



2009 Minerals Yearbook

ZINC

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In 2009, U.S. production of recoverable zinc was 710,000 metric tons (t), a 5% decrease from that of 2008 (table 1). The value of domestic mine production was approximately \$1.22 billion. Alaska continued to be the dominant zinc-producing State, accounting for 93% of recoverable production. Zinc was also produced from mines in Idaho, Missouri, Montana, Tennessee, and Washington. Estimated refined zinc production in 2009 was 203,000 t. Apparent consumption of refined zinc was 893,000 t, 12% lower than that of 2008. Domestic exports of zinc contained in ores and concentrates increased by 8% to 785,000 t in 2009 and were predominantly sent to Canada (29%), the Republic of Korea (24%), Spain (15%), and Japan (10%) (table 7). Imports for consumption of zinc contained in ores and concentrates increased by 17% to 74,200 t from those in 2008. Total U.S. refined zinc production in 2009 was estimated to have decreased by 29% to 203,000 t. Imports of refined zinc in 2009 decreased by 5% to 686,000 t. Refined zinc was imported primarily from Canada (80%), Mexico (12%), and Peru (7%). Domestic exports of refined zinc decreased by 294 t to 2,960 t in 2009. Global zinc mine production decreased by 3% to 11.2 million metric tons (Mt), and zinc metal production decreased by 3% to 11.4 Mt (tables 10, 11).

Legislative and Government Programs

A U.S. Government stockpile of zinc has been maintained since 1967 for national defense purposes. In 1992, Public Law 102-484, which authorized the disposal of the entire inventory of zinc from the National Defense Stockpile (NDS), was signed. The Defense Logistics Agency (DLA), which maintains the NDS, was authorized to sell 27,200 t of zinc during fiscal year 2009 (October 1, 2008, to September 30, 2009; actual quantity sold would be limited to remaining inventory). However, there were no sales of zinc during the fiscal year; sales of zinc from the NDS were suspended in August 2008 owing to concerns regarding domestic availability and access to various raw materials.

In August 2006, the Department of Defense (DOD) submitted an initial report to Congress that recommended a more detailed review of the current stockpile disposal policy. In January 2008, a working group was established to review the findings of the previous studies and the issues raised by Congress. In April, the working group submitted a report to Congress proposing to reconfigure the NDS. The report supported the NDS' action to temporarily suspend or limit the sale of 13 mineral commodities in the NDS inventory, identified 39 other materials that should be monitored to ensure future availability, and concluded that 11 materials used in the largest quantities by the DOD should be considered for strategic sourcing, including zinc (U.S. Department of Defense, 2009, p. 8, 58).

Production

Mine.—In 2009, zinc was produced in six States, with Alaska the leading zinc-producing State. Other zinc-producing States were Idaho, Missouri, Montana, Tennessee, and Washington. Domestic mine production of recoverable zinc in 2009 was 710,000 t, a 5% decrease from that of 2008. An increase in production in Alaska was offset by decreases in production in Montana, New York, Tennessee, and Washington owing to the closure of zinc-producing mines in these States. Domestic mine production data were collected by the U.S. Geological Survey (USGS) from a voluntary survey of lode-mine production from seven operations. Six responded representing 99% of the data in tables 1 and 2.

Alaska.—Teck Resources Ltd. (Teck; Vancouver, British Columbia, Canada) operated the open pit Red Dog zinc-lead mine in the Northwest Arctic Borough, Alaska, under a royalty agreement with NANA Regional Corp., an Alaskan Native-owned corporation. Since the third quarter of 2007, Teck has paid NANA a percentage of the net proceeds of the production from the mine, starting at 25% and increasing to 50% by successive increments of 5% every 5 years.

Zinc in concentrate production at Red Dog increased by 13% in 2009 from that of 2008 to a production record of 583,000 t owing to increased mill operating rates and several site-improvement initiatives that were implemented during the year. In 2009, approximately 30% of Red Dog's zinc concentrates were refined at Teck's metallurgical complex at Trail, British Columbia, Canada. Remaining concentrates were sent to Asia and Europe. Reported ore reserves at yearend 2009 totaled 57.6 Mt averaging 16.2% zinc. Zinc in concentrate production in 2010 was projected to decline to 550,000 t (Teck Resources Ltd., 2010a, p. 41, 44; 2010b, p. 27).

