

COPPER

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Mine production of recoverable copper in the United States was essentially unchanged from the record-high level of 1.85 million metric tons established in 1994. However, because of a rise in average copper prices, the estimated value of production rose by more than 27%, to \$5.6 billion. The United States maintained its position as the world's second largest mine producer of copper, accounting for about 19% of world production. Chile, which experienced a 12% growth in production, was the largest mine producer and accounted for about 25% of production.

Thirty-eight mines operating in 11 States produced reportable quantities of copper; the top 18 mines accounted for more than 98% of production. The six principal mining States, in descending order, Arizona, Utah, New Mexico, Montana, Wisconsin, and Michigan, accounted for more than 99% of production. Although two copper mines closed during the year, U.S. production was maintained through incremental expansions at several other mines. Mine capacity in 1995 was estimated at 2.08 million tons, an increase of about 60,000 tons from that of the previous year. Production was expected to increase slightly in 1996 with startup of a new mine and increased capacity utilization from 1995 expansions. In an effort to increase capacity and reduce average production costs, U.S. copper companies continued to invest heavily in their properties in Chile and Peru.

During the year, 8 primary and 4 secondary smelters, 8 electrolytic and 6 fire refineries, and 14 electrowinning plants operated in the United States. However, by yearend, a primary smelter and an electrolytic refinery in Michigan, an electrolytic refinery and a rod mill in South Carolina, and a rod mill in Virginia had closed.

Electrowon production rose by almost 10% from that of the previous year and accounted for 29% and 28%, respectively, of domestic mine production and refinery production. Conversion of old scrap to alloys and refined copper declined significantly for the second consecutive year following closure of a secondary smelter/refinery, but contributed 433,000 tons of copper to the market, a quantity equivalent to about 17% of industrial copper consumption. Exports of unalloyed copper scrap rose by more than 50%.

Copper was consumed, both as refined copper and as direct melt scrap, at about 35 brass mills; 15 wire rod mills; and 600 foundries, chemical plants, and miscellaneous consumers. According to data compiled by the Copper Development Association Inc. on mill product shipments to the U.S. market, copper and copper alloys found both structural and electrical use in building construction (40%), electrical products (25%), industrial machinery and equipment (12%), transportation equipment (13%), and consumer and general products (10%).

Though its share of the world totals declined slightly, the

United States retained its position as both the largest producer and consumer of refined copper, accounting for 19% and 22%, respectively. Domestic consumption of refined copper declined by more than 5% from the record-high level in 1994, yet remained 7% above the 1993 level. The annual growth rate for copper consumption since 1991 has averaged more than 5.6%. With a drop in consumption, the net import reliance for refined copper, as a percentage of apparent consumption, fell from 13% in 1994 to 6% in 1995. Canada was the largest U.S. trading partner for unwrought copper, accounting for 66% of refined imports and 49% of all imports of unwrought copper, and 38% of unwrought copper exports. Japan and Taiwan were the largest recipients of refined copper, together accounting for 59% of refined exports.

Copper was mined in about 50 countries in 1995, of which the top 2, Chile and the United States, accounted for more than 44%, and the top 10 for about 76% of the world total. The world reserve base was estimated at 610 million tons, and world reserves at 310 million tons. The United States had about 15% each of reserves and the reserve base.

Following a sharp decline in reported world inventories of copper in 1994, world production and consumption of refined copper were nearly in balance in 1995. Inventories held on the London Metal Exchange (LME) and the New York Commodity Exchange (COMEX) were down only a nominal 20,000 tons in 1995, after having fallen by more than 300,000 tons in 1994 (51%). However, owing to the severe drawdown in inventories in 1994, copper availability remained tight and average annual copper prices were at record-high levels. The U.S. producer price traded within a \$0.25-per-pound range and averaged \$1.38 for the year.

Production

Mine production of copper in the United States remained essentially unchanged in 1995, because capacity expansion at several mines was offset by closure and ore depletion at several other mines. Total domestic mine capacity in 1995 rose by about 60,000 tons to 2.08 million tons. Notable capacity expansions included startup of underground operations at ASARCO Incorporated's Mission complex and commissioning of the Southside Extension open pit leaching operations at Phelps Dodge Corp.'s Morenci Mine.

At the end of September, the Inmet Mining Corp.'s White Pine underground mine, which had been operating below capacity, was shut indefinitely pending evaluation of an in situ leach study. Depletion of oxide reserves at the San Manuel open pit led to lower solvent extraction-electrowinning (SX-EW) production, and a depletion of sulfide reserves at Twin Buttes led to lower production at the Sierrita-Twin Buttes

operation. Reserves were exhausted at the Pinos Altos Mine in New Mexico, which closed during the third quarter of the year.

Several small mines, including Arimetco International Inc.'s Zonia and Van Dyke Mines, and Great Lakes Minerals Inc.'s 543-S deposit, were scheduled to come on-stream during 1995 but failed to do so. Van Dyke and Zonia were awaiting permitting, and the 543-S was being reevaluated in light of projected lower copper prices.

Capacity utilization at domestic mines averaged about 90% in 1995, unchanged from that in 1994. Capacity utilization had trended upward since 1982, when low prices and relatively high production costs resulted in the closure of a number of U.S. mines and a 61% utilization rate. Restructuring of the domestic copper industry, coupled with higher copper prices, led to capacity utilization rates of between 83% and 87% during the 1987-93 period.

Productivity at domestic copper mines, as calculated from employment data compiled by the Mine Health and Safety Administration, declined slightly from the record-high 66 kilograms of copper per worker-hour in 1994 to 64 kilograms in 1995. Productivity had been steadily improving since 1989, when only 50 kilograms of copper per worker-hour were produced.

Both primary and secondary smelter production declined sharply in 1995. Inmet Mining Corp., owners of the Copper Range Co., suspended smelting operations at its 75,000-ton-per-year White Pine, MI, smelter at the end of February. The associated refinery continued to operate using anode imported from Canada. Production at Kennecott's Garfield, UT, replacement flash furnace remained well below its 282,000-ton capacity owing to a series of startup difficulties.

