

Mineral Industry Surveys

For information, contact:

Peter H. Kuck, Nickel Commodity Specialist
U.S. Geological Survey
989 National Center
Reston, VA 20192
Telephone: (703) 648-4965, Fax: (703) 648-7757
E-mail: pkuck@usgs.gov

Barbara J. McNair (Data)
Telephone: (703) 648-7952
Fax: (703) 648-7975
E-mail: bmcnair@usgs.gov

Internet: <http://minerals.usgs.gov/minerals>

NICKEL IN APRIL 2005

Reported domestic nickel consumption in April, on a daily average basis, was 11% greater than that of March, according to the U.S. Geological Survey. Daily average nickel consumption of cathodes, pellets, briquets, powder, and ferronickel for stainless steel was 60.5 metric tons per day (t/d), 5% greater than the 57.6 t/d for March, but 3% less than the 62.2 t/d (revised) for April 2004. Consumption of >99.8% nickel metal to make superalloys (such as INCONEL 718 and WAsPALOY) increased slightly from March levels, on a daily average basis. Consumption to make corrosion-resistant, less stress-resistant nickel-base alloys (such as INCONEL 600 and Nickel 200) was stronger, increasing by 8% on a daily average basis. Sales to plating companies averaged 33.4 t/d, about 32% greater than the March sales figure of 25.3 t/d.

On April 30, U.S. consumer stocks of cathode, pellets, briquets, and powder totaled 1,520 metric tons (t), down 18% from the revised figure of 1,850 t for March 31, but 7% greater than the 1,420 t (revised) reported for December 31, 2004. Stocks in London Metal Exchange (LME) warehouses totaled 6,024 t on April 30, 39% less than the 9,936 t on March 31.

The United States imported 36,800 t of primary nickel in the first quarter of 2005, 14% greater than the 32,300 t for the corresponding quarter of 2004. Trade data for April will appear in a subsequent report.

Update: CVRD decides to develop Vermelho

On July 5, 2005, Companhia Vale do Rio Doce S.A. de C.V. (CVRD) announced that it would begin developing the Vermelho nickel deposit in the Carajás region of Brazil. The company's board of directors has approved the expenditure of up to US\$1.2 billion for the project. Vermelho is being

designed to produce 46,000 metric tons per year (t/yr) of metallic nickel and 2,800 t/yr of cobalt. A high pressure acid leaching plant would be constructed onsite to extract the nickel and cobalt from the lateritic ore. The proposed complex is scheduled to begin producing nickel hydroxide in the fourth quarter of 2008. Pilot plant work has been underway in Western Australia since 2000 (Companhia Vale do Rio Doce, 2005a¹; Lakefield Orestest Pty. Ltd., 2005§).

The Vermelho deposit is in the State of Pará, 70 kilometers (km) south of the Carajás iron mines and 15 km east of CVRD's new Sossego copper mine. The Vermelho deposit has 290 million metric tons (Mt) of proved and probable reserves of limonitic laterites averaging 0.8% nickel (Companhia Vale do Rio Doce, 2005b§). The finished products would be trucked 75 km to the Carajás Railroad for transport to the Atlantic Port of Ponta da Madeira.

CVRD is also conducting a pre-feasibility study of the São João do Piauí laterite deposit in the State of Piauí. The company expects to complete the Piauí study before the end of 2005 (Companhia Vale do Rio Doce, 2005a§).

Internet References Cited

- Companhia Vale do Rio Doce, 2005a (July 5), CVRD will start the development of the Vermelho Nickel Mine, accessed August 2, 2005, at URL <http://www.cvrld.com.br/saladeimprensa/en/releases/release.asp?id=14577>.
Companhia Vale do Rio Doce, 2005b, Vermelho nickel project, accessed August 2, 2005, via URL <http://www.cvrld.com.br>.
Lakefield Orestest Pty. Ltd., 2005, Nickel laterite processing, accessed August 3, 2005, at URL http://www.oretest.com.au/services/ni_laterite.asp#pilot.