Teck continued to work towards receiving the required permits for the Aqqaluk Deposit, the next ore body to be developed at Red Dog. Teck's operating plan was to continue mining the Main Pit until mid-2011, at which time, the ore would be supplemented with ore from Aqqaluk to maintain efficient production rates. Permitting delays for Aqqaluk owing to various appeals and petitions may negatively affect future production at Red Dog. Red Dog was in compliance with the total dissolved solids limits according to the settlement filed in 2008 by the Village of Kivalina (Teck Resources Ltd., 2010b, p. 17).

Hecla Mining Co.'s (Coeur d'Alene, ID) underground Greens Creek Mine is in a polymetallic (silver-zinc-gold-lead) massive sulfide deposit located on Admiralty Island in the Tongass National Forest near Juneau. Products included gold and silver dore, as well as lead and zinc concentrates, which were exported to foreign smelters. In 2009, zinc in concentrate production

totaled 63,800 t. Reserves at yearend were 7.34 Mt of ore grading an average of 10.3% zinc (Hecla Mining Co., 2010b, p. 12).

Historically, Greens Creek was completely powered by onsite diesel generators. In 2006, necessary infrastructure was completed to allow surplus hydroelectric power supplied by Alaska Electric Light and Power Co. (AEL&P) to reach Greens Creek's facilities. During 2009, the mine received an increased proportion of its power needs from hydroelectricity, and the company expected most, if not all, of its power to be supplied from AEL&P in 2010. The project was expected to reduce Greens Creek's production costs, which had increased significantly owing to high diesel fuel prices during the past few years (Hecla Mining Co., 2010b, p. 12).

Idaho.—Hecla Mining operated the Lucky Friday Mine, an underground silver-lead-zinc mine in the Coeur d'Alene Mining District in northern Idaho. Products included silver-lead concentrates and zinc concentrates. All concentrates in 2009 were sent to Teck's facility at Trail for processing. Zinc in concentrate production at Lucky Friday increased in 2009 to 9,360 t from 8,510 t in 2008. At yearend, reserves measured 1.2 Mt of ore grading an average of 2.6% zinc (Hecla Mining Co., 2010a, p. 8; 2010b, p. 21).

During 2009, Hecla resumed the early stage development of an internal shaft that would provide access to ore reserves deeper than the current mining level and potentially extend Lucky Friday's mine life. The project had been placed on hold in 2008 owing to lower metals prices (Hecla Mining Co., 2010b, p. 15).

Missouri.—Doe Run Resources Corp. (St. Louis, MO) operated a series of production shafts that run along the Viburnum Trend lead-zinc-copper ore body in southeast Missouri. Doe Run processed the ore at four mills to produce primarily lead concentrates and to a lesser extent, zinc and copper concentrates.

Tennessee.—In May, Nyrstar NV (Balen, Belgium) acquired the Mid-Tennessee zinc mine complex from Strategic Resource Acquisition Corp. (Toronto, Ontario, Canada) for approximately \$12 million, and in December, Nyrstar acquired the East Tennessee zinc mine complex from Glencore International AG (Baar, Switzerland) for approximately \$116 million. The acquisitions were part of Nyrstar's strategy to begin pursuing mining opportunities that favor resources that support its existing smelting business markets (mainly, copper, gold, lead, silver, and zinc). The Mid-Tennessee mine complex had been on care-and-maintenance status since October 2008 because zinc prices declined during 2008. The East Tennessee complex had been on care-and-maintenance status since February 2009. Nyrstar planned to reopen and operate the six mines under the name Nyrstar Tennessee Mines. The combined production capacity for the mines was 130,000 metric tons per year (t/yr) of zinc in concentrate. The concentrates would provide 100% of the feedstock needs at Nyrstar's Clarksville, TN, zinc refinery. Mine life for the complex was projected to be 15 years (Nyrstar NV, 2010a, p. 26, 55, 80–81).

Washington.—Teck temporarily shut down the Pend Oreille zinc-lead mine in February as a result of reduced zinc metal demand and low zinc prices. The mine produced 4,800 t of zinc

in concentrate during 2009 before operations were suspended. All concentrates were trucked to Teck's operations at Trail, 80 kilometers (km) northwest of the mine. Teck acquired ownership of Pend Oreille in 1996 and reopened the mine for commercial production in 2004. Yearend reserves at Pend Oreille were 1.9 Mt of ore grading 6.1% zinc (Teck Resources Ltd., 2010a, p. 45; 2010b, p. 27).

