

# Mineral Industry Surveys

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## NICKEL IN MAY 2003

In May, reported domestic nickel consumption on a daily average basis was 3% less than that of April, according to the U.S. Geological Survey. Average daily nickel consumption of cathode, pellets, briquets, and ferronickel for stainless steel was 57.4 metric tons per day (t/d)—slightly less than the 58.2 t/d for April and 12% less than the 65.4 t/d for May 2002.

Consumption of elemental nickel to make corrosion-resistant nickel alloys was 19% greater than corresponding tonnage reported for April. The 19% increase for corrosion-resistant alloys was partially offset by a 15% decrease in consumption for superalloys. Sales to plating companies averaged 30.1 t/d, about 16% less than the April sales figure of 35.7 t/d.

On May 31, U.S. consumer stocks of cathode, pellets, briquets, and powder totaled 1,540 metric tons (t)—slightly more than the 1,520 t (revised) on April 30, but 2% less than the 1,570 t reported for yearend 2002. Stocks in London Metal Exchange (LME) warehouses worldwide totaled 26,538 t—19% more than the 22,230 t on April 30. Preliminary data collected by the International Nickel Study Group indicated that, at the end of April, world nickel producers (excluding those in Austria, China, the former Yugoslavia, and the Ural area of Russia) had approximately 97,800 t of nickel in primary products in stock, of which 66,400 t or 68% was Class I materials. Class I materials are refined products with a nickel (Ni) content of 99% or greater (electrolytic cathode, pellets, briquets, rondelles, powder, etc.). Class II materials include ferronickel, oxide sinter, and East Asian utility nickel—products with a Ni content of less than 99%.

Percentages reported in the above paragraphs may not be verifiable owing to concealment of individual company proprietary data and late reporting of data.

The United States imported 47,600 t of primary nickel in the first 4 months of 2003, 28% more than the 37,200 t for the corresponding period of 2002. Class I materials accounted for 88% of total primary imports received during the first 4 months of 2003. Trade data for May 2003 will appear in a subsequent report.

## Canada—Exploration and development update [Part 2 of 2]

### (Part 1 appeared in the April issue.)

*Inco gives go-ahead to develop Voisey's Bay.*—In March 2003, Inco Ltd. launched the first phase of its project to develop the Voisey's Bay nickel-copper-cobalt project in northeastern Labrador. Inco's management made the decision to proceed after receiving a positive bankable feasibility study from its consulting contractor, SNC Lavalin. Crews have begun clearing a site for the mill/concentrator, building roads, and constructing a permanent airstrip (Inco Ltd., 2003<sup>1</sup>; Mining Journal, 2003).

The capital cost estimate for the initial phase has been revised upward from \$680 million to \$776 million. The first phase involves the development of an open pit mine in the Ovoid deposit and construction of a 6,000-metric-ton-per-day plant producing three concentrates—one of nickel, one of copper, and one of cobalt. The mine and concentrator are expected to cost \$582 million. A demonstration hydrometallurgical plant is to be built at Argentia on the island of Newfoundland at an additional cost of \$134 million. The concentrates produced during the initial mining phase (2006 to 2011) will be processed at Inco's existing smelters at Sudbury, Ontario, and Thompson, Manitoba. The construction of special handling facilities at these last two locations will cost \$47 million. The remaining \$13 million of the \$776 million will be spent on additional exploration (Inco Ltd., 2003).

After 2011, the concentrates from Voisey's Bay would be processed at a state-of-the-art plant that Inco has agreed to build near the Argentia demonstration plant. The processing technology used in the full-scale plant will depend upon the results of the Argentia hydrometallurgical research and development program. Inco recently built a mini-pilot-plant at its research facilities in Mississauga, Ontario, to begin evaluating the pressure oxidative leaching process proposed for the Argentia plant.