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

TABLE 1
CONSUMPTION OF NICKEL (EXCLUSIVE OF SCRAP), BY FORM AND USE¹

(Metric tons, nickel content)

Period	Cathodes, pellets, briquets, and powder	Ferronickel	Oxide-sinter, salts, and other forms	Total	Total year to date
2004:					
April	4,690	458	52	5,200	21,200
May	5,310	528	28	5,870	27,100
June	5,260	556	39	5,850	33,000
July	4,820	536	43	5,400	38,300
August	4,880	677	36	5,590 ^r	43,900
September	4,570	549	48	5,170	49,100
October	5,110	734	41	5,890	55,000
November	4,640	504	37	5,180	60,200
December	4,550	482	36	5,070	65,200
January-December	58,200	6,600	461 ^r	65,200	XX
2005:					
January	5,020	589	40	5,650	5,650
February	4,870	534	38	5,440	11,100
March	4,870	533	38	5,440	16,500
April:					
Steel:					
Stainless and heat resisting	1,310	500	W	1,810	7,660
Alloy (excludes stainless)	250	--	--	250	1,080
Superalloys	971	--	W	971	4,100
Copper-nickel alloys	W	--	--	W	W
Electric, magnetic, and expansion alloys	13	--	--	13	50
Other nickel & nickel alloys	W	--	W	W	W
Cast iron	W	--	--	W	W
Electroplating (sales to platers)	951	--	--	951	3,280
Chemical and chemical uses	W	--	--	W	W
Other uses	1,730	--	45	1,770	6,150
Total reported	5,230 ²	500	45	5,770	22,300
Total all companies (calc) ³	XX	XX	XX	10,900	42,000
2005: January-April	20,000	2,160	163	22,300	XX
2004: January-April	19,000	2,040	150	21,200	XX

^rRevised. W Withheld to avoid disclosing company proprietary data; included in "Other uses" category. XX Not applicable. -- Zero.

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

²Of consumption, 4,250 metric tons were consumed as cathodes and pellets, the remainder as briquets and powder.

³Figures represent calculated apparent consumption; based on the revised proportion of reported primary consumption (53.17%) to apparent primary consumption for 2003.

TABLE 2
ENDING STOCKS OF NICKEL (EXCLUSIVE OF SCRAP) HELD BY CONSUMERS,
BY FORM AND USE^{1,2}

(Metric tons, nickel content)

Period	Cathodes, pellets, briquets, and powder	Ferronickel	Oxide-sinter, salts, and other forms	Total
2004:				
April	1,750	227	34	2,020
May	1,380	158	42	1,580
June	1,470	185	45	1,700
July	1,260	147	30	1,440
August	1,490	139	32	1,660
September	1,640	184	31	1,860
October	1,390	146	50	1,590
November	1,340	170	59	1,570
December	1,420	147	45	1,610
2005:				
January	1,460	192	52	1,700
February	1,510	227	70 ^r	1,800
March	1,850 ^r	221	45	2,110 ^r
April:				
Steel (stainless, heat resisting and alloy)	573	164	(3)	737
Nonferrous alloys ⁴	916	20	(3)	936
Foundry (cast irons)	(3)	W	--	(3)
Chemical (catalysts, ceramics, plating salt, etc.) and unspecified uses	28	W	49	77
Total	1,520	184	49	1,750

^rRevised. W Withheld to avoid disclosing company proprietary data. -- Zero.

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

²Stocks 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.

³Included in the "Chemical and unspecified uses" category.

⁴Includes 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 USE¹

(Metric tons, nickel content)

Period	Consumption			Stocks		
	Ferrous scrap ²	Nonferrous scrap ³	Total scrap	Ferrous scrap ²	Nonferrous scrap ³	Total scrap
2004:						
April	6,530 ^r	869 ^r	7,400 ^r	3,880 ^r	82	3,970 ^r
May	6,460 ^r	805 ^r	7,260 ^r	3,670 ^r	63	3,730 ^r
June	6,330 ^r	808 ^r	7,140 ^r	3,690 ^r	85	3,770 ^r
July	6,100 ^r	676 ^r	6,770 ^r	3,580 ^r	76	3,650 ^r
August	6,260 ^r	960 ^r	7,220 ^r	3,350 ^r	73	3,420 ^r
September	5,640 ^r	816 ^r	6,450 ^r	3,740 ^r	75	3,810 ^r
October	6,100 ^r	713 ^r	6,820 ^r	3,770 ^r	70	3,840 ^r
November	5,950 ^r	740 ^r	6,690 ^r	3,550 ^r	63	3,620 ^r
December	6,430 ^r	585 ^r	7,010 ^r	3,320 ^r	65	3,390 ^r
January-December	75,100 ^r	9,330 ^r	84,400 ^r	XX	XX	XX
2005:						
January	4,690	676	5,370	2,330	80	2,410
February	4,680	772 ^r	5,460 ^r	2,440	90	2,530
March	4,510	830 ^r	5,340	2,490	106	2,600
April	4,980	794	5,770	2,470	106	2,570
January-April	18,900	3,070	21,900	XX	XX	XX

^rRevised. XX Not applicable.