Despite underutilization at Kennecott's Garfield refinery, primary refined production rose by 5% to a record-high level owing to expansions of both electrolytic and electrowinning capacity. Secondary refinery production fell by 18% owing to closure of Southwire's Gaston facility at yearend 1994.

Capacity at domestic smelters and refineries rose to 2.0 million and 2.7 million tons, respectively. Capacity utilization at domestic smelters and refineries followed a trend similar to that of mines. After peaking in 1994 at 89% and 85%, respectively, both smelter and refinery utilization rates declined in 1995, to 80% and 83%.

Foreign Investments.—Domestic copper companies continued to invest heavily in their South American properties to increase their capacity and lower their average production costs. In Chile, construction began in February at Cyprus's El Abra Project; Cyprus acquired a 51% interest in the Corporación Nacional del Cobre de Chile (Codelco) property in June 1994. Mine development was under way and startup of SX-EW production was slated for the fourth quarter of 1996. Capacity of 225,000 tons of electrowon copper per year was expected to be reached in early 1997.¹ Phelps Dodge produced 150,000 tons of copper in concentrate during its first full year of production at its Candelaria Mine in Chile. At its Ojos del Salado Mine, Phelps Dodge began construction of a third underground mine, the Alcaparrosa Project, to maintain the current production level of about 20,000 tons per year.²

In Peru, Magma Copper Co., which had acquired the Tintaya copper project late in 1994 for \$243 million plus a commitment to invest \$85 million over 5 years, announced a \$37.3 million investment program for 1995 to include exploration, fleet modernization, new concentrator equipment, and a feasibility study for a 36,000-ton-per-year SX-EW operation. By May, mill throughput had been increased by about 60%. A new open pit in the Chabuca Sur deposit was under consideration.³ Cyprus Amax was expanding SX-EW capacity from 30,000 tons to 45,000 tons at its recently acquired (91.5% in March 1994) Cerro Verde operation. A new oxide deposit, Cerro Negro, was discovered about 5 kilometers west of existing operations.⁴ Asarco increased its ownership in Southern Peru Copper Corp. (SPCC) from 43.2% to 52.3%. By yearend, SPCC had completed most of a \$445 million expansion project begun in 1992 that included purchase of the Ilo refinery (May 1994), construction of a new smelter acid plant, and construction of a 36,000-ton-per-year SX-EW plant, which was commissioned in November 1995.⁵

In Indonesia, Freeport-McMoRan Copper and Gold Inc. and Fluor Daniel Inc. agreed to a joint venture with Mitsubishi Materials Corp. to build and operate a 200,000-ton-per-year copper smelter and refinery in Gresik, East Java, at an estimated cost of \$550 million. Freeport also completed a mill expansion at its Grasberg operations.⁶

Costs and Earnings.—Most domestic copper mining companies reported record profits from copper operations in 1995 owing to high production levels, lowered operating costs, and record-high copper prices. According to the company annual report, Phelps Dodge Mining Co. nearly tripled its operating income, to \$897 million, from production of almost 650,000 tons of copper, up from 520,000 tons in 1994. The company reported unit operations costs for copper production to be essentially unchanged from those of 1994. Its reported net income rose from \$271 million in 1994 to \$746 million in 1995. Asarco reported an operating income and net earnings of \$487 million and \$169 million, respectively, up from \$64 million and \$18.3 million, respectively, in 1994. The company reported a record copper mine production of 560,000 tons and a record refined production of 671,000 tons of copper from Asarco-operated facilities. In its form 10-K report, Cyprus Amax Minerals Co. reported operating income from copper-molybdenum operations of \$584 million, up from \$206 million in 1994, from a record production of 312,000 tons of copper and 34,000 tons of molybdenum. The company reported a drop in net cash costs for copper production from 69 cents per pound in 1994 to 57 cents in 1995. An increase in byproduct molybdenum credits (31 cents per pound compared with 14 cents in 1994), which accounted for the cost reduction, was partially offset by higher costs associated with prestripping at Miami and Cerro Verde, lower ore grades at Bagdad and Sierrita, and a higher stripping ratio at Sierrita.

In November, Broken Hill Proprietary Co. Ltd. (BHP) of Australia announced a planned acquisition of Magma Copper. In early January 1996, BHP reported having received offers for 87% of Magma's outstanding common shares at its tendered price of \$28 per share. The acquisition cost was estimated at

\$2.4 billion, including the assumption of about \$600 million in Magma debt. With the purchase of Magma, BHP became the world's second largest producer of copper, with production in excess of 800,000 tons of copper per year, and formed a new operating entity, BHP Copper Group, headquartered in San Francisco. BHP already owned 57.5% of Escondida in Chile, the world's largest copper project in terms of annual mine output.⁷ Magma had reported a net income for the first three quarters of 1995 of \$158 million. This compares with a total 1994 net income of \$87 million. Higher copper prices and increased sales from Peruvian operations accounted for the increase.⁸

Mines, Smelters, and Refineries.—According to the company's annual report, domestic copper mine production by Asarco-operated mines, including Montana Resources (49.9% control), was a record 307,000 tons. Concentrate production at the Ray Mine in Arizona rose about 21,000 tons, to 118,000 tons, as a result of an accelerated mine development program that was completed in August, 4 months ahead of schedule. The development program provided additional working faces and restored "operating flexibility" following flooding in 1992-93. Following a \$5 million investment, production, which had been curtailed during the redevelopment at Ray, was restored to the older part of the Hayden mill. At the Mission Mine in Arizona, declines were being driven from the bottom of the open pit to allow for underground mining of an estimated 4.6 million tons of ore grading 2.1% copper. Underground production was expected to yield an additional 13,000 tons of copper per year, beginning mid-1996. A fleet modernization (trucks and shovels) was also underway at both Mission and Ray. Construction of a new 12,000-ton-per-year SX-EW plant at the Silver Bell Mine in Arizona was initiated, with startup scheduled for mid-1997. Mitsui and Co. Ltd. of Japan retained a 25% interest in the \$70 million project. Since 1984, when mining and milling were suspended, Silver Bell has generated only a small quantity of precipitate production. Asarco reported yearend reserves at its domestic operations of 12.2 million tons of contained copper. It reported that production at its El Paso smelter increased almost 30%, to 115,000 tons, and that the smelter was operating at 96% of capacity, following modifications to the CONTOP furnace made in late 1993.