The go-ahead marked the end of 6 years of negotiations between Inco and the Provincial Government of Newfoundland

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<sup>1</sup>References that include a section mark (§) are found in the Internet References Cited section.

and Labrador. On June 11, 2002, Inco signed a statement of principles with the Provincial Government that outlined how development of the Voisey's Bay project would proceed. The Province's House of Assembly ratified the statement of principles 8 days later on June 19. On October 7, 2002, Inco and the Provincial Government signed two legally-binding agreements—the Development Agreement and the Industrial-and-Employment Benefits Agreement for the Voisey's Bay Project. The two formal agreements describe the undertakings and commitments that both parties agreed upon in their June 2002 statement (Government of Newfoundland and Labrador, Executive Council, 2002).

Several other agreements have been concluded with local indigenous groups. An environmental management board will provide advice to various government ministries on permit authorizations and impact issues that relate to the mine and mill project. The board consists of representatives from the Labrador Inuit Association, the Innu Nation, the Government of Canada, and the Provincial Government, plus an independent chair (Government of Newfoundland and Labrador, Department of Environment, 2002).

*Donner and Falconbridge jointly explore Labrador for nickel.*—On December 6, 2001, Donner Minerals Ltd. and Falconbridge Ltd. agreed to jointly explore for nickel-copper sulfide deposits in Labrador. The goal of the joint exploration program is to find Voisey's Bay-type deposits outside of the Voisey's Bay and South Voisey Bay project areas. Large areas of Labrador remain underexplored despite the Voisey's Bay staking rush of 1993-98. Several promising mafic-ultramafic complexes (and adjoining skarns and sulfide-rich iron formations) may have been overlooked during the staking rush because the ore deposit model for Voisey's Bay was not fully developed at the time. Donner and Falconbridge are 50:50 partners in the exploration venture (Donner Minerals Ltd., 2003a§; Vanguard Consulting Ltd., 2002).

*Donner continues to explore its South Voisey Bay project area.*—Since 1996, Donner has been actively exploring an area 90 kilometers (km) south of the Voisey's Bay discovery site. Donner and its partners have spent in excess of C\$20 million on the exploration project and drilled more than 140 holes. Radiometric age dating and trace element geochemical studies indicate that the South Gabbro complex staked by Donner closely resembles some of the olivine-rich host rocks at Voisey's Bay. Falconbridge has an option to earn a 50% interest in the South Voisey Bay (SVB) project by spending C\$23 million on exploration before the end of 2006. Falconbridge must spend a minimum of C\$2 million each year to maintain its option. By the end of 2002, Falconbridge had spent about C\$2.3 million on the project and was planning to spend an additional C\$1.7 million in 2003. Falconbridge has helped direct and finance deep-penetrating electromagnetic surveys, geological mapping, and relogging of drill core. Teck Cominco Ltd., an important lead-zinc producer in the Western Hemisphere, has been a major shareholder in Donner since 1996. Teck Cominco and its predecessor, Teck Corp., supported the SVB exploration program by underwriting Donner's share of the capital costs, buying additional shares of stock in Donner, and serving as lead contractor for the project (Donner Minerals Ltd., 2003b; 2003b§).

Donner has taken the lead in simplifying the property ownership at SVB. In 2001, four of Donner's venture partners consolidated their properties with part of Donner's holdings and placed the combined holdings under the control of a single company, the South Voisey Bay Nickel Company Ltd. (SVBN). The SVB project area is comprised now of only four ownership blocks: (1) SVBN, (2) the Donner/Northern Abitibi Mining Corp. joint venture, (3) the Donner/Major General Resources Ltd. joint venture, and (4) the SVBN/Pallaum Minerals Ltd. joint venture. Donner has a 76.69% interest in SVBN and a 52% interest in both the Donner/North Abitibi and Donner/Major General Resources ventures (Donner Minerals Ltd., 2002; Vanguard Consulting Ltd., 2002).