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

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

³Combined consumption and stocks of aluminum-base, copper-base, and nickel-base scrap.

NOTE: The 2004 monthly consumption statistics for ferrous scrap have been revised and are significantly greater than those published in previous issues of the Nickel Mineral Industry Surveys. The revisions reflect, in part, the addition of new respondents to the Iron and Steel Scrap Survey. The U.S. Geological Survey (USGS) continually strives to improve the value of its publications to users. As part of this process, the USGS is reevaluating its statistics on U.S. consumption of austenitic stainless steel scrap and other types of nickel-bearing scrap.

TABLE 4
U.S. IMPORTS FOR CONSUMPTION OF NICKEL, BY COUNTRY¹

(Metric tons, nickel content)²

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 ³	Total year to date ⁴	Wrought nickel
2004:										
March	10,700	812	806	134	1,430	1,660	376	15,900	38,400	72
April	10,700	720	1,680	23	574	908	296	14,900	53,400	53
May	8,530	564	941	--	698	680	381	11,800	65,200	55
June	9,190	732	978	--	553	680	324	12,500	77,600	86
July	7,370	914	1,070	--	624	663	374	11,000	88,600	79
August	9,770	800	1,020	24	585	928	434	13,600	102,000	116
September	6,590	571	1,080	207	689	697	339	10,200	112,000	88
October	11,100	976	1,280	210	535	780	321	15,300	128,000	43
November	9,140	659	1,240	240	602	696	378	13,000	141,000	33
December	9,340	814	1,750	170	403	1,340	295	14,100	155,000	46
January-December	107,000	9,220	14,000	1,210	7,850	11,000	4,440	155,000	XX	796
2005:										
January	9,040	756	1,940	114	585	780	279	13,500	13,500	40
February	10,200	596	2,040	122	524	853	360	14,700	28,200	95
March:										
Australia	910	60	--	--	--	--	--	970	2,520	--
Brazil	--	--	--	--	--	--	--	--	8	--
Canada	5,050	569	--	484	141	565	--	6,810	18,500	(5)
Colombia	--	--	295	--	--	--	--	295	826	--
Dominican Republic	--	--	1,420	--	--	2	--	1,420	4,630	--
Finland	138	57	--	--	--	1	94	290	1,120	--
France	39	--	2	--	63	--	14	118	578	3
Germany	--	5	--	--	107	--	40	152	315	47
Japan	--	1	--	(5)	34	(5)	40	75	110	9
Mexico	--	--	--	--	8	154	(5)	162	491	--
New Caledonia	--	--	100	--	--	--	--	100	300	--
Norway	972	--	--	--	--	--	--	972	3,840	--
Russia	328	160	115	--	--	--	--	603	5,380	--
South Africa	--	20	--	--	--	--	--	20	159	--
Sweden	--	--	--	--	--	--	--	--	7	1
United Kingdom	18	126	--	3	135	--	21	303	735	(5)
Venezuela	--	--	--	--	10	5	--	15	40	--
Zimbabwe	38	--	--	--	--	--	--	38	536	--
Other	99 ⁶	8	26 ⁶	1	131	23	125	413	866	21
Total	7,600	1,010	1,950	488	629	750	334	12,800	40,900	81
2005: January-March	26,800	2,360	5,930	723	1,740	2,380	973	40,900	XX	216
2004: January-March	25,200	2,470	2,910	334	2,590	3,610	1,300	38,400	XX	198

XX Not applicable. -- Zero.

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

²The 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%).

³Excludes wrought nickel.

⁴May include revisions for prior months.

⁵Less than 1/2 unit.