According to the company annual report, mine production at Phelps Dodge-operated U.S. operations, including minority participants share of 155,000 tons, rose by 6% to a record-high 619,000 tons. Total company production, including La Candelaria and Ojos del Salado, but excluding minority participation, rose about 25% to 646,000 tons, making Phelps Dodge the second largest copper producer in the world after Chile's Codelco. However, with the acquisition of Magma Copper early in 1996, BHP supplanted Phelps Dodge as the number 2 producer. At Phelps Dodge's Morenci, AZ, open pit, production increased by 27,000 tons, to a record 397,000 tons, owing to startup of its \$200 million Southside Extension project, with an annual capacity of 68,000 tons of electrowon copper. Total SX-EW production and capacity at Morenci rose to 205,000 tons and 227,000 tons, respectively. In New Mexico, concentrate and SX-EW production at its Chino Mine

operations rose to a combined record production of 153,000 tons. Construction of a \$16 million tertiary grinding circuit was completed at the Chino mill. Electrowon production at the Tyrone Mine rose slightly, to 64,000 tons. The Hidalgo smelter set a record production of 224,000 tons of anode, surpassing its 1994 record by 13,500 tons.

In late 1995, Phelps Dodge purchased the Sanchez property in the Safford district in Arizona, along with a 70% share of the Piedras Verde copper deposit in Sonora, Mexico, from Azco Mining Inc. It anticipated developing a project, beginning by late 1998, in the Safford district that could include its Sanchez, Dos Pobres, and San Juan resources. Based on completed feasibility studies at Dos Pobres, Phelps Dodge added 330 million tons of milling ore grading 0.65% copper and 285 million tons of leaching ore grading 0.39% copper to its reported copper reserves. It reported total domestic reserves at Phelps Dodge-controlled operations of 13.95 million tons of contained copper. Not included in reserves is 19 million tons of copper contained in potentially developable copper resources controlled by Phelps Dodge. In December, RTZ Corp. PLC (RTZ) and CRA Ltd. (CRA) merged to form the RTZ-CRA Group. According to the Group's combined annual report, mine production at its wholly owned Kennecott Utah Copper's Bingham Canyon Mine was unchanged in 1995 at 308,000 tons. The new replacement flash smelter was commissioned during the first half of the year but was plagued by successive startup problems, including the failure of a cooling element in the flash converter and failure of the heat recovery system at the acid plant, that continued into 1996. Consequently, refined output declined in 1995 by 41% from the already depressed 1994 level. Refinery production had been reduced in 1994 owing to startup problems associated with refinery modernization. Production at Kennecott's Flambeau Mine in Wisconsin fell by 6% owing to declining ore grades. Reserves at Flambeau were expected to be exhausted by yearend 1997.

In its 1995 annual report, Cyprus Amax reported domestic copper production of 277,000 tons, a nominal increase over the previous year's production. At the Bagdad, AZ, open pit, higher throughput at the expanded concentrator compensated for lower ore grades. Electrowon production of 14,000 tons was essentially unchanged. At the Sierrita/Twin Buttes operations in Arizona, production declined slightly, to 109,000 tons, in part owing to depletion of Twin Buttes sulfide reserves early in 1994. Ore had been transferred to Sierrita via a 10-kilometer conveyor system. At Miami, AZ, production of electrowon cathode rose by 8%, to 59,000 tons. Expansion of SX-EW facilities to 73,000 tons was completed during the year. At Tohono, near Casa Grande, AZ, SX-EW from ore mined from a test open pit increased about 40%, to a total of 15,000 tons. At the Miami smelter, production rose 24% owing to replacement of a gas cooling hood, and the new 172,000-ton-per-year refinery, completed late in 1994, was operating at full capacity by yearend 1995. The Pinos Altos Mine in New Mexico closed during the fourth quarter of 1995 owing to depletion of ore.

Arimetco International Inc. reported a record production of 9,300 tons of electrowon copper, up slightly from that of the

previous year, from its two operating properties, the Johnson Camp in Arizona and the Yerington-MacArthur property in Nevada. Significant upgrades to the Johnson Camp Mine during 1995 included a new fleet of trucks, commissioning of a 3-stage crusher late in the year, and construction of a new leach pad. A tank house expansion planned for 1996 is expected to raise capacity to 6,600 tons per year. Expansion of the MacArthur leach pads continued, with new capacity projected to reach 10,800 tons per year. During 1995, a 725-ton-per-hour crushing plant and acid cure system were installed, and by yearend, mining had commenced at the MacArthur pit. Prior to mining at MacArthur, production had been exclusively from Yerington stockpiles.

During the year, Arimetco purchased the assets of the Paradise Peak gold leach project, adjacent to its Sullivan property in Nevada, from FMC Gold. Arimetco planned to use the existing infrastructure and permits at Paradise Peak to facilitate production of copper and gold from Sullivan. Gold production from Paradise was scheduled to restart in 1996. In Arizona, development of a 10,000-ton-per-year SX-EW operation at Zonia was still awaiting permitting. At Emerald Isle, reserves were reevaluated to reduce stripping, anticipated mine life was shortened, and plans were developed for a 1996 resumption of mining, production having last occurred in 1993. Development remained on hold at Arimetco's Van Dyke Mine in Arizona, the Mesaba property in Minnesota, and the Yerington sulfide project in Nevada.

