mm)	3,050	10,100	34,300	123,000
Bars and rods in irregular coils	1,380	4,900	24,100	79,100
Other bars and rods	8,130	30,400	82,200	316,000
Wire	2,700	11,100	27,800	121,000
Tubes, pipes, hollow profiles	7,940	48,900	85,800	587,000
Total	56,700	174,000	555,000	1,960,000
Stainless steel scrap	21,400	18,500	179,000	156,000
Grand total	78,100	192,000	735,000	2,120,000

<sup>&</sup>lt;sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown. <sup>2</sup>May include revised data that are not broken out by specific month(s).

<sup>&</sup>lt;sup>3</sup>Export value is free alongside ship. 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 incurred in bringing the merchandise into the United States.