⁶All 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 COUNTRY¹

(Metric tons, nickel content)²

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 ³	Total year to date	Wrought nickel
2004:										
March	116	150	(4)	8	1,000	3,800	497	5,570	12,900	59
April	144	132	3	8	1,070	2,660	563	4,570	17,500	227
May	54	127	23	4	1,290	3,100	323	4,920	22,400	120
June	187	138	3	4	1,310	4,720	567	6,930	29,400	65
July	18	171	(4)	2	1,160	2,600	473	4,420	33,800	100
August	39	172	--	1	1,190	2,330	200	3,940	37,700	68
September	112	238	--	7	1,170	2,610	498	4,640	42,400	86
October	60	257	1	2	1,110	3,620	197	5,240	47,600	44
November	77	257	1	45	890	2,530	285	4,080	51,700	42
December	27	196	23	98	1,030	2,980	227	4,580	56,300	95
January-December	972	2,130	68	201	12,400	35,900	4,630	56,300	XX	1,110
2005:										
January	37	211	1	161	1,230	2,400	228	4,270	4,270	63
February	31	165	3	3	877	3,960	316	5,360	9,620	57
March:										
Australia	--	1	--	--	50	--	1	52	148	7
Belgium	17	8	--	--	--	8	17	50	81	--
Canada	2	9	--	--	854	144	140	1,150	3,440	12
China	--	37	--	--	--	1,280	11	1,330	3,600	10
Finland	--	--	--	--	--	--	--	--	979	--
Germany	--	30	--	--	6	1	3	40	201	2
India	--	1	--	--	--	241	6	248	721	(4)
Italy	--	--	--	--	--	4	--	4	4	2
Japan	4	9	--	3	19	17	14	66	253	16
Korea, Republic of	--	6	--	--	--	759	7	772	1,310	5
Mexico	66	3	--	--	--	859	29	957	1,820	17
Netherlands	--	(4)	--	--	--	20	1	21	128	1
South Africa	--	--	--	--	--	--	3	3	41	--
Spain	--	--	--	--	--	--	--	--	4	--
Sweden	--	--	--	--	31	--	--	31	95	--
Taiwan	2	3	--	--	--	541	--	546	1,350	3
United Kingdom	--	5	12	4	112	9	22	164	392	(4)
Other	--	48	--	--	--	113	35	197	699	56
Total	91	160	12	7	1,070	3,990	289	5,630	15,200	131
2005: January-March	160	536	15	170	3,180	10,400	834	15,200	XX	251
2004: January-March	254	445	15	29	2,200	8,710	1,290	12,900	XX	266

XX Not applicable. -- Zero.

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

²The 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%).

³Excludes wrought nickel.

⁴Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF NICKEL ALLOYS, BY COUNTRY¹

(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
2004:									
March	102	166	446	213	18	362	459	1,770	4,520
April	345	255	504	164	44	773	172	2,260	6,770
May	123	269	494	131	14	231	115	1,380	8,150
June	227	344	517	301	40	136	100	1,670	9,820
July	271	322	504	192	32	140	87	1,550	11,400
August	324	251	496	236	31	89	109	1,540	12,900
September	528	193	440	192	30	317	79	1,780	14,700
October	295	285	477	215	7	148	206	1,630	16,300
November	245	247	624	280	41	246	233	1,920	18,200
December	269	300	588	226	43	106	145	1,680	19,900
January-December	3,000	3,120	5,740	2,590	322	3,060	2,080	19,900	XX
2005:									
January	273	220	600	234	35	67 ^r	304	1,730 ^r	1,730 ^r
February	329	255	422	259	49	175 ^r	202	1,690 ^r	3,420 ^r
March:									
Australia	113	--	--	--	--	--	--	113	264
Belgium	(2)	--	--	9	--	--	--	9	29
Canada	--	(2)	10	(2)	--	12	29	51	104
China	(2)	--	1	(2)	--	--	51	52	240
France	--	1	145	5	--	19	3	173	451
Germany	143	134	296	285	16	55	2	931	2,410
Italy	--	101	8	--	--	(2)	10	119	366
Japan	(2)	--	6	1	--	(2)	14	21	53
Mexico	--	--	(2)	--	--	--	19	19	41
Netherlands	--	--	--	--	--	--	25	25	56
South Africa	20	--	--	--	--	--	--	20	116
Sweden	--	32	146	5	--	10	--	193	697
United Kingdom	39	22	10	3	(2)	5	9	88	244
Other	46	4	7	8	--	2	11	78	242
Total	361	294	629	316	16	103	173	1,890	5,320
2005: January-March	962	770	1,650	808	100	346	678	5,320	XX
2004: January-March	368	658	1,090	657	41	870	831	4,520	XX

^rRevised. XX Not applicable. -- Zero.

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

²Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 7
U.S. EXPORTS OF NICKEL ALLOYS, BY COUNTRY¹