Magma Copper Co., which was purchased by BHP in January 1996, was continuing to invest in its domestic operations. In Arizona, development of the Kalamazoo ore body was proceeding on schedule, with phase-in as a replacement for overlying San Manuel ore body expected during 1997. The Kalamazoo deposit is expected to extend mine life by 12 years. In January 1995, Magma ceased open pit mining of the San Manuel oxides. Though Magma anticipated increased production from in situ leaching, electrowon capacity was expected to drop from the current 32,000 tons per year to 23,000 tons per year by 1997. In August, Magma announced plans to develop its Poston Butte copper deposit near Florence, AZ, using in situ mining technology and SX-EW. Plans call for recovery of 34,000 tons of copper per year over a 15-year period beginning in early 1998. Magma estimated leachable oxide reserves of more than 400 million tons grading 0.34% copper. When commissioned, Poston Butte would become the first commercial-scale in situ mining that did not depend on preexisting underground workings for solution recovery. Development was on schedule for a first quarter 1996 startup for the Robinson Mine in Nevada. Magma anticipated a 15-year mine life at a production rate of about 70,000 tons per year of copper in concentrate.⁹

Trade

In response to lower demand and increased domestic refined production, U.S. import dependence for refined copper declined to about 7% from the high 13% level experienced in 1994. Net imports of refined copper declined in 1995 by 33% (111,000

tons). The decline in net imports was moderated by a rise in commodity exchange inventories; 68,000 tons of copper, that might have been exported, was delivered to the new LME warehouse in California. Canada continued to be the largest source of refined copper, accounting for about two-thirds of refined imports. Net exports of copper concentrate fell by 38% (68,000 tons), despite a 6-month period when concentrate from the White Pine Mine was exported to Canada for treatment. Return of anode from Canada to the United States resulted in a rise in imports of anode and blister.

According to Bureau of the Census data compiled by the Copper and Brass Fabricators Council, U.S. net imports of all copper and copper alloy semifabricated products in 1995 (91,400 tons) was essentially unchanged from the 1994 level. In 1995, Canada was the largest recipient of semifabricated copper exports (42%), and Mexico was the largest source of imports (17%). Although, the U.S. trade pattern with Canada was essentially unchanged in 1995, Mexico switched from being a net importer of semifabricates from the United States in 1994 (17,000 tons) to being a net exporter in 1995 (14,000 tons).

Prices and Stocks

The global supply-demand balance for refined copper, which showed a large deficit in 1994, was in near balance during 1995. In the United States, stocks of refined copper rose by 44,000 tons owing to the yearend rise in inventories held in newly opened U.S. LME warehouses. Although the LME established warehouses in the United States early in the year, it was not until July, when a sustained LME price premium over Comex developed, that material began flowing into LME warehouses in Long Beach, CA. Domestic LME inventories continued to rise throughout the year, even with the return of a Comex premium in October and November. Domestic inventories, exclusive of those held in LME warehouses, actually declined from the low levels established at yearend 1994.

Copper prices throughout 1995 remained at or near the high values established at yearend 1994 and reached a record high annual average. The Comex spot price traded within a reasonably narrow band, with a yearly low of \$1.21 in October and a high of \$1.46 in June. The tight global supply that led to the sharp rise in prices at yearend 1994 prevailed throughout the year. Prices on both Comex and the LME were in backwardation throughout the year; i.e., spot contracts traded at a premium to futures contracts. The cash to 3-month premium on Comex averaged almost \$0.17 per pound for the year, reflecting both the tightness of material available for spot delivery and the market's anticipation of increasing supplies.

Consumption

Domestic consumption of refined copper declined by about 6% in 1995 from the record-high level of 1994, yet remained 7% above consumption in 1993; the annual consumption growth rate for the 1992-94 period averaged more than 9%. Copper consumption was particularly weak during the second half of the

year. In mid-September, Southwire closed its Gaston rod mill, which had operated on purchased cathode following closure of the associated smelter and refinery in January. At the end of September, Westinghouse Electric Co. closed its wire rod mill in Abington, VA. The two facilities had a combined annual capacity of about 225,000 tons of rod. With most remaining rod mills operating near their combined capacity of 2.0 million tons, there was some industry concern over future wire rod availability.

According to data compiled by the Copper Development Association Inc. (CDA), shipments of copper and copper alloy products to the U.S. market by fabricators, including net imports, declined by about 2% in 1995. Building construction, the largest end use, accounted for 40% of shipments; electric and electrical products, 25% of shipments; industrial machinery, 12% of shipments; transportation equipment, 13% of shipments; and consumer and general products, 10% of shipments.

World Review

The global supply-demand balance for refined copper, which showed a large deficit in 1994, was in near balance during 1995. Combined inventories on the LME and Comex, which had fallen by 340,000 tons in 1994, declined by only 20,000 tons, to 306,000 tons. According to data compiled by the International Copper Study Group (ICSG), total world inventories, including producers, consumers, and merchants, may have risen slightly. However, ICSG calculations of global supply balance, production minus consumption, indicate a significant global deficit. The disparity between supply-demand balance and stock change was the subject of industry review.

According to ICSG data, world demand for refined copper increased by 300,000 tons, or 2.7%, despite the decline in U.S. demand. Most of the increase in demand came from the newly industrialized Asian countries. Although demand in Japan increased by 40,000 tons, or 3%, it remained 12% below its 1991 level. European demand rose by 2.4%; increased demand in France, Germany, Italy, and several eastern European countries was partially offset by declines in Belgium and Poland. Production of refined copper, which had declined by more than 20,000 tons in 1994, rose in 1995 by 480,000 tons to a record-high level. Almost one-half, 240,000 tons, of the increased production came from new or expanded SX-EW facilities, principally in Chile and the United States, where SX-EW production rose by 30,000 and 170,000 tons, respectively.