*Donner teams up with Falconbridge to drill in Manitoba.*—In February 2002, Donner entered into an agreement with Falconbridge to help explore for nickel in northern Manitoba. Under the terms of the agreement, Donner can earn a 50% interest in Falconbridge's Stephens Lake project by expending Can\$5 million on the project before the end of 2006. The Stephens Lake property is almost completely covered by glacial till and covers 3,700 square kilometers on the northwest boundary of the Superior Craton. In the current exploration model, the Stephens Lake area is interpreted as an extension of the Thompson nickel belt. Numerous nickel deposits have been identified in the 200-km-long Thompson belt of ultramafic rocks. Inco discovered the deposits at Thompson in the 1950s. Donner and Falconbridge began jointly drilling selected magnetic and conductive anomalies in February 2003 (Donner Minerals Ltd., 2002; 2003a).

## References Cited

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TABLE 1  
CONSUMPTION OF NICKEL (EXCLUSIVE OF SCRAP), BY FORM AND USE<sup>1</sup>

(Metric tons, nickel content)

Period	Cathodes, pellets, briquets, and powder	Ferronickel	Oxide-sinter, salts, and other forms	Total	Total year to date
<b>2002:</b>					
May	4,730	722	81	5,530	29,300
June	5,150	873	254	6,280	35,600
July	5,210	730	266	6,200	41,800
August	5,230	843	230	6,310	48,100
September	5,130	754	59	5,950	54,000
October	5,330	750	62	6,140	60,200
November	4,830	632	58	5,520	65,700
December	4,750	505	53	5,310	71,000
January-December	59,600	9,080	2,270	71,000	XX
<b>2003:</b>					
January	5,180	529	75	5,780	5,780
February	4,820	390	23	5,230	11,000
March	4,720	653	42	5,410	16,400
April	5,180 <sup>r</sup>	400	46	5,620	22,100 <sup>r</sup>
<b>May:</b>					
<b>Steel:</b>					
Stainless and heat resisting	1,260	524	W	1,780	9,520
Alloy (excludes stainless)	W	--	W	W	1,210
Superalloys	973	--	W	973	4,980
Copper-nickel alloys	W	--	--	W	W
Electric, magnetic, and expansion alloys	13	--	--	13	81
Other nickel & nickel alloys	W	--	W	W	W
Cast iron	W	--	--	W	W
Electroplating (sales to platers)	932	--	--	932	4,600
Chemical and chemical uses	W	--	--	W	W
Other uses	1,570	--	353	1,920	7,270
Total reported	4,740 <sup>2</sup>	524	353	5,620	27,700
Total all companies (calc) <sup>3</sup>	XX	XX	XX	8,650	42,600
2003: January-May	24,600	2,500	536	27,700	XX
2002: January-May	24,000	3,990	1,290	29,300	XX

<sup>r</sup>Revised. W Withheld to avoid disclosing company proprietary data; included in "Other uses" category. XX Not applicable. -- Zero.

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

<sup>2</sup>Of consumption, 3,770 metric tons were consumed as cathodes and pellets, the remainder as briquets and powder.

<sup>3</sup>Figures represent calculated apparent consumption; based on the revised proportion of reported primary consumption (65.01%) to apparent primary consumption for 2001.

TABLE 2  
ENDING STOCKS OF NICKEL (EXCLUSIVE OF SCRAP) HELD BY CONSUMERS, BY FORM AND USE <sup>1,2</sup>

(Metric tons, nickel content)

Period	Cathodes, pellets, briquets, and powder		Ferronickel	Oxide-sinter, salts, and other forms	Total
	2002:				
May	2,200	82	127	2,400	
June	1,770	63	138	1,970	
July	1,500	98	97	1,700	
August	1,820	112	83	2,020	
September	2,270	89	78	2,440	
October	1,890	140	76	2,100	
November	1,700	93	84	1,880	
December	1,570	60	81	1,710	
2003:					
January	1,450 <sup>r</sup>	100	44	1,590 <sup>r</sup>	
February	1,520 <sup>r</sup>	54	34	1,610 <sup>r</sup>	
March	1,320 <sup>r</sup>	148	43	1,510 <sup>r</sup>	
April	1,520 <sup>r</sup>	49	47	1,620 <sup>r</sup>	
May:					
Steel (stainless, heat resisting and alloy)	429	(3)	(3)	429	
Nonferrous alloys <sup>4</sup>	1,090	(3)	(3)	1,090	
Foundry (cast irons)	(3)	--	--	(3)	
Chemical (catalysts, ceramics, plating salt, etc.) and unspecified uses	20	58	41	119	
Total	1,540	58	41	1,640	

<sup>r</sup>Revised. -- Zero.