(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
2004:									
March	980	640	92	491	30	184	333	2,750	7,190
April	283	649	99	472	22	144	303	1,970	9,160
May	457	976	168	334	46	119	543	2,640	11,800
June	511	722	130	427	33	170	272	2,270	14,100
July	614	1,100	177	350	11	132	244	2,630	16,700
August	629	760	176	234	10	123	221	2,150	18,800
September	1,010	1,080	169	389	16	163	257	3,090	21,900
October	517	776	190	390	26	178	236	2,310	24,300
November	613	1,110	183	327	21	148	256	2,660	26,900
December	823	1,100	157	350	5	150	244	2,830	29,700
January-December	7,510	10,400	1,850	4,470	244	1,800	3,440	29,700	XX
2005:									
January	994	1,180	84	312	11	226	186	2,990	2,990
February	910	1,050	104	392	10	163	278	2,910	5,900
March:									
Australia	--	(2)	(2)	--	--	(2)	4	4	31
Belgium	70	309	5	(2)	--	1	1	386	1,100
Canada	2	36	23	43	3	41	16	164	516
China	11	117	70	59	--	1	52	310	592
France	67	157	3	11	(2)	3	(2)	241	1,060
Germany	4	84	7	18	(2)	1	(2)	114	365
India	(2)	37	1	1	--	1	--	40	110
Ireland	(2)	--	(2)	2	--	--	(2)	2	7
Israel	--	64	4	2	--	--	--	71	264
Italy	76	122	2	4	(2)	(2)	3	207	517
Japan	915	25	(2)	19	(2)	20	3	982	2,140
Korea, Republic of	17	3	1	41	(2)	2	1	65	173
Mexico	(2)	73	15	59	3	74	200	424	869
Netherlands	--	10	(2)	1	--	1	1	13	88
Singapore	1	18	1	3	1	1	64	89	138
Spain	(2)	(2)	2	1	--	--	(2)	3	66
Sweden	1	--	--	16	--	(2)	3	20	52
Switzerland	6	3	(2)	6	(2)	5	1	21	106
Taiwan	13	10	(2)	9	--	(2)	1	33	83
United Kingdom	9	236	3	30	(2)	14	8	300	817
Other	11	41	41	63	(2)	35	46	237	530
Total	1,200	1,350	178	388	7	200	404	3,730	9,630
2005: January-March	3,110	3,580	366	1,090	28	588	869	9,630	XX
2004: January-March	2,050	2,150	401	1,200	54	474	862	7,190	XX

XX Not applicable. -- Zero.

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

²Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 8
NICKEL CONSUMPTION IN CAST AND WROUGHT PRODUCTS

	Percent	
	Wrought	Cast
April 2005:		
Stainless and heat resisting steels	96	4
Alloy steels	99	1
Superalloys	88	12
Copper-nickel alloys	97	3
Other nickel-base alloys	100	(1)

¹Less than 1/2 unit.

TABLE 9
NICKEL PRICES

Date	Platts Metals Week			18/8 Stainless steel scrap Free market \$/long ton (gw)	American Metal Market, 18/8 Stainless steel scrap Pittsburgh \$/long ton (gw)
	Cathode NY Dealer \$/lb.	LME Cash mean ¹ \$/t	LME Cash mean ¹ \$/lb.		
2004:					
Average for month of:					
April	6.056	12,848.125	5.828	1,397	1,503
May	5.185	11,118.289	5.043	1,281	1,367
June	6.063	13,533.523	6.139	1,241	1,208
July	6.990	15,023.295	6.814	1,430	1,402
August	6.320	13,679.524	6.205	1,481	1,560
September	6.112	13,270.909	6.020	1,405	1,470
October	6.523	14,404.286	6.534	1,413	1,470
November	6.488	14,045.455	6.371	1,506	1,562
December	6.286	13,768.810	6.245	1,457	1,523
Yearly average	6.341	13,823.241	6.270	1,427	1,473
2005:					
Average for week ending:					
April 1	7.48-7.81	16,023.125	7.268	1,610-1,640	1,550-1,575
April 8	7.54-7.77	16,204.500	7.350	1,640-1,655	1,670-1,700
April 15	7.27-7.74	15,921.000	7.222	1,640-1,655	1,670-1,700
April 22	7.44-7.77	16,057.500	7.284	1,640-1,655	1,670-1,700
April 29	7.67-7.83	16,363.000	7.422	1,640-1,655	1,670-1,700
May 6	7.70-7.96	16,383.125	7.431	1,640-1,655	1,670-1,700
May 13	8.12-8.55	17,403.000	7.894	1,640-1,655	1,600-1,620
May 20	7.83-8.49	16,847.500	7.642	1,640-1,655	1,600-1,620
May 27	8.03-8.21	16,957.000	7.692	1,625-1,650	1,600-1,620
Average for month of:					
January	6.748	14,501.250	6.578	1,487	1,513
February	7.065	15,344.625	6.960	1,520	1,513
March	7.510	16,184.524	7.341	1,609	1,563
April	7.480	16,136.429	7.319	1,647	1,685
May	7.920	16,919.750	7.675	1,645	1,629

¹Mean of the cash buyer price and the cash seller and settlement price.