Smelter.—Domestic zinc metal production data were estimated based on publicly available information. In 2009, refined zinc was produced mainly in two States—Pennsylvania (Horsehead Holding Corp.'s Monaca facility) and Tennessee (Nyrstar's Clarksville facility). Estimated refined zinc production in 2009 was 203,000 t.

Primary.—Nyrstar's Clarksville electrolytic zinc refinery was the only primary zinc smelter in the United States. Products included Special High Grade (SHG) zinc metal and galvanizing alloys as well as a number of byproducts, including cadmium metal, intermediate copper cementate, leach residues, sulfuric acid, and synthetic gypsum. Refined zinc production in 2009 decreased by 25% from that of 2008 to 94,000 t owing to reduced production levels the company voluntarily took during the first half of the year in response to the downturn in the zinc market. The refinery returned to full production in July once market conditions improved. Nyrstar scheduled a roaster shutdown for the second half of 2010, which would potentially reduce 2010 production by 10,000 t from its capacity of 125,000 t (Nyrstar NV, 2010a, p. 26; 2010b, p. 4).

Secondary.—Horsehead (Monaca, PA) produced zinc metal—primarily Prime Western Grade (PW) and to a lesser extent, Special Special High Grade (SSHG)—and zinc oxide at its electrothermic zinc smelter (159,000 t/yr capacity) in Monaca. The PW zinc was sold to hot-dip galvanizers and brass manufacturers, and the SSHG zinc was used as feed for the production of high-purity zinc alloys and powder. Feedstock for metal and oxide production was composed entirely of secondary materials; 65% was sourced from Horsehead's electric arc furnace (EAF) dust recycling operations, and the balance was composed of dross and skimmings sourced from hot-dip galvanizers and other zinc-bearing residues sourced from the zinc, brass, and alloying industries. In 2009, Horsehead entered into a long-term contract to source EAF dust from a leading U.S. steel minimill and acquired the EAF dust collection business of EnviroSAFE Services of Ohio, Inc., a landfill disposer of EAF dust (Horsehead Holding Corp., 2010, p. 3, 6–9).

In addition to the Monaca facility, Horsehead operated five other facilities, including four EAF dust recycling operations located in Beaumont, TX; Calumet, IL; Palmerton, PA; and Rockwood, TN; and a hydrometallurgical metals recovery facility in Bartlesville, OK. Total EAF dust processing capacity was 561,000 t/yr. The company planned to further increase its EAF dust recycling capacity by constructing a fifth facility in Barnwell, SC. The new facility would have the capacity to recycle 163,000 t/yr of EAF dust. The first kiln was expected to start running in the second quarter of 2010 (Horsehead Holding Corp., 2010, p. 3, 6–9).

Horsehead operated its recycling facilities at reduced rates for most of the year. In 2009, Horsehead recycled 373,000 t of EAF dust compared with 470,000 t in 2008. The company

attributed the processing rate reduction to a decline in domestic steel production and a weaker economy. At the end of the year, however, all facilities returned to operating at full capacity (Horsehead Holding Corp., 2010, p. 3, 6–9).

Secondary refined zinc was also produced to a lesser extent at U.S. Zinc's (owned by Votantim Metais, São Paulo, Brazil) operations in Coldwater, MI, and Houston, TX. The facilities produced PW grade and continuous galvanizing grade zinc metal primarily from galvanizing residues, such as dross and skimmings.

Consumption

Apparent consumption of refined zinc in 2009 was 893,000 t, 12% lower than that of 2008. Of the total zinc consumed, about 55% was estimated to be used in galvanizing, 21% in zinc-based alloys, 16% in brass and bronze, and 8% in other uses. Zinc compounds and dust were used principally by the agriculture, chemical, paint, and rubber industries. Infrastructure improvement projects (funded by the American Recovery and Reinvestment Act of 2009) and a rise in new vehicle sales (spurred by the “Cash for Clunkers” program) helped to boost activity in the automotive and construction markets, which use galvanized sheet and zinc alloys.

Prices and Stocks

The annual average London Metal Exchange, Ltd. (LME) cash price for SHG zinc in 2009 declined by 13% from that of 2008 to \$1,654.69 per metric ton (75.06 cents per pound). The monthly average price was \$1,187 per metric ton in January and rose to \$2,375 per metric ton in December. Despite the zinc metal market being in surplus during 2009, average monthly zinc prices increased, possibly owing to speculative investment as overall economic conditions improved during the year.