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

<sup>2</sup>Stocks held by companies that consume nickel in more than one end-use category are credited to the major category. Stocks are subject to revisions owing to inventory adjustments.

<sup>3</sup>Included in the "Chemical and unspecified uses" category.

<sup>4</sup>Includes superalloys, nickel-copper and copper-nickel alloys, permanent magnet alloys, and other nickel alloys.

TABLE 3  
CONSUMPTION AND ENDING STOCKS OF PURCHASED SECONDARY NICKEL, BY USE<sup>1</sup>

(Metric tons, nickel content)

Period	Consumption			Stocks		
	Ferrous scrap <sup>2</sup>	Nonferrous scrap <sup>3</sup>	Total scrap	Ferrous scrap <sup>2</sup>	Nonferrous scrap <sup>3</sup>	Total scrap
2002:						
May	4,970	617	5,590	3,690	107	3,790
June	6,330	547	6,880	3,300	107	3,410
July	5,900	713	6,610	3,280	90	3,370
August	6,060	662	6,720	3,110	113	3,220
September	4,770	606	5,370	3,400	120	3,520
October	5,170	660	5,830	3,540	104	3,640
November	4,590	506	5,100	3,240	104	3,350
December	3,870	641	4,510	3,210	101	3,310
January-December	61,600	8,070	69,700	XX	XX	XX
2003:						
January	4,760	582	5,340	3,420	107	3,530
February	4,080	633	4,710	3,080	96	3,180
March	6,470	513	6,990	2,930	108	3,040
April	5,310	594	5,910	3,210	93	3,310
May	4,920	669	5,590	3,150	102	3,250
2003: January-May	25,500	2,990	28,500	XX	XX	XX
2002: January-May	24,900	3,740	28,700	XX	XX	XX

XX Not applicable.

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

<sup>2</sup>Nickel content is calculated from an average nickel content and the reported gross weight of scrap.

<sup>3</sup>Combined consumption and stocks of aluminum-base, copper-base, and nickel-base scrap.

TABLE 4  
U.S. IMPORTS FOR CONSUMPTION OF NICKEL, BY COUNTRY<sup>1</sup>

(Metric tons, nickel content)<sup>2</sup>

Period and country of origin	Cathodes pellets, and briquets	Powder and flakes	Ferro-nickel	Metal-lurgical-grade oxide	Waste and scrap	Stainless steel scrap	Chemicals	Total <sup>3</sup>	Total year to date <sup>4</sup>	Wrought nickel
2002:										
April	6,220	551	983	--	221	349	274	8,590	39,600	116
May	6,600	590	1,240	14	221	477	298	9,450	49,100	53
June	8,950	391	1,160	238	174	460	228	11,600	60,700	43
July	11,800	627	1,080	214	367	874	225	15,200	75,900	69
August	7,750	603	1,790	127	152	762	171	11,400	87,200	72
September	13,000	566	1,570	2	160	641	194	16,200	103,000	85
October	5,140	609	1,010	11	230	564	183	7,740	111,000	106
November	6,560	684	991	27	181	627	222	9,300	120,000	51
December	6,970	512	750	16	225	530	312	9,310	130,000	70
January-December	97,200	6,970	12,300	1,230	3,030	6,080	2,860	130,000	XX	878
2003:										
January	5,950	928	605	10	341	322	223	8,380	8,380	55
February	7,060	954	916	8	323	424	269	9,960	18,300	115
March	17,400	1,130	1,310	34	420	476	309	21,100	39,400	93
April:										
Australia	948	80	--	--	--	--	--	1,030	4,560	--
Brazil	20	--	--	--	--	--	--	20	542	--
Canada	3,960	495	--	--	104	322	--	4,880	18,600	14
Colombia	--	--	--	--	--	--	--	--	888	--
Dominican Republic	--	--	688	--	--	--	--	688	2,410	--
Finland	240	74	--	--	--	--	74	388	2,030	--
France	137	(5)	--	--	80	7	28	252	1,120	3
Germany	3	1	--	--	69	(5)	43	116	356	32
Japan	--	2	--	--	12	6	75	95	266	6
Mexico	--	--	--	--	4	187	2	193	675	--
New Caledonia	--	--	953	--	--	--	1	954	1,060	--
Norway	1,610	--	--	--	1	--	--	1,610	4,730	--
Russia	--	--	56	--	--	--	--	56	10,700	--
South Africa	20	--	--	--	--	--	--	20	38	--
Sweden	--	7	--	--	--	--	--	7	27	--
United Kingdom	22	14	--	--	206	--	8	250	759	4
Venezuela	--	--	--	--	--	3	--	3	8	--
Zimbabwe	60	--	--	--	--	--	--	60	176	--
Other	757 <sup>6</sup>	5	--	--	20	8	90	880	1,990	5
Total	7,770	678	1,700	--	496	533	321	11,500	50,900	64
2003: January-April	38,200	3,700	4,530	52	1,580	1,750	1,120	50,900	XX	324
2002: January-April	30,400	2,390	2,730	582	1,320	1,140	1,030	39,600	XX	330

XX Not applicable. -- Zero.

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

<sup>2</sup>The nickel contents are assumed to be as follows: metallurgical-grade oxide (77%), waste and scrap (50%), and stainless steel scrap (7.5%). The chemicals category includes chlorides (25%); sulfates (22%); other salts (22%); supported catalysts (22%); and oxide, sesquioxide, and hydroxide (65%).

<sup>3</sup>Excludes wrought nickel.

<sup>4</sup>May include revisions for prior months.

<sup>5</sup>Less than 1/2 unit.

<sup>6</sup>All or part of these data have been referred to the Census Bureau for verification.

Source: U.S. Census Bureau.

TABLE 5  
U.S. EXPORTS OF NICKEL, BY COUNTRY<sup>1</sup>

(Metric tons, nickel content)<sup>2</sup>

Period and country of destination	Cathodes pellets, and briquets	Powder and flakes	Ferro-nickel	Metal-lurgical-grade oxide	Waste and scrap	Stainless steel scrap	Chemicals	Total <sup>3</sup>	Total year to date	Wrought nickel
2002:										
April	186	113	--	68	1,280	3,890	226	5,770	18,300	139
May	65	119	10	111	1,360	1,900	213	3,780	22,100	271
June	105	134	(4)	19	1,550	2,500	155	4,470	26,500	283
July	131	139	1	9	1,560	2,040	204	4,080	30,600	200
August	76	222	1	42	826	1,510	168	2,840	33,400	230
September	164	122	2	55	718	1,660	153	2,880	36,300	249
October	113	99	8	34	1,010	1,840	167	3,280	39,600	221
November	64	95	8	6	830	1,470	184	2,650	42,300	181
December	75	65	7	3	983	2,080	423	3,630	45,900	175
January-December	1,740	1,480	46	685	13,700	25,700	2,580	45,900	XX	2,570
2003:										
January	92	58	10	11	853	3,060	267	4,350	4,350	586
February	24	84	13	7	948	5,050	261	6,380	10,700	462
March	46	113	5	13	770	5,150	243	6,340	17,100	629
April:										
Australia	--	--	--	--	--	--	2	2	20	--
Belgium	--	5	--	--	--	13	5	23	158	1
Canada	--	20	--	16	676	332	117	1,160	4,280	5
China	--	1	6	(4)	20	584	19	630	2,080	--
Germany	--	13	--	--	7	1	(4)	21	151	1
India	--	--	--	--	--	116	52	168	261	(4)
Italy	--	(4)	--	--	--	26	3	29	492	18
Japan	--	(4)	--	2	149	68	13	232	581	7
Korea, Republic of	--	7	2	--	--	225	160	394	1,420	(4)
Mexico	60	4	--	--	1	2	5	72	273	26
Netherlands	--	1	--	--	--	182	16	199	597	--
South Africa	--	--	--	(4)	--	--	1	1	53	1
Spain	--	--	--	--	--	--	--	--	1,980	--
Sweden	--	1	--	--	--	3	--	4	135	--
Taiwan	--	(4)	--	--	5	385	20	410	5,620	5
United Kingdom	--	1	--	--	28	53	3	85	569	4
Other	18	33	--	1	8	888	50	998	2,840	81
Total	78	86	8	19	894	2,880	466	4,430	21,500	149
2003: January-April	240	340	36	50	3,470	16,100	1,240	21,500	XX	1,830
2002: January-April	945	481	10	405	4,850	10,700	907	18,300	XX	760

XX Not applicable. -- Zero.

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

<sup>2</sup>The nickel contents are assumed to be as follows: metallurgical-grade oxide (77%), waste and scrap (50%), and stainless steel scrap (7.5%). The chemicals category includes chlorides (25%); sulfates (22%); other salts (22%); supported catalysts (22%); and oxide, sesquioxide, and hydroxide (65%).

<sup>3</sup>Excludes wrought nickel.

<sup>4</sup>Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 6  
U.S. IMPORTS FOR CONSUMPTION OF NICKEL ALLOYS, BY COUNTRY<sup>1</sup>

(Metric tons, gross weight)

Period and country of origin	Unwrought alloyed ingot	Bars, rods and profiles	Wire	Plates and sheets	Foil	Tubes and pipes	Other alloyed articles	Total	Total year to date
2002:									
April	390	229	531	254	(2)	233	151	1,790	6,500
May	179	248	456	289	1	337	162	1,670	8,170
June	232	293	401	286	15	511	122	1,860	10,000
July	133	259	624	361	31	124	196	1,730	11,800
August	170	217	360	356	34	180	161	1,480	13,200
September	64	153	412	207	35	243	131	1,250	14,500
October	180	150	400	212	28	106	117	1,190	15,700
November	231	279	324	348	28	194	149	1,550	17,200
December	170	192	510	353	21	147	153	1,550	18,800
January-December	2,540	2,640	5,230	3,520	194	2,850	1,810	18,800	XX
2003:									
January	54	252	427	332	(2)	133	91	1,290	1,290
February	167	158	356	264	11	93	140	1,190	2,480
March	129 <sup>2</sup>	209	600	308	(2)	148	163	1,560	4,040
April:									
Australia	34	--	--	--	--	--	--	34	207
Belgium	37	--	(2)	--	--	--	5	42	91
Canada	--	--	13	--	(2)	(2)	5	18	47
China	--	--	--	(2)	--	--	55	55	122
France	--	10	152	22	--	9	25	218	568
Germany	3	96	233	145	6	86	6	575	1,990
Italy	--	84	--	--	--	4	1	89	402
Japan	5	--	4	(2)	--	40	3	52	151
Mexico	--	--	--	--	--	--	104	104	334
Netherlands	--	--	(2)	--	--	--	26	26	53
South Africa	20	--	--	--	--	--	--	20	98
Sweden	--	10	251	8	--	44	--	313	824
United Kingdom	85	37	1	141	1	21	10	296	870
Other	--	8	43	--	--	(2)	26	77	198
Total	184	245	697	316	7	204	266	1,920	5,950
2003: January-April	534	864	2,080	1,220	18	578	660	5,950	XX
2002: January-April	1,180	844	1,740	1,100	1	1,010	619	6,500	XX

<sup>1</sup>Revised. XX Not applicable. -- Zero.

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

<sup>2</sup>Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 7  
U.S. EXPORTS OF NICKEL ALLOYS, BY COUNTRY<sup>1</sup>

(Metric tons, gross weight)

Period and country of destination	Unwrought alloyed ingot	Bars, rods and profiles	Wire	Plates and sheets	Foil	Tubes and pipes	Other alloyed articles	Total	Total year to date
2002:									
April	618	451	96	476	12	204	278	2,130	10,300
May	862	495	99	638	32	136	297	2,560	12,900
June	1,070	393	142	567	8	127	363	2,670	15,500
July	437	518	94	392	8	144	307	1,900	17,400
August	951	527	142	545	15	128	426	2,730	20,200
September	788	568	174	733	4	133	333	2,730	22,900
October	290	507	146	717	3	187	320	2,170	25,100
November	739	418	174	546	10	147	295	2,330	27,400
December	415	316	78	302	14	115	426	1,660	29,100
January-December	8,720	6,020	1,520	6,590	169	1,770	4,290	29,100	XX
2003:									
January	729	375	138	236	12	231	192	1,910	1,910
February	1,160	419	93	215	38	168	374	2,460	4,380
March	226	615	113	399	214	150	307	2,020	6,400
April:									
Australia	--	--	1	7	--	--	1	9	18
Belgium	15	66	3	(2)	--	1	1	86	289
Canada	(2)	55	70	39	3	72	52	291	1,050
France	92	72	10	20	1	1	3	199	920
Germany	385	34	3	7	--	7	11	447	2,010
India	--	1	--	(2)	--	(2)	(2)	1	56
Ireland	--	--	1	--	--	--	(2)	1	6
Italy	7	56	1	4	--	2	2	72	143
Japan	21	21	4	86	1	5	1	139	522
Korea, Republic of	21	8	(2)	6	(2)	(2)	12	47	161
Mexico	1	(2)	24	11	--	58	143	237	906
Netherlands	--	(2)	(2)	5	--	(2)	1	6	58
Singapore	1	3	1	2	--	1	2	10	37
Spain	7	--	(2)	--	--	(2)	1	8	62
Sweden	--	--	14	2	--	(2)	(2)	16	37
Switzerland	9	(2)	1	17	--	8	--	35	201
Taiwan	(2)	2	--	7	(2)	--	6	15	116
United Kingdom	29	390	9	58	--	6	1	493	1,190
Other	12	35	16	44	9	21	55	192	923
Total	600	743	158	315	14	182	292	2,300	8,700
2003: January-April	2,710	2,150	502	1,170	278	731	1,170	8,700	XX
2002: January-April	3,170	2,280	473	2,150	76	650	1,520	10,300	XX

XX Not applicable. -- Zero.

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

<sup>2</sup>Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 8  
NICKEL CONSUMPTION IN CAST AND WROUGHT PRODUCTS

	Percent	
	Wrought	Cast
May 2003:		
Stainless and heat resisting steels	81	19
Alloy steels	98	2
Superalloys	99	1
Copper-nickel alloys	98	2
Other nickel-base alloys	100	(1)

<sup>1</sup>Less than 1/2 unit.

TABLE 9  
NICKEL PRICES

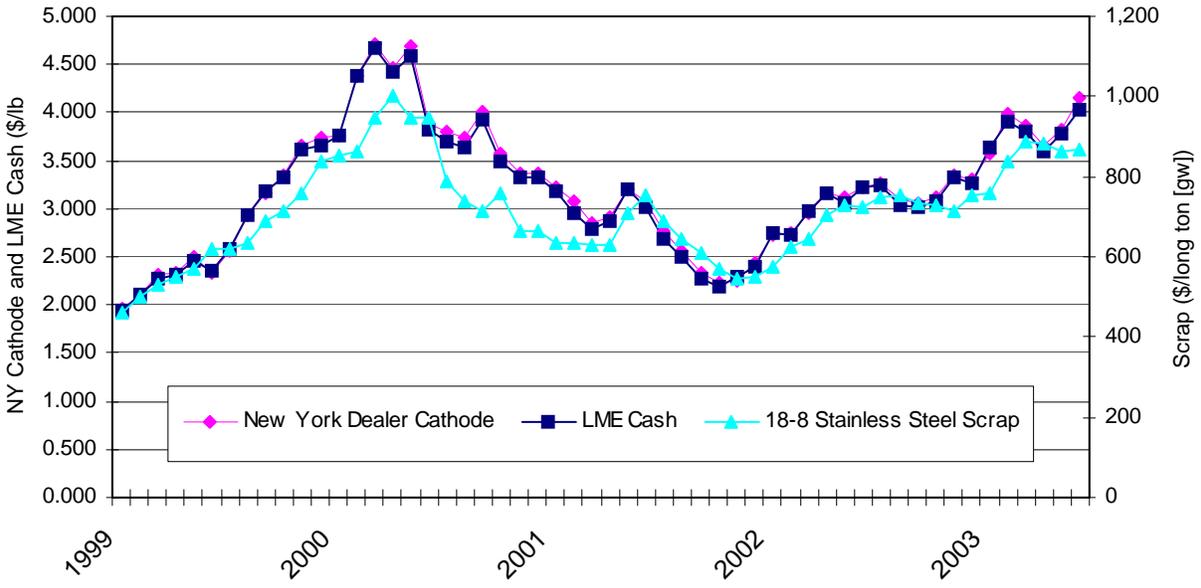
Date	Platts Metals Week			American Metal Market, 18/8 Stainless steel scrap	
	Cathode NY Dealer \$/lb.	LME Cash \$/t	LME Cash \$/lb.	18/8 Stainless steel scrap Free market \$/long ton (gw)	18/8 Stainless steel scrap Pittsburgh \$/long ton (gw)
2002:					
Average for month of:					
June	3.213	7,119.861	3.230	XX	725
July	3.268	7,142.717	3.240	XX	748
August	3.094	6,717.143	3.047	XX	755
September	3.053	6,640.238	3.012	XX	733
October	3.118	6,804.457	3.086	XX	729
November	3.349	7,313.929	3.318	XX	716
December	3.308	7,193.158	3.263	XX	755
Yearly average	3.095	6,771.751	3.072	XX	703
2003:					
Average for week ending:					
May 2	3.70-3.82	7,985.500	3.622	835-850	880-890
May 9	3.80-3.84	8,145.625	3.695	829-840	850-860
May 16	3.80-4.68	8,197.500	3.718	829-840	850-860
May 23	3.87-4.68	8,363.000	3.793	829-840	850-860
May 30	3.96-4.16	8,762.500	3.975	840-860	850-860
June 6	4.25-4.47	9,358.500	4.245	870-890	860-875
June 13	4.27-4.55	9,141.000	4.146	865-880	860-875
June 20	4.10-4.24	8,657.500	3.927	865-880	860-875
June 27	4.00-4.15	8,438.500	3.828	865-880	860-875
Average for month of:					
January	3.580	8,026.020	3.641	XX	757
February	3.978	8,623.000	3.911	840	840
March	3.865	8,378.810	3.801	886	885
April	3.655	7,910.125	3.588	885	885
May	3.826	8,330.625	3.779	839	861
June	4.155	8,874.762	4.026	874	867

XX Not applicable.

NOTE

On February 6, 2003, Platts Metals Week began assessing a weekly North American Free Market 18-8 stainless steel scrap price. The price is being published as a range, in dollars per long ton (gross weight), reflecting the majority of spot business. Specifications are: material sold in bundles and solids, minimum nickel content of 7-9%, minimum chromium content of 17%, delivered plant, loaded on trucks or barges, minimum quantity 1,000 long tons, net-30 day standard payment terms.

**1999-2003 AVERAGE MONTHLY PRICES**  
 (Derived from Metals Week and American Metal Market quotations)



**1999-2003 STOCKS**