World mine production rose by 550,000 tons, almost 6%, to a record-high level, with North and South America accounting for most of the increase. In Canada, production rose by more than 100,000 tons owing to reactivation of idled capacity in British Columbia, including the Afton and Similco Mines, increased production from the Louvicourt Mine in Quebec following startup in 1994, and startup of several small mines during the latter half of 1995. At the end of 1995, BHP Minerals Canada Ltd. closed the 45,000-ton-per-year Island Copper Mine owing to reserves depletion. Exploration continued on Diamond Fields Resources Inc.'s Voisey Bay

nickel-copper-cobalt deposit where more than 100 million tons of resources has been indicated by the company. Feasibility studies were scheduled for completion in 1996.¹⁰ In Mexico, two mines in Sonora, La Caridad and Cananea, accounted for about 87% of mine production. At La Caridad, which accounted for about 50% of Mexican production, a new 20,000-ton-per-year SX-EW plant began operation in June 1995.¹¹

In Chile, mine production rose by more than 250,000 tons, or 12%. At Phelps Dodge's Candelaria Mine, which experienced its first full year of operation, production rose by 122,000 tons, to 150,000 tons. The Cerro Zalvidar open pit SX-EW facility began production late in the year and was expected to reach full capacity of 125,000 tons per year in 1997. At the Antos Blancos Mine, a new 42,000-ton-per-year SX-EW plant began production early in the year from the Manto Verde oxide deposit. At Codelco's Quebrada M deposit, startup of a 25,000-ton-per-year SX-EW operation began late in 1994. According to the RTZ-CRA annual report, production at the Escondida Mine declined slightly from that of the previous year owing to troublesome ore conditions, though at yearend the mine was reportedly operating at an annual rate of 500,000 tons of copper. The Phase 3 expansion at Escondida was expected to boost capacity to 800,000 tons per year beginning in mid-1996, making it the largest copper mine in the world.

In Peru, Cyprus initiated an expansion program at its Cerro Verde oxide operation acquired early in 1994 that boosted production 50% to about 30,000 tons of electrowon copper. Production was expected to rise to 45,000 tons with completion of the expansion. Southern Peru Copper Corp.'s new 36,000-ton-per-year SX-EW plant at its Toquepala Mine was commissioned in October 1995. The Tintaya Mine, acquired by Magma in November 1994, increased production by 41% in 1995, to 66,000 tons, as a result of modernization of the concentrator and mining fleet.

In Indonesia, Freeport-McMoRan Copper & Gold Inc. reported that it had completed a mill expansion during the second quarter of the year that boosted capacity by about two-thirds, to 125,000 tons of ore per day. According to the company's annual report, the mill averaged 112,000 tons of ore per day, up from 72,500 tons in 1994, and recoverable copper production rose by 122,000 tons, to 444,000 tons. During the first half of the year, RTZ Corp. PLC purchased a 12% interest in Freeport's Indonesian operation and agreed to form joint ventures for future exploration activities. Freeport reported yearend reserves of 1.9 billion tons grading 1.17% copper, 1.18 grams of gold, and 3.78 grams of silver per ton. Commensurate with mine expansion, Freeport was proceeding with a doubling of its smelting and refining capacity to 270,000 tons of copper at its complex in Huelva, Spain.

Estimated world smelter production rose by about 270,000 tons, or 2.7%, in 1995 in response to increased production of concentrate. While capacity utilization was down in 1994, and theoretical capacity rose by almost 200,000 in 1995 to 12.8 million tons, a modest smelter bottleneck developed by yearend. In the United States, which accounted for about one-half of the increase, effective capacity was greatly reduced with the closure

of both the White Pine and Gaston smelters, and the startup difficulties at Kennecott's new smelter. Consequently, spot treatment and refining charges, which had been at very low levels during 1994, rose throughout the year. According to data published by CRU International Ltd., spot treatment and refining charges rose from less than 14 cents per pound of payable copper during the fourth quarter 1994 to more than 30 cents per pound during the fourth quarter of 1995. Spot treatment and refining charges had averaged 22 cents per pound in 1993.

Outlook

U.S. mine production is expected to increase in 1996 by about 50,000 tons, with modest expansions of electrowinning operations and the startup of BHP's Robinson Mine and a new underground mine at Asarco's Mission Complex. Startup of Great Lakes Mineral's 543-S deposit, originally scheduled for 1996, was delayed by the permitting process. Capacity could increase an additional 50,000 tons in 1997 with full utilization at Robinson and the startup of several smaller mines.

Refinery production is expected to increase by about 50,000 tons as increases in primary refined electrowon and electrolytic production are partially offset by a decline in electrolytic scrap recovery. The Kennecott smelter continued to experience startup difficulties in 1996 and low capacity utilization at its refurbished refinery. Domestic refined production is projected to rise by more than 100,000 tons in 1997, assuming Kennecott's smelter achieves projected operating rates.

Consumption of refined copper, which declined in 1995 following 3 years of exceptional growth, was up by about 1% during the first half of 1996 from that of the equivalent 1995 period, and appeared to be gaining momentum. Consumption for the full year 1996 is projected to rise about 3% above the 1995 level. Net imports of refined copper, which during the first half of 1996 rose to 207,000 tons, nearly triple those of the first half of 1995, are expected to provide material to accommodate the increased demand in 1996.

World mine capacity is expected to grow rapidly in the next several years. According to data compiled by the ICSG, world mine capacity can be expected to grow by about 600,000 tons in 1996. World consumption, assuming a 3% growth rate, is expected to grow by about 400,000 tons. The near market balance that prevailed during 1995 is expected to continue through most of 1996; low capacity utilization coupled with a modest smelter bottleneck is expected to moderate the increase in refined production. According to ICSG projections, mine capacity is projected to rise between 530,000 and 660,000 tons in 1997. Greater production from rising capacity utilization at existing mines and from new capacity is expected to outstrip a projected 2% to 3% growth in world demand and lead to a modest surplus in supply. Beyond 1997, mine capacity growth is expected to accelerate and outstrip growth in production. Capacity at operating mines or mines now under development is projected to rise from the current 11.2 million tons to 14 million tons by the year 2000. About 1.1 million tons of the

increase is projected to come from SX-EW production. An additional 1.7 million tons of new capacity could be realized from mines in feasibility or exploration stages of development. Chile is expected to account for most of the increase, where capacity is expected to grow from the current 2.57 million tons to as much as 4.55 million tons. Significant increases are also projected for Argentina, Australia, Canada, Indonesia, Peru, and the Philippines.

With new smelter projects under consideration in more than a dozen countries, smelter capacity could rise by the year 2000 by more than 2 million tons, thus keeping pace with the projected 1.7 million tons of projected growth in copper contained in concentrates. If mine projects now in the formative stage of development were to come on-stream by the year 2000, mine capacity could reach as much as 15.7 million tons. In this event, a smelter shortage could develop by the year 2000.

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The Availability of Copper in Market Economy Countries, IC 9310, 1992.

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TABLE 1
SALIENT COPPER STATISTICS 1/

(Metric tons unless otherwise specified)

	1991	1992	1993	1994	1995
United States:					
Mine production:					
Ore concentrated 2/	261,000	263,000	262,000	271,000	267,000
Average yield of copper 2/	0.45	0.48	0.49	0.47	0.48
Recoverable copper:					
Arizona	1,020,000	1,150,000	1,160,000	1,160,000 r/	1,170,000
Michigan, Montana, Utah	337,000	385,000	387,000	397,000	384,000
New Mexico	253,000	211,000	224,000	234,000	250,000
Other States	17,000	16,000	31,100	55,700	47,400
Total recoverable	1,630,000	1,760,000	1,800,000	1,850,000 r/	1,850,000
Total value	\$3,930	\$4,180	\$3,640	\$4,430	\$5,640
Smelter production: 3/					
From domestic and foreign ores	1,120,000	1,180,000	1,270,000	1,310,000	1,240,000
From scrap (new and old)	364,000	394,000	415,000	397,000	358,000
Total smelter	1,490,000	1,570,000	1,680,000	1,710,000	1,600,000
Byproduct sulfuric acid	1,100	1,090	1,230 r/	1,200 r/	1,210
Refinery production:					
Primary materials:					
Electrolytic from domestic ores	1,060,000	1,110,000	1,210,000	1,280,000	1,310,000
Electrolytic from foreign materials	76,900	96,100	88,600	63,500	77,300
Electrowon	441,000	502,000	491,000	493,000	539,000
Total primary	1,580,000	1,710,000	1,790,000	1,840,000	1,930,000
Secondary materials (scrap):					
Electrolytic	318,000	331,000	337,000	269,000	215,000
Fire refined	99,600	102,000	123,000	122,000	137,000
Total secondary	418,000	433,000	460,000	392,000	352,000
Total refined	2,000,000	2,140,000	2,250,000	2,230,000	2,280,000
Secondary copper produced:					
Recovered from new scrap	682,000	723,000	748,000	827,000	874,000
Recovered from old scrap	518,000	555,000	543,000	500,000	442,000
Total copper from scrap	1,200,000	1,280,000	1,290,000	1,330,000	1,320,000
Copper sulfate:					
Production	40,200	46,800	46,400	48,400	52,000
Stocks, Dec. 31	2,380	2,860	2,990	2,510	2,770
Exports:					
Refined	263,000	177,000	217,000	157,000	217,000
Unmanufactured 4/	806,000	676,000	685,000	752,000	894,000
Imports:					
Refined	289,000	289,000	343,000	470,000	429,000
Unmanufactured 4/	512,000	593,000	637,000	763,000	808,000
Copper stocks, Dec. 31:					
Blister and in-process material	135,000	166,000	146,000	171,000	174,000
Refined copper:					
Refineries	38,300	35,500	33,400	42,500	38,000
Wire rod mills	29,600	37,000	34,700	39,800	24,800
Brass mills	10,700	12,500	14,100	8,530	7,110
Other industry	22,800	23,800	3,650	4,090 r/	3,540
New York Commodity Exchange (COMEX)	30,600	96,000	67,200	24,200	21,500
London Metal Exchange (LME), U.S. warehouses	--	--	--	--	68,200
Total refined	132,000	205,000	153,000	119,000	163,000
Consumption:					
Refined copper, reported	2,050,000	2,180,000	2,360,000	2,680,000	2,530,000
Apparent consumption, primary refined and old scrap	2,090,000	2,300,000	2,510,000	2,680,000	2,540,000
Price:					
Producer, weighted average	109.33	107.42	91.56	111.05	138.33
COMEX, first position	104.88	102.72	85.28	107.05	134.72
LME, Grade A cash	106.21	103.72	86.76	104.64	133.12
World production:					
Mine	9,090 r/	9,490 r/	9,420 r/	9,490 r/	10,000
Smelter	9,810 r/	9,930 r/	9,990 r/	10,100 r/	10,400
Refinery	10,700 r/	11,200 r/	11,400	11,200 r/	11,700

r/ Revised.

1/ Data are rounded to three significant digits, except prices; may not add to totals shown.

2/ Yield calculations include precipitates but excludes copper recovered from leaching by solvent extraction-electrowinning.

3/ Includes primary copper produced from foreign ores, matte, etc., to avoid disclosing company proprietary data.

4/ Includes copper content of alloy scrap.

TABLE 2
LEADING COPPER-PRODUCING MINES IN THE UNITED STATES IN 1995, IN ORDER OF OUTPUT 1/

Rank	Mine	County and State	Operator	Source of copper	Capacity (thousand metric tons)
1	Morenci	Greenlee, AZ	Phelps Dodge Corp.	Copper-molybdenum ore, concentrated and leached.	425
2	Bingham Canyon	Salt Lake, UT	Kennecott Utah Copper Corp.	do.	320
3	Chino	Grant, NM	Phelps Dodge Corp.	do.	160
4	Ray	Pinal, AZ	ASARCO Incorporated	Copper ore, concentrated and leached.	160
5	San Manuel	do.	BHP Copper Co.	Copper-molybdenum ore, concentrated and leached.	140
6	Sierrita	Pima, AZ	Cyprus Amax Minerals Co.	do.	135
7	Mission Complex	do.	ASARCO Incorporated	Copper ore, concentrated.	110
8	Bagdad	Yavapai, AZ	Cyprus Amax Minerals Co.	Copper-molybdenum ore, concentrated and leached.	110
9	Pinto Valley	Gila, AZ	BHP Copper Co.	do.	85
10	Tyrone	Grant, NM	Phelps Dodge Corp. and Burro Chief Copper Co.	Copper ore, concentrated and leached.	75
11	Inspiration	Gila, AZ	Cyprus Amax Minerals Co.	Copper ore, leached.	70
12	Continental	Silver Bow, MT	Montana Resources Inc.	Copper-molybdenum ore, concentrated.	50
13	Flambeau	Rusk, WI	Kennecott Minerals Corp.	Copper ore, concentrated.	40
14	White Pine	Ontonagon, MI	Copper Range Co.	do.	60
15	Continental	Grant, NM	Cobre Mining Co.	do.	30
16	Superior (Magma)	Pinal, AZ	BHP Copper Co.	do.	20
17	Tohono	do.	Cyprus Amax Minerals Co.	Copper ore, leached.	20
18	Miami	Gila, AZ	BHP Copper Co.	do.	12

1/ The mines in this list accounted for 98% of the U.S. mine production in 1995.

TABLE 3
MINE PRODUCTION OF COPPER-BEARING ORES AND RECOVERABLE COPPER CONTENT OF
ORES PRODUCED IN THE UNITED STATES, BY SOURCE AND TREATMENT PROCESS

(Metric tons)

Source and treatment process	1994		1995	
	Gross weight	Recoverable copper	Gross weight	Recoverable copper
Mined copper ore:				
Concentrated	271,000,000	1,280,000 r/	267,000,000 1/	1,250,000
Leached	NA	493,000	NA	539,000
Total	NA	1,770,000 r/	NA	1,790,000
Copper precipitates shipped; leached from tailings, dump, and in-place material	30,200	26,400	28,000	21,500
Other copper-bearing ores 2/	6,000,000	49,300	6,420,000	41,000
Grand total	XX	1,850,000 r/	XX	1,850,000

r/ Revised. NA Not available. XX Not applicable.

1/ In 1995, 604,000 ounces of gold and 13,500,000 ounces of silver were recovered from concentrated ore. The average value of gold and silver per metric ton of ore concentrated was \$1.13.

2/ Includes gold ore, gold-silver ore, lead ore, lead-copper ore, lead-zinc ore, molybdenum ore, silver ore, tungsten ore, zinc ore, fluorspar, flux ores, clean up, ore shipped directly to smelters, and tailings.

TABLE 4
CONSUMPTION OF COPPER AND BRASS MATERIALS IN THE UNITED STATES, BY ITEM 1/

(Metric tons)

Item	Brass mills	Wire rod mills	Foundries, chemical plants, miscellaneous users	Smelters, refiners, ingot makers	Total
1994:					
Copper scrap	862,000 2/	W	67,000 r/	779,000	1,710,000
Refined copper 3/	568,000	2,060,000	47,100 4/	(5/)	2,680,000
Hardeners and master alloys	841	--	2,650	--	3,490
Brass ingots	--	--	120,000	--	120,000
Slab zinc	89,800 r/	--	12,900	3,870 r/	107,000 r/
Miscellaneous	--	--	--	15	15
1995:					
Copper scrap	886,000 2/	W	71,500	695,000	1,650,000
Refined copper 3/	533,000	1,950,000	55,900 4/	(5/)	2,530,000
Hardeners and master alloys	1,030	--	1,980	--	3,000
Brass ingots	--	--	120,000	--	120,000
Slab zinc	64,700	--	23,000	3,580	91,300
Miscellaneous	--	--	--	2	2

r/ Revised. W Withheld to avoid disclosing company proprietary data; included in "Brass mills."

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes consumption of copper scrap at wire rod mills to avoid disclosing company proprietary data.

3/ Detailed information on consumption of refined copper can be found in table 5.

4/ Includes consumption of refined copper at ingot makers to avoid disclosing company proprietary data.

5/ Withheld to avoid disclosing company proprietary data; included in "Foundries, chemicals plants, miscellaneous users."

TABLE 5
CONSUMPTION OF REFINED COPPER SHAPES IN THE UNITED STATES, BY CLASS OF CONSUMER 1/

(Metric tons)

Class of consumer	Cathodes	Ingots and ingot bars	Cakes and slabs	Wirebar, billets, and other	Total
1994:					
Wire rod mills	\$2,060,000.00	--	--	--	\$2,060,000.00
Brass mills	\$339,000.00	\$32,700.00	\$73,200.00	\$124,000.00	\$568,000.00
Chemical plants	--	--	--	\$1,130.00	\$1,130.00
Ingotmakers	W	W	W	\$4,490.00	\$4,490.00
Foundries	\$2,060.00	\$4,590.00 r/	W	\$4,430.00	\$11,100.00
Miscellaneous 2/	W	W	W	\$30,400.00	\$30,400.00
Total	\$2,410,000.00	\$37,300.00	\$73,200.00	\$164,000.00	\$2,680,000.00
1995:					
Wire rod mills	\$1,950,000.00	--	--	--	\$1,950,000.00
Brass mills	\$298,000.00	\$27,800.00	\$75,900.00	\$130,000.00	\$533,000.00
Chemical plants	--	--	--	\$1,070.00	\$1,070.00
Ingotmakers	W	--	W	\$7,740.00	\$7,740.00
Foundries	\$2,380.00	\$3,480.00	W	\$9,480.00	\$15,300.00
Miscellaneous 2/	W	W	W	\$31,400.00	\$31,400.00
Total	\$2,250,000.00	\$31,300.00	\$75,900.00	\$180,000.00	\$2,530,000.00

r/ Revised. W Withheld to avoid disclosing company proprietary data; included with "Wirebar, billets and other."

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes iron and steel plants, primary smelters producing alloys other than copper, consumers of copper powder and copper shot, and other manufacturers.

TABLE 6
U.S. EXPORTS OF UNMANUFACTURED COPPER (COPPER CONTENT), BY COUNTRY 1/

Country	Ore and concentrate		Matte, ash and precipitates		Refined		Unalloyed copper scrap		Blister and anodes		Total	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
1994	261,000	\$328,000	25,100	\$29,800	157,000	\$359,000	142,000	\$197,000	11,900	\$29,200	596,000	\$943,000
1995:												
Belgium	1,980	1,980	1,330	2,080	2,260	10,100	2,730	10,100	81	110	8,380	24,500
Canada	123,000	239,000	30,400	30,000	22,700	65,700	110,000	191,000	24,500	67,700	311,000	593,000
China	37,100	24,500	--	--	5,130	13,000	28,000	40,300	211	428	70,500	78,200
Germany	--	--	152	41	628	1,810	1,580	1,820	84	313	2,440	3,980
Hong Kong	--	--	48	161	4,690	12,500	31,400	47,900	650	1,520	36,800	62,100
India	--	--	151	116	138	183	7,020	7,520	36	45	7,340	7,870
Italy	--	--	--	--	1,580	3,070	823	1,790	245	682	2,640	5,540
Japan	53,500	117,000	1,880	9,370	52,800	155,000	20,000	64,800	363	541	129,000	347,000
Korea, Republic of	5,520	14,800	10	4	11,200	34,300	10,300	19,900	1,440	5,530	28,400	74,500
Malaysia	--	--	--	--	4,110	11,000	932	535	--	--	5,050	11,500
Mexico	160	153	763	1,070	2,710	5,990	6,470	11,000	149	241	10,300	18,400
Netherlands	11	12	--	--	168	558	521	888	--	--	701	1,460
Philippines	16,000	39,200	--	--	3	11	20	12	20	87	16,000	39,300
Singapore	5	4	18	132	12,700	36,600	211	410	39	132	12,900	37,300
Taiwan	--	--	201	216	75,000	204,000	1,680	2,490	137	363	77,000	207,000
Thailand	34	27	--	--	18,700	54,800	--	--	124	570	18,800	55,400
United Kingdom	317	702	26	39	206	1,060	338	510	25	79	912	2,390
Venezuela	--	--	--	--	27	125	--	--	860	864	887	989
Other	1,190	1,210	52	115	2,520	6,460	1,080	1,470	165	562	5,000	9,820
Total	239,000	438,000	35,100	43,300	217,000	616,000	223,000	403,000	29,200	79,700	743,000	1,580,000

1/ Data are rounded to three significant digits; may not add to totals shown.

Source: Bureau of the Census.

TABLE 7
U.S. EXPORTS OF COPPER SEMIMANUFACTURES, BY COUNTRY 1/

Country	Pipes and tubing		Plates, sheets, foil, and bars		Bare wire, including wire rod 2/		Wire and cable, stranded		Copper sulfate	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
1994	19,300	\$66,400	29,300	\$108,000	45,600	\$145,000	11,000	\$57,200	997	\$1,680
1995:										
Australia	293	1,510	8	60	17	220	275	1,200	9	28
Austria	18	89	364	978	14	195	1	39	--	--
Canada	7,700	29,400	16,500	59,800	14,000	45,900	2,680	10,900	2,870	3,100
Chile	111	521	--	--	38	224	135	714	33	35
China	589	2,720	13	146	150	685	239	582	--	--
Colombia	205	586	15	15	8	75	144	766	62	99
Costa Rica	89	335	663	2,370	89	202	63	336	--	--
Dominican Republic	43	186	258	801	1,340	5,360	463	2,640	--	--
El Salvador	9	29	718	2,230	117	423	244	1,250	--	--
France	76	605	30	227	29	244	54	1,350	3	7
Germany	13	100	71	883	41	542	134	3,170	--	--
Hong Kong	966	3,850	2,160	13,600	1,640	3,360	117	950	2	8
India	181	495	1,260	1,730	41	142	30	330	--	--
Israel	274	1,590	9	116	31	393	78	560	--	--
Italy	302	1,310	15	113	11	165	192	1,360	--	--
Japan	425	2,570	4,640	18,100	4,400	11,300	83	1,010	--	--
Korea, Republic of	903	3,810	936	6,730	50	393	160	1,800	--	--
Kuwait	208	1,010	--	--	21	65	1	25	--	--
Malaysia	200	951	441	1,520	148	499	4	84	--	--
Mexico	3,850	13,500	3,380	13,300	10,300	34,800	1,170	6,100	14	44
Netherlands	280	979	8	129	21	210	10	246	--	--
New Zealand	206	1,100	28	241	1	12	2	59	1	11
Norway	40	186	635	2,000	4	41	180	465	--	--
Philippines	157	655	3	27	10	56	153	1,930	(3/)	8
Saudi Arabia	785	3,420	135	557	3	14	222	2,050	--	--
Singapore	93	576	74	670	30	222	77	749	4	3
Spain	552	2,230	31	90	--	--	110	764	--	--
Sweden	13	109	9	230	15	194	28	598	--	--
Switzerland	17	74	14	179	18	486	30	690	--	--
Taiwan	645	2,800	2,170	10,500	260	1,560	25	400	--	--
Thailand	652	2,480	303	879	3	21	50	598	--	--
Trinidad and Tobago	18	75	129	413	964	3,030	4	26	--	--
United Arab Emirates	230	1,000	20	81	1	19	2	47	--	--
United Kingdom	165	1,010	80	483	105	1,030	210	2,700	(3/)	6
Venezuela	214	1,020	111	540	11	198	226	2,130	16	18
Other	1,210	5,650	990	4,950	511	2,850	1,160	6,320	65	70
Total	21,700	88,500	36,200	145,000	34,300	115,000	8,760	54,900	3,080	3,440

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Total exports of wire rod for 1994 were 7,230 tons valued at \$15,400,000 and in 1995 were 12,900 tons valued at \$30,700,000.

3/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 8
U.S. IMPORTS FOR CONSUMPTION OF UNMANUFACTURