

NICKEL STATISTICS¹
U.S. GEOLOGICAL SURVEY

[All values are in metric tons (t) nickel content unless otherwise noted]

Last modification: April 1, 2014

Year	Primary production	Secondary production	Imports	Exports	Stocks	Apparent consumption	Unit value (\$/t)	Unit value (98\$/t)	World production
1900	5	NA	26,100	2,660	NA	23,600	1,100	22,000	9,290
1901	3	NA	53,200	2,660	NA	50,700	1,240	24,000	11,400
1902	3	NA	15,400	1,460	NA	14,100	992	19,000	12,200
1903	52	NA	16,400	1,100	NA	15,600	882	16,000	10,200
1904	11	NA	8,950	3,410	NA	5,800	882	16,000	10,500
1905	NA	NA	14,100	4,330	NA	10,000	882	16,000	15,600
1906	NA	NA	15,500	4,820	NA	10,900	882	16,000	16,000
1907	W	NA	8,440	3,980	NA	4,690	992	17,000	16,300
1908	W	NA	7,630	4,430	NA	3,470	992	18,000	14,900
1909	309	NA	10,100	5,470	NA	4,940	882	16,000	17,000
1910	W	NA	14,700	6,910	NA	8,110	882	15,000	23,100
1911	404	NA	13,500	11,400	NA	2,500	882	15,000	25,200
1912	298	NA	21,000	11,700	NA	9,600	882	15,000	27,900
1913	219	NA	21,500	13,200	NA	8,520	926	15,300	32,200
1914	384	NA	15,900	12,500	NA	3,780	904	14,700	30,000
1915	746	NA	25,700	12,000	NA	14,400	904	14,600	39,100
1916	833	740	33,000	15,200	NA	19,400	926	13,800	45,500
1917	365	780	34,300	9,980	NA	25,500	926	11,800	46,200
1918	400	1,260	33,200	7,920	NA	26,900	904	9,760	47,600
1919	464	2,220	16,600	1,730	NA	17,600	882	8,320	23,100
1920	331	2,000	22,000	551	NA	23,800	926	7,530	35,700
1921	101	857	1,990	193	NA	2,750	926	8,420	10,400
1922	189	1,370	6,770	4,940	NA	5,430	838	8,140	11,800
1923	91	1,410	18,400	840	NA	19,400	794	7,560	31,100
1924	173	2,030	16,800	1,180	NA	18,200	661	6,300	35,300
1925	247	2,090	19,600	1,630	NA	20,800	728	6,800	37,100
1926	293	2,770	17,500	1,420	NA	20,000	794	7,280	33,900
1927	780	3,070	16,200	800	NA	19,300	772	7,220	34,500
1928	474	4,080	27,500	800	NA	31,300	816	7,770	50,300
1929	308	3,950	37,600	1,000	NA	40,900	772	7,350	56,300
1930	279	2,630	23,000	1,100	NA	24,800	772	7,570	54,200
1931	338	1,880	13,700	600	NA	15,300	772	8,270	36,300
1932	177	1,320	8,530	700	NA	9,330	772	9,190	21,800
1933	114	1,500	19,900	900	NA	20,600	772	9,670	46,300
1934	142	1,680	19,100	1,500	NA	19,400	772	9,390	71,600
1935	145	1,770	31,000	1,200	NA	31,700	772	9,190	77,400
1936	97	1,780	43,200	2,300	NA	42,800	772	9,050	93,400
1937	199	2,180	43,700	2,500	NA	43,600	772	8,740	120,000
1938	377	2,090	23,800	3,800	NA	22,500	772	8,930	115,000
1939	357	2,650	52,800	6,100	NA	51,900	772	9,050	122,000
1940	503	3,770	76,000	7,100	NA	76,600	772	8,990	140,000
1941	599	4,820	96,300	4,100	NA	94,400	772	8,560	162,000
1942	555	3,760	104,000	5,000	NA	103,000	705	7,050	158,000
1943	582	6,270	111,000	6,800	8,160	109,000	705	6,650	167,000
1944	896	3,920	107,000	5,900	12,000	120,000	705	6,530	157,000
1945	1,050	5,880	97,500	2,500	8,340	109,000	705	6,410	145,000
1946	319	7,480	83,900	5,000	11,800	82,600	772	6,430	123,000
1947	586	8,660	73,200	7,500	7,010	70,300	772	5,640	140,000
1948	801	8,030	87,500	5,000	9,650	87,000	794	5,370	151,000
1949	717	5,150	82,600	2,500	8,100	83,400	882	6,040	146,000
1950	828	7,980	82,800	2,700	5,360	86,400	992	6,700	145,000

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1951	686	7,800	84,500	3,560	5,180	78,600	1,190	7,440	132,000
1952	574	6,790	98,700	5,350	7,380	92,000	1,260	7,730	146,000
1953	546	7,580	108,000	11,700	8,980	95,900	1,320	8,050	198,000
1954	754	7,810	120,000	11,000	9,610	85,900	1,350	8,180	216,000
1955	3,450	10,500	129,000	15,900	8,170	99,900	1,460	8,900	239,000
1956	6,100	13,500	130,000	34,300	11,500	116,000	1,430	8,560	259,000
1957	9,140	10,900	127,000	10,300	22,900	111,000	1,630	9,480	286,000
1958	10,700	6,720	81,600	10,800	12,100	71,700	1,630	9,210	224,000
1959	10,500	8,560	102,000	10,100	12,800	102,000	1,630	9,110	285,000
1960	13,000	8,560	93,400	41,700	10,300	98,100	1,630	8,960	320,000
1961	10,100	9,700	115,000	42,800	16,600	108,000	1,720	9,400	361,000
1962	10,200	10,100	112,000	21,300	12,200	108,000	1,760	9,510	357,000
1963	10,400	17,200	108,000	47,000	15,600	113,000	1,740	9,260	339,000
1964	11,100	21,000	117,000	52,800	15,600	133,000	1,740	9,160	371,000
1965	12,300	17,600	148,000	16,100	12,700	156,000	1,740	9,020	425,000
1966	12,000	24,300	128,000	20,300	28,400	170,000	1,740	8,740	412,000
1967	13,200	18,800	130,000	24,300	28,100	158,000	1,940	9,460	449,000
1968	13,800	12,800	134,000	26,000	24,900	145,000	2,090	9,810	497,000
1969	14,300	17,000	117,000	26,800	15,000	129,000	2,320	10,300	487,000
1970	14,100	21,000	142,000	24,300	22,400	141,000	2,840	11,900	628,000
1971	14,200	24,300	129,000	20,200	14,500	117,000	2,930	11,800	637,000
1972	14,300	32,600	158,000	16,700	23,800	145,000	3,090	12,100	611,000
1973	12,600	59,800	173,000	4,500	66,800	239,000	3,370	12,400	710,000
1974	12,800	58,500	200,000	3,900	80,700	257,000	3,840	12,700	770,000
1975	13,000	37,700	146,000	6,700	67,600	199,000	4,560	13,800	802,000
1976	12,600	47,400	171,000	14,000	63,600	221,000	4,960	14,200	792,000
1977	11,700	45,700	177,000	15,100	51,300	231,000	5,000	13,400	828,000
1978	10,200	40,100	213,000	15,100	52,500	247,000	4,500	11,300	658,000
1979	10,600	52,100	161,000	21,700	50,600	205,000	5,860	13,200	686,000
1980	10,200	44,700	172,000	17,700	107,000	187,000	6,230	12,300	779,000
1981	9,350	47,200	190,000	17,800	151,000	187,000	5,970	10,700	726,000
1982	3,140	39,000	118,000	33,900	112,000	164,000	4,810	8,130	621,000
1983	W	45,200	138,000	21,200	92,100	175,000	4,670	7,650	673,000
1984	8,710	50,000	160,000	39,800	88,000	186,000	4,770	7,490	773,000
1985	4,730	48,700	143,000	32,000	72,700	197,000	4,980	7,540	813,000
1986	1,500	39,700	117,000	19,600	62,600	163,000	3,880	5,770	852,000
1987	0	32,300	135,000	21,000	53,600	172,000	4,840	6,940	891,000
1988	0	48,700	146,000	27,900	56,100	181,000	13,800	19,000	952,000
1989	347	52,100	137,000	31,500	56,600	178,000	13,300	17,500	987,000
1990	3,700	57,400	145,000	37,100	55,800	185,000	8,860	11,100	974,000
1991	7,070	53,500	139,000	36,900	61,500	179,000	8,160	9,760	1,010,000
1992	8,960	55,900	128,000	33,900	61,400	175,000	7,000	8,130	1,010,000
1993	4,880	54,000	133,000	33,200	61,700	176,000	5,290	5,970	928,000
1994	0	62,100	133,000	41,700	47,300	196,000	6,340	6,970	932,000
1995	8,290	68,300	157,000	51,500	44,800	219,000	8,230	8,800	1,040,000
1996	15,100	64,400	150,000	46,800	42,700	211,000	7,500	7,790	1,060,000
1997	16,000	72,100	158,000	56,500	37,200	226,000	6,930	7,040	1,140,000
1998	4,290	65,700	156,000	43,500	31,600	215,000	4,630	4,630	1,180,000
1999	0	84,900	149,000	38,900	22,800	225,000	6,010	5,880	1,170,000
2000	0	94,500	167,000	58,100	26,100	241,000	8,640	8,180	1,290,000
2001	0	85,900	144,000	57,000	24,200	215,000	5,950	5,470	1,350,000

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2002	0	98,000	130,000	45,900	17,000	219,000	6,770	6,130	1,350,000
2003	0	99,900	137,000	53,600	19,000	217,000	9,630	8,530	1,370,000
2004	0	99,700	155,000	56,300	17,900	228,000	13,800	11,900	1,350,000
2005	0	98,500	159,000	63,200	19,100	233,000	14,700	12,300	1,460,000
2006	0	104,000	173,000	67,300	19,900	248,000	24,200	19,600	1,570,000
2007	0	94,000	141,000	116,000	19,300	206,000	37,200	29,300	1,740,000
2008	0	86,700	149,000	106,000	21,700	186,000	21,100	16,000	1,610,000
2009	0	79,800	118,000	97,000	20,100	172,000	14,600	11,100	1,450,000
2010	0	81,900	153,000	93,000	23,300	200,000	21,800	16,300	1,710,000
2011	0	86,600	159,000	77,200	25,000	213,000	22,890	16,600	1,960,000
2012	0	89,900	155,000	68,900	22,700	216,000	17,530	12,400	2,220,000

NA Not available. W Withheld to avoid disclosing company proprietary data.

¹Compiled by T.G. Goonan and P.H. Kuck.

Data are calculated, estimated, or reported. See notes for more information.

Nickel Worksheet Notes

Data Sources

The sources of data for the nickel worksheet are the mineral statistics publications of the U.S. Bureau of Mines and the U.S. Geological Survey (USGS)—Minerals Yearbook (MYB) and its predecessor, Mineral Resources of the United States (MR); Metal Prices in the United States through 1998 (MP98); and Materials Survey—Nickel 1950, p. II-4, II-10, IX-4, X-4–X-8, (MS50). In a few instances, data were revised more than 5 years after being published in the MYB. Some of the revised data came from Ferrous Metals Supply/Demand Data, Mineral Industry Surveys (FM–MIS) (special, one-time publications issued as part of the monthly Mineral Industry Surveys) or from unpublished archives. The years of publication and corresponding years of data coverage are listed in the References section below. Blank cells in the worksheet indicate that data were not available or were withheld because they are proprietary.

Primary Production

U.S. nickel primary production data report the amount of nickel contained in U.S. smelter and refinery production. U.S. annual primary nickel smelter production was relatively constant, about 10,000–12,000 metric tons (t) for 1958–80. Almost all of this production, in the form of ferronickel, came from the Nickel Mountain Mine near Riddle, OR, which commenced operations in 1953. For 1955–99, U.S. primary nickel production was augmented by output from a refinery in Louisiana that produced nickel—first from imported sulfide matte, and later from petroleum residues. The greatest production from U.S. nickel deposits took place during World War I (1916–18), World War II (1941–45), a period of Government strategic stockpile building (1951–61), and the Vietnam Conflict (1961–75). Nickel has been a strategic and critical material in every major conflict fought by the United States since 1900, with the U.S. Government having to allocate or ration the metal in almost every instance. Primary domestic nickel production was not reported for 1905–06. Data were withheld for years 1907–08, 1910, and 1983. Data are sourced as follows: 1900–10, MR; 1911–50, MS50; 1951–72, MYB; 1973–79, FM–MIS; 1980 to the most recent year, MYB.

Primary Production Detail Worksheet Notes

Smelter Production from Laterite

In 1951, the M.A. Hanna Co. began exploring the nickel laterite deposit at Riddle, OR. In 1953, Hanna Nickel Smelting Co. began smelting operations at Riddle, extracting nickel from local laterite deposits. On January 7, 1987, The M.A. Hanna Co. closed its mine and smelter complex at Riddle. For 1958–80, nickel production from laterite ores averaged about 11,000 t nickel per year. Total production for the period was 301,000 t, excluding withheld production in 1983. There was no production from this facility for 1987–88. In 1989, Glenbrook Nickel Co. reopened the Riddle, OR, complex and began smelting stockpiled ore. In 1990, Glenbrook Nickel Co. began processing spent catalysts and freshly mined ore. In July 1991, Glenbrook Nickel began importing lateritic ore from New Caledonia, and a special drying facility was built at Coos Bay, OR, to handle the imported ore. Glenbrook Nickel decommissioned its mining and smelting complex at Riddle in 2000. During the period of production, about 7,000 t nickel was produced per year. Total production for 1989–98 was 68,600 t. There has been no production from this facility since 1998.

Refinery Production from Matte

In 1958–59, Freeport Nickel Co. built a nickel smelter and refinery in Port Nickel/Braithwaite, LA, to process concentrate from Cuba. In 1960, the facility produced 1,608 t of nickel from Cuban concentrate. Freeport Nickel Co. closed its new refinery at Port Nickel because suitable concentrate was not available. Freeport stopped importing Cuban concentrate in mid-1960 after restrictions and prohibitive taxes were imposed by the new Government of Cuba. In 1974, Amax Inc. began producing nickel in the rehabilitated refinery at Port Nickel/Braithwaite. The first feed was matte from Botswana. Amax Nickel Inc. halted nickel production from matte at Braithwaite in November 1985. In 1986, part of the Braithwaite plant was modified so that vanadium, molybdenum, and other metals could be recovered from spent petroleum catalysts. Impure nickel-cobalt hydroxides were being exported for recovery outside of the United States. During the period of production, about 24,500 t nickel was produced per year. Total production for the period was 294,600 t. There has been no production from this facility since 1985. Production from this

facility was not included in U.S. primary production figures reported in the MYB, however, the nickel content of the concentrates and mattes treated did appear in the totals for imports for the period of production.

Byproduct of Lead, or Cobalt Production

In 1900, nickel was produced as a byproduct of the smelting of the lead ores at Mine La Motte, Madison County, MO. In 1906, North American Lead Co. built a smelter near Fredericktown, MO, to recover lead from galena ores. In 1909–10 the smelter produced byproduct cobalt oxide, copper metal, and nickel metal in addition to lead. In this period, Hudson Valley Lead Co. produced byproduct nickel, cobalt, and copper sulfide concentrates from lead ores in southeastern Missouri. A total of 77 t nickel was produced as byproduct for 1900–04. For 1905–06, and 1911–18, no production was reported. For 1907–10, and 1919, production was reported as withheld. In 1920, production of 125 t of nickel as byproduct was reported. The St. Louis Smelting and Refining Co. produced nickel near Fredericktown between July 1944 and September 1945. In 1953, byproduct nickel was recovered from cobalt ore at the Blackbird Mine, Lemhi County, ID. In 1955, National Lead Co. (Fredericktown) recovered nickel from a pyrite concentrate averaging 5.4 percent nickel. Byproduct nickel continued to be recovered from cobalt ore at the Blackbird Mine in Idaho. National Lead Co. closed its mining and refining complex at Fredericktown in May 1961.

Byproduct of Copper Production

Reporting of byproduct nickel production from copper smelting began in 1909, was withheld in 1910, and continued for 1911–74, after which reporting was discontinued. The data point for 1953 is comprised of the nickel content of nickel sulfate produced at Baltimore, MD; Carteret, NJ; Perth Amboy, NJ; Laurel Hill, NY; and Tacoma, WA. For 1975–2004, byproduct nickel from copper production was estimated as 0.05 percent of U.S. copper mill concentrate production, a figure developed from 2 previous years of overlapping data. These estimated data are not included in primary production totals as reported in the MYB.

Byproduct of Talc Production

During World War II, talc operations became of interest as a source of nickel. In 1941, Vermont produced concentrates grading 10 percent Ni and 0.78 percent Co. Production data for 1943 were withheld; however, for 1944–45, nickel as a byproduct of talc production reached levels of 264 t, and 396 t, respectively. Production from this source did not last past the War.

Byproduct of Palladium and Platinum Production

In 2000, the Stillwater Mining Co. began constructing a nickel sulfate crystallizer circuit at its Columbus, MT, refinery. For 2001–02, 358 t and 639 t of byproduct nickel was produced at Stillwater, respectively. The crystallizer circuit was still operating in 2011. Data beginning in 2002 represent the nickel content of crystals sold to consumers or traders.

USGS Reported Primary Production

This data column is the data reported on the “Summary Statistics” page.

Adjusted Primary Production

The purpose of this data column is to show what was, and was not, included when the historical statistics for U.S. primary nickel production was calculated and presented in past published data. From 1985 forward, there is a difference because nickel as a byproduct of copper production was unreported, and therefore not included in domestic nickel production.

Secondary Production

U.S. secondary nickel production data for 1973 to the most recent year report the amount of nickel recovered from nonferrous scrap and from stainless steel scrap. The USGS began collecting data on scrap usage in 1916. For 1916–

72, only nickel recovered from copper and nickel scrap is reported. After 1972, nickel recovered from stainless steel scrap is included. Data are sourced as follows: 1916–50, MS50; 1952–72, MYB; 1973–79, FM–MIS; 1980 to the most recent year, MYB.

Imports

U.S. nickel import data represent a variety of product categories, the most important being elemental metal in the form of cathode, briquettes, pellets, or powders. Other key products include metallurgical and chemical-grade oxides, ferronickel, and plating salts. Import data exclude steel mill products, castings, and downstream manufactured products that contain nickel-bearing steel. Over the years, the United States has imported most of its nickel requirements. In some cases, ore or matte was converted domestically into value-added products, such as ferronickel. In other cases, value-added products, such as ferronickel, oxide sinters, metal powders, and wrought products were shipped directly to steel mills and other downstream consumers upon clearing customs. For 1900–25, data represent nickel content of ore and matte plus gross weight of the following: unwrought and wrought nickel metal, nickel oxide, and cupronickel alloys. For 1926–48, data represent the nickel content of ore, matte, wrought, and unwrought nickel, nickel oxide, and nickel-silver. For 1949–52, data represent nickel content of refined metal, matte, oxide, and residues. For 1900–81, imports are reported as gross weight of products. For 1982 to the most recent year, import data represent contained nickel in imports. Because Congress enacted the Omnibus Trade and Competitiveness Act (PL 100-418), on August 23, 1988, foreign trade data after 1988 are not fully comparable with data of prior years. The new law required that all tariff schedules after January 1, 1989, conform to the internationally established Harmonized Tariff System. The new law caused a restructuring of both the import and export classification systems for nickel. Data are sourced as follows: 1900–31, MR; 1932–48, MYB; 1949–52, recently revised by USGS; 1953–72, MYB; 1973–79, FM–MIS; 1980 to the most recent year, MYB.

For 1900–88, primary imports comprised the total of imported nickel. Beginning in 1988, and continuing forward, an estimate of secondary nickel imports, that is, nickel contained in imported scrap, has been published in the MYB, and it has become a part of total nickel imports.

For 1900–21, data represent nickel content of ore and matte plus gross weight of the following: unwrought and wrought nickel metal, nickel oxide, and cupronickel alloys. The use of gross weights in the total will tend to overstate the nickel imported for those years. For 1926–49, the bulk of the imports consisted of refined nickel, ore, matte, and oxide. The amount reported also may include wrought shapes, nickel-silver, nonferrous scrap and nickel residues. Again, there is not complete clarity regarding how much the inclusion of gross weights would tend to overstate the true amount of nickel imported. From 1988 forward, total imports include an estimate of the amount of nickel contained in imported scrap.

Exports

U.S. nickel export data represent the amount of nickel contained in value-added products exported from the United States. Nickel export data have been reported since 1902. Export data exclude steel mill products, castings, and manufactured products that contain nickel-bearing steel. For 1900–21, data represent the nickel content of nickel metal, oxide, and matte. From 1922 forward, export data added categories for value-added products containing nickel, waste, and scrap, and since 1986, nickel contained in stainless steel scrap. For 1951–81, the MYB published gross weight data for exports. For this period, the weight of nickel contained in exports was equal to 85 percent of the gross weight of nickel export products. For 1982–2002, export data were available directly from reports of contained nickel in exports. Foreign trade data after 1988 are not fully comparable with data of prior years. On August 23, 1988, Congress enacted the Omnibus Trade and Competitiveness Act (PL 100-418). The new law required that all export schedules after January 1, 1989, conform to the internationally established Harmonized Tariff System. The new law caused a restructuring of both the import and export classification systems for nickel. Data are sourced as follows: 1900–31, MR; 1932–72, MYB; 1973–79, FM–MIS; 1980 to the most recent year, MYB.

For 1900–83, primary exports comprised the total of exported nickel. Beginning in 1984, and continuing forward, an estimate of secondary nickel exports (nickel contained in exported scrap) has been published in the MYB, and has become a part of total nickel exports. For 1900–21, data represent estimated nickel content of nickel metal, oxide, and matte. For the entire period, the character of nickel exports has changed with regard to what is included, and whether it was reported in gross or contained weights.

Stocks

U.S. nickel stocks data report the amount of contained nickel in reported industry stocks as of December 31 of each year, as reported in the MYB. Stocks were not reported before 1945. For 1945–79, consumer stocks included only primary (ferroalloys, metal, and oxide) material and excluded scrap. For 1980–81, stocks include primary and secondary material held by government, producers, and consumers. From 1982 forward, stocks include government, producer, as well as consumer primary and secondary material. Data are sourced as follows: 1942–72, MYB; 1973–79, FM–MIS; 1980 to the most recent year, MYB.

Government stocks figures were available for 1942–44, and for 1962 forward. For 1945–61, for which there was no published data, government stocks growth was estimated by interpolation using a factor for annual incremental growth equal to 11.06 percent of apparent nickel supply for the year. The factor was determined by dividing the difference in government stocks between 1944 and 1962 by the accumulation of apparent supply for that same period, apparent supply being defined as:

$$\text{PRIMARY PRODUCTION} + \text{SECONDARY PRODUCTION} + \text{NET IMPORTS} + \text{NONGOVERNMENT STOCK CHANGE (END OF YEAR - BEGINNING OF YEAR)}.$$

Apparent Consumption

For 1900–82, apparent consumption is calculated using the following equation:

$$\text{APPARENT CONSUMPTION} = \text{PRODUCTION} + \text{IMPORTS} - \text{EXPORTS} \pm \text{STOCK CHANGES}.$$

In the earlier years of the apparent consumption column, certain variables that go into the calculation of apparent consumption were omitted (implicitly assumed to be zero) in the calculation due to lack of data. For example, stock adjustments were not reported prior to 1945; secondary production was not reported prior to 1916; and primary production was not reported prior to 1911. From 1983 forward, U.S. nickel consumption as reported in the MYB was:

$$\text{APPARENT PRIMARY (CALCULATED FOR PRIMARY NICKEL PRODUCTS USING EQUATION ABOVE)} + \text{REPORTED SECONDARY CONSUMPTION}.$$

Reported secondary consumption is significantly larger than secondary consumption calculated from the net scrap export model. In recent years, significant amounts of nickel-bearing, semi finished stainless steel slab have been imported into the United States for further processing. Large quantities of scrap are generated during the downstream processing of this slab. The revised equation attempts to correct for this canvassing problem. Data are sourced as follows: 1900–31, MR; 1932–72, MYB; 1973–79, FM–MIS; 1980 to the most recent year, MYB.

Unit Value (\$/t)

Unit value for nickel is the price of nickel reported in MP98 for 1900–78. Beginning in 1979, London Metal Exchange nickel price data are reported unrounded, because they are internationally accepted in that format.

Unit Value (98\$/t)

The Consumer Price Index conversion factor, with 1998 as the base year, is used to adjust unit value in current U.S. dollars to the unit value in constant 1998 U.S. dollars.

World Production

World production represents mine production and is reported as recoverable nickel contained in the ore mined. Where actual mine output was not available, data related to a more highly processed form were used to indicate the minimum magnitude of mine output. In 1953, production data for countries once comprising the former Soviet Union were included for the first time. Data are sourced as follows: 1900–29, MS50; and 1930 to the most recent year, MYB.

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