The annual average Platts North American producer price for SHG zinc in 2009, which was based on the LME cash price plus a premium, was 77.91 cents per pound. Monthly average North American SHG premiums began the year at approximately 3.10 cents per pound and decreased to about 2.75 cents per pound in July, after which premiums rose slightly to approximately 2.85 cents per pound by yearend.

Yearend stocks of SHG zinc in global LME warehouses increased to 489,125 t from 253,475 t at yearend 2008. Much of the increase during the year was from rising zinc inventories at U.S. warehouses—mainly in New Orleans, LA, and Detroit, MI.

World Industry Structure

Global zinc mine production decreased by 3% in 2009 from that of 2008 to approximately 11.2 Mt (table 10) as a result of numerous production cutbacks and mine closures. Production increases in several countries were not able to compensate for the significant production decreases in Australia, China, Peru, Poland, Portugal, and the United States. China (28% share of global production), Peru (13%), and Australia (12%) were the three leading producers of zinc in concentrate in 2009. Mine openings during the year, which added 314,000 t/yr of capacity, were more than offset by closures or cutbacks. Significant mine openings included Goldcorp Inc.'s Penasquito polymetallic mine

in Mexico (190,000 t/yr zinc in concentrate production capacity) and Iberian Minerals Corp.'s Aguas Tenidas copper-zinc-lead mine in Spain (58,000 t/yr of zinc in concentrate production capacity). Permanent and temporary mine closures reduced active production capacity by 477,000 t/yr. However, much of this reduction was temporary; 390,000 t/yr of capacity was expected to reopen in the near future (International Lead and Zinc Study Group, 2010b; 2011, p. 6).

Global zinc metal production decreased by 3% in 2009 from that of 2008 to 11.2 Mt (table 11) owing to voluntary production cutbacks at many smelters outside of China that were implemented to prevent an accumulation of zinc metal stocks. China (38% share of global production), Canada (6%), and Japan (6%) were the leading producers of refined zinc metal in 2009.

After declining since the third quarter of 2008, global zinc consumption began to recover during the second quarter of 2009. According to the International Lead and Zinc Study Group (ILZSG) data, annual global zinc consumption declined by 5% in 2009 from that of 2008 to 10.8 Mt. Consumption decreases in Europe (25%), Japan (23%), the Republic of Korea (22%), and the United States (11%) were moderated by an 18% increase in China (International Lead and Zinc Study Group, 2010b).

Outlook

Global economic activity was expected to continue to strengthen throughout the first half of 2010. In April 2010, ILZSG forecast an 11% increase in zinc consumption in 2010 from that in 2009 owing to increases in consumption in Europe, Japan, and the United States. China's consumption was expected to rise by 9% owing to continued expenditure on infrastructure and strong growth in the automotive and construction sectors (International Lead and Zinc Study Group, 2010a).

On the supply side, mine production was expected to increase by 6% in 2010 to 12.05 Mt owing to the reversal of mine suspensions and production curtailments that took place in 2009. Refined metal production was expected to increase by 10% to 12.5 Mt owing to the reversal of voluntary production curtailments at many Western smelters, the opening of Hindustan Zinc Ltd.'s Rajpura Dariba refinery in India, and China's estimated 11% increase in production. Overall, the zinc metal market was forecast to remain in substantial surplus in 2010 (International Lead and Zinc Study Group, 2010a).

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TABLE 1
 SALIENT ZINC STATISTICS¹

	2005	2006	2007	2008	2009	
United States:						
Production:						
Domestic ores, contained zinc	metric tons	748,000	727,000	803,000	778,000	736,000
Domestic ores, recoverable zinc	do.	720,000	699,000	769,000	748,000	710,000
Value, recoverable zinc	thousands	\$1,070,000	\$2,450,000	\$2,620,000	\$1,470,000	\$1,220,000
Refined zinc:						
At primary smelters	metric tons	195,000 ^e	113,000	121,000	125,000	94,000
At secondary smelters ^c	do.	156,000	156,000	157,000	161,000	109,000
Total	do.	351,000	269,000	278,000	286,000	203,000
Exports:						
Ores and concentrates, zinc content	do.	786,000	825,000	816,000	725,000	785,000
Refined (slab) zinc	do.	784	2,530	8,070	3,250	2,960
Zinc plates, sheets, strip, and foil	do.	8,760	3,780	4,310	4,970	6,160
Imports for consumption:						
Ores and concentrates, zinc content	do.	156,000	383,000	271,000	63,200	74,200
Refined (slab) zinc	do.	700,000	895,000	758,000	725,000	686,000
Zinc plates, sheets, strip, and foil	do.	3,630	2,050	2,160	3,330	3,010
Reported stocks of slab zinc, December 31:						
Producer and consumer	do.	71,100	60,000 ^f	55,000 ^f	56,000 ^f	49,000
Government stockpile	do.	45,100	15,300	7,730	7,490	7,490
Consumption, refined zinc:						
Reported	do.	466,000 ^f	501,000 ^f	436,000 ^f	370,000 ^f	306,000
Apparent ²	do.	1,080,000	1,190,000 ^f	1,040,000	1,010,000 ^f	893,000
Price ³						
North American	cents per pound	67.11	158.89	154.40	88.93	77.91
London Metal Exchange, cash	do.	62.66	148.53	147.03	85.01	75.06
World production:						
Mine	thousand metric tons	10,000	10,300	11,000	11,600 ^f	11,200
Smelter	do.	10,300 ^f	10,800 ^f	11,400 ^f	11,700 ^f	11,400

^eEstimated. ^fRevised. do. Ditto.

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

²Domestic production plus net imports, plus adjustments for Government and industry stock changes.

³Special High Grade. Source: Platts Metals Week.

TABLE 2
MINE PRODUCTION OF RECOVERABLE ZINC
IN THE UNITED STATES, BY STATE¹

(Metric tons)

State	2008	2009
Alaska ²	588,000	661,000
Other	160,000 ³	49,600 ⁴
Total	748,000	710,000

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

²Data based, in part, on publicly available information.

³Includes production from Idaho, Missouri, Montana, New York, Tennessee, and Washington.

⁴Includes production from Idaho, Missouri, Montana, Tennessee, and Washington.

TABLE 3
LEADING ZINC-PRODUCING MINES IN THE UNITED STATES IN 2009, IN ORDER OF OUTPUT¹

Rank	Mine	County and State	Operator	Source of zinc
1	Red Dog	Northwest Arctic, AK	Teck Alaska Inc.	Zinc-lead ore.
2	Greens Creek	Juneau, AK	Hecla Mining Co.	Zinc-silver ore.
3	Brushy Creek	Reynolds, MO	Doe Run Resources Corp.	Lead ore.
4	Lucky Friday	Shoshone, ID	Hecla Mining Co.	Silver ore.
5	Buick	Iron, MO	Doe Run Resources Corp.	Lead ore.
6	Pend Oreille	Pend Oreille, WA	Teck Washington Inc.	Zinc-lead ore.
7	Fletcher	Reynolds, MO	Doe Run Resources Corp.	Lead ore.
8	Montana Tunnels	Jefferson, MT	Apollo Gold Corp.	Gold ore.
9	East Tennessee Zinc Complex ²	Jefferson and Knox, TN	Glencore International AG	Zinc ore.
10	Viburnum (#29 and #35)	Washington and Iron, MO	Doe Run Resources Corp.	Lead ore.

¹The mines on this list accounted for more than 99% of recoverable U.S. zinc mine production in 2009.

²Coy, Immel, and Young Mines. In December 2009, Nyrstar NV (Brussels, Belgium) acquired the East Tennessee Zinc Complex from Glencore.

TABLE 4
REPORTED PRODUCTION OF ZINC PRODUCTS
FROM ZINC-BASE SCRAP IN THE UNITED STATES¹

(Metric tons)

Products	2008	2009
Redistilled slab zinc	171,000	115,000
Other zinc metal products ²	1,880	1,540
Zinc in chemical products	W	W
Zinc dust	26,300	22,200

W Withheld to avoid disclosing company proprietary data.

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

²Includes electrogalvanizing anodes, remelt die-cast slab, and other metal alloys.

TABLE 5
ZINC RECOVERED FROM SCRAP PROCESSED IN THE UNITED STATES, BY TYPE OF SCRAP¹

(Metric tons)

	2008	2009
Type of scrap:		
New scrap:		
Zinc-base	126,000 ^r	82,900
Copper-base	121,000 ^r	111,000
Magnesium-base	107 ^r	100
Total	246,000 ^r	194,000
Old scrap:		
Zinc-base	83,300	70,000
Copper-base	9,020 ^r	8,220
Aluminum-base	582 ^r	498
Magnesium-base	14	14
Total	92,900 ^r	78,800
Grand total	339,000 ^r	273,000

^rRevised.

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

TABLE 6
U.S. REPORTED CONSUMPTION OF ZINC IN 2009, BY INDUSTRY USE AND GRADE¹

(Metric tons)

Industry use	Special high grade	High grade	Prime western	Remelt and other grades	Total
Galvanizing	97,300	39,000	34,500	55,000	226,000
Zinc-base alloys	W	W	--	--	17,900
Brass and bronze	W	W	W	--	45,500
Other	16,100	W	W	--	17,200
Total	170,000	46,600	34,600	55,000	306,000

-- Zero.

W Withheld to avoid disclosing company proprietary data; included in "Total."

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

TABLE 7
U.S. EXPORTS OF ZINC ORES AND CONCENTRATES, BY COUNTRY¹

	2008		2009	
	Quantity (metric tons, zinc content)	Value (thousands)	Quantity (metric tons, zinc content)	Value (thousands)
Aruba	1	\$6	--	--
Australia	--	--	27,400	\$19,500
Belgium	53,000	35,200	27,400	25,600
Canada	261,000	277,000	226,000	151,000
Chile	73	70	--	--
China	69,900	57,200	44,900	43,900
Denmark	--	--	5	3
El Salvador	--	--	3	12
Finland	39,600	25,200	26,500	26,600
Germany	33,600	35,600	6,090	4,330
India	68	114	104	90
Israel	29	19	--	--
Italy	1	12	42,700	40,500
Japan	119,000	66,700	79,600	59,600
Korea, Republic of	116,000	85,200	189,000	167,000
Mexico	--	--	12	15
Panama	--	--	(2)	3
Saudi Arabia	9	15	--	--
Spain	32,600	14,900	116,000	118,000
Suriname	--	--	1	4
United Kingdom	68	78	46	26
Total	725,000	598,000	785,000	656,000

-- Zero.

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

²Less than ½ unit.

Source: U.S. Census Bureau.

TABLE 8
U.S. EXPORTS OF ZINC COMPOUNDS¹

	2008		2009	
	Quantity (metric tons, gross weight)	Value (thousands)	Quantity (metric tons, gross weight)	Value (thousands)
Chromates of zinc or of lead	17	\$157	56	\$293
Lithopone	350	1,400	666	3,000
Zinc chloride	1,840 [†]	2,110	1,800	2,750
Zinc oxide	39,900	61,700	17,300	31,100
Zinc sulfate	578	799	1,030	1,610
Zinc sulfide	6,850	10,300	4,510	8,720

[†]Revised.

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

Source: U.S. Census Bureau.

TABLE 9
U.S. IMPORTS FOR CONSUMPTION OF ZINC COMPOUNDS¹

	2008		2009	
	Quantity (metric tons, gross weight)	Value (thousands)	Quantity (metric tons, gross weight)	Value (thousands)
Chromates of zinc or of lead	298	\$1,310	32	\$101
Lithopone	1,850	1,960	1,550	1,520
Zinc chloride	462	1,780	249	964
Zinc oxide	114,000	192,000	69,200	98,500
Zinc sulfate	41,900	45,700	31,700	23,000
Zinc sulfide	2,450	4,380	1,570	2,990

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

Source: U.S. Census Bureau.

TABLE 10
ZINC: WORLD MINE PRODUCTION, BY COUNTRY^{1,2}

(Metric tons, zinc content of concentrate and direct shipping, unless otherwise specified)

Country	2005	2006	2007	2008	2009
Algeria	4,412 ^r	572 ^r	--	--	--
Argentina	30,227	29,808	27,025	30,349 ^r	30,000 ^e
Armenia ^e	3,000	2,932 ³	2,585 ³	4,200	3,900
Australia	1,367,000	1,362,000	1,514,000	1,519,000 ^r	1,290,000
Bolivia	158,582 ^r	172,747	214,053 ^r	383,618	421,721
Bosnia and Herzegovina ^e	3,000	1,000	2,000	5,000 ^r	2,000
Brazil	170,659	185,211	193,887	173,933	174,000 ^p
Bulgaria ^e	17,500	13,476 ³	12,206 ³	12,200	12,000
Burma	78 ⁴	46	10	20	45
Canada	666,654	637,956	622,985	716,078	698,901
Chile	28,841 ⁴	36,238	36,453	40,519	27,801
China	2,550,000	2,840,000	3,040,000	3,200,000	3,100,000
Congo (Kinshasa)	7,588	16,831	18,500	18,000 ^e	16,000
Finland	40,500	35,700	38,900	27,800	30,233
Georgia ^e	-- ^r	-- ^r	-- ^r	-- ^r	--
Greece	1,300	16,414	19,549	22,694	18,126
Guatemala	--	6,000	20,000	14,000	--
Honduras	42,698	37,646	29,211	28,462	36,370
India	477,100	501,700	538,900	613,600	695,000
Iran ^e	167,000	164,000	100,000	100,000	100,000
Ireland	429,464	425,756	400,898	398,158	385,670
Japan	41,452	7,169	--	--	--
Kazakhstan	364,300	404,600	446,000	459,000	480,000
Korea, North ^e	65,000	85,000	95,000	65,000	65,000
Korea, Republic of	77	16	4,067 ^r	3,672 ^r	4,000 ^e
Kosovo ⁵	430 ^r	2,230 ^r	2,460 ^r	4,900 ^r	3,690
Laos	3,410	1,100	1,100	1,100 ^e	1,000 ^e
Macedonia	--	11,000	24,000 ^r	29,000 ^r	32,000
Mexico	476,307	432,347	426,509	397,306	390,000 ^e
Mongolia	11,400	54,850	77,350	71,800 ^r	72,000 ^e
Morocco	128,000	95,000	57,700	96,900	98,000
Namibia ⁶	69,368	55,455	46,335 ^r	38,319 ^r	38,300 ^e
Peru	1,201,671	1,203,364 ^r	1,444,381 ^r	1,602,597	1,509,129
Philippines	--	--	7,364	1,619 ^r	10,035

See footnotes at end of table.

TABLE 10—Continued
ZINC: WORLD MINE PRODUCTION, BY COUNTRY^{1,2}

(Metric tons, zinc content of concentrate and direct shipping, unless otherwise specified)

Country	2005	2006	2007	2008	2009
Poland	135,600	126,000	124,000	125,000	100,000 ^e
Portugal	--	7,505	24,380	39,254 ^r	501
Romania	13,784	8,052	1,000	-- ^r	--
Russia ^c	180,000	190,000	185,000	204,000	225,000
Saudia Arabia	--	983	716	3,663	4,500 ^e
Serbia	1,000 ⁷	2,000	1,000	1,000 ^e	1,000 ^e
South Africa	32,112	34,444	30,859 ^r	29,002 ^r	28,159
Spain	--	--	--	--	6,500 ^e
Sweden	215,691	210,029	214,576	188,048 ^r	192,538
Thailand	47,250	32,100 ^r	32,921 ^r	17,811 ^r	34,000
Tunisia	15,889	--	--	--	--
Turkey	56,000	59,000	71,000	73,000	76,000 ^e
United States	748,000	727,000	803,000	778,000	736,000
Vietnam ^c	48,000	45,000	46,000	45,000	45,000
Total	10,000,000	10,300,000	11,000,000	11,600,000 ^r	11,200,000

^eEstimated. ^pPreliminary. ^rRevised. -- Zero.

¹World totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

²Table includes data available through July 7, 2010.

³Reported figure.

⁴Data are for fiscal year ending March 31 of the following year.

⁵On February 17, 2008, the Kosovo Assembly declared independence from Serbia.

⁶Does not include ores sent to solvent extraction-electrowinning plant.

⁷Montenegro and Serbia formally declared independence in June 2006 from each other and dissolved their union.

TABLE 11
ZINC: WORLD SMELTER PRODUCTION, BY COUNTRY^{1,2}

(Metric tons)

Country ³	2005	2006	2007	2008	2009
Algeria, primary ^c	32,000 ⁴	30,000	30,000	30,000	30,000
Argentina:					
Primary	37,460	42,584	42,876	39,479 ^r	40,000 ^e
Secondary	2,997	3,407	3,430	3,158 ^r	3,000 ^e
Total	40,457	45,991	46,306	42,637 ^r	43,000 ^e
Australia:					
Primary ⁵	457,300	463,000	502,000	499,000	525,000
Secondary ^e	6,000 ^r	6,000 ^r	6,000 ^r	6,000 ^r	6,000
Total	463,300 ^r	469,000 ^r	508,000 ^r	505,000 ^r	531,000
Belgium, primary	257,000 ^e	251,000	241,000	251,000 ^r	26,000
Brazil, primary	267,374	272,311 ^r	265,126	248,874 ^r	250,000 ^{p,e}
Bulgaria, primary and secondary	92,077	95,341	99,992	102,000 ^r	92,000
Canada, primary	724,035	824,464	802,103	764,312	685,504
China, primary and secondary ^c	2,780,000	3,170,000	3,740,000	4,000,000	4,360,000
Czech Republic, secondary ^e	250	250	250	250	250
Finland, primary	281,904	282,238	305,543	297,722	295,000
France, primary	267,524	127,777	129,110	117,861	161,000
Germany, primary and secondary	344,891	342,566	294,735	292,284	159,000 ^e
India:					
Primary	266,200	420,900	430,800	545,800	560,000 ^p
Secondary ^e	23,000	23,000	23,000	22,000	22,000
Total	289,200	443,900	453,800	567,800	582,000
Iran ^e	120,000	140,000	90,000	100,000	100,000
Italy, primary and secondary ^c	121,000 ⁴	109,000 ⁴	109,000	100,000	100,000
Japan:					
Primary	536,768	504,532 ^r	501,135	509,717 ^r	515,000 ^e
Secondary	138,453	148,715	137,560	122,859 ^r	128,000 ^e
Total	675,221	653,247 ^r	638,695	632,576 ^r	643,000 ^e
Kazakhstan, primary and secondary	364,821	364,821	358,226	365,561	328,834
Korea, North, primary and secondary ^c	72,000	72,000	75,000	75,000	75,000
Korea, Republic of, primary	644,828	662,521	690,000 ^r	738,000 ^r	623,000 ^e
Kosovo, primary ⁶	--	--	--	--	5,487
Mexico, primary	327,205	279,734	321,932	305,409	300,000 ^e
Namibia ⁷	132,800	129,900	150,080	145,400	150,400
Netherlands, primary	224,549	238,274	224,838	239,462	224,000 ^e
Norway, primary	151,285	160,670	157,027	145,469	138,973
Peru, primary	163,603	175,250	162,375	190,324	179,224
Poland, primary and secondary	137,300	134,000	142,000	143,000 ^{r,e}	140,000 ^e
Portugal, secondary ^e	2,000	--	--	--	--
Romania, primary and secondary	57,000 ^e	43,705	58,342	62,000 ^r	1,000
Russia, primary and secondary ^e	220,000	240,000	260,000	260,000	225,000
Serbia, primary and secondary ^e	1,800 ^{4,8}	15,000 ⁴	--	--	--
South Africa, primary	102,000	90,000	101,000	87,000	87,000 ^e
Spain, primary and secondary	506,230	507,440	494,090	456,050	500,776
Thailand, primary	60,866 ^r	94,779 ^r	99,337 ^r	107,753 ^r	100,000 ^e
United States:					
Primary	195,000 ^e	113,000	121,000	125,000	94,000
Secondary ^e	156,000	156,000	157,000	161,000	109,000 ⁵
Total	351,000	269,000	278,000	286,000	203,000

See footnotes at end of table.

TABLE 11—Continued
ZINC: WORLD SMELTER PRODUCTION, BY COUNTRY^{1,2}

Country ³	2005	2006	2007	2008	2009
Uzbekistan, primary	35,030	45,000 ^e	71,800	70,445	40,000 ^e
Grand total	10,300,000 ^f	10,800,000 ^f	11,400,000 ^f	11,700,000 ^f	11,400,000
Of which:					
Primary	5,030,000 ^f	5,080,000	5,200,000 ^f	5,310,000 ^f	4,880,000
Secondary	329,000 ^f	337,000 ^f	327,000 ^f	315,000 ^f	269,000
Undifferentiated	4,950,000	5,360,000	5,870,000	6,100,000 ^f	6,230,000

^eEstimated. ^pPreliminary. ^fRevised. -- Zero.

¹World totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

²Wherever possible, detailed information on raw material source of output (primary—directly from ores, and secondary—from scrap) has been provided. In cases where raw material source is unreported and insufficient data are available to estimate the distribution of the total, that total has been left undifferentiated (primary and secondary). To the extent possible, this table reflects metal production at the first measurable stage of metal output. Table includes data available through June 23, 2010.

³In addition to the countries listed, Israel also produces small amounts of secondary zinc, but available information is inadequate to make reliable estimates of output levels.

⁴Reported figure.

⁵Excludes zinc dust.

⁶On February 17, 2008, the Kosovo Assembly declared independence from Serbia.

⁷Special high-grade electrowon cathodes from Anglo American plc's Skorpion solvent extraction-electrowinning plant.

⁸Montenegro and Serbia formally declared independence in June 2006 from each other and dissolved their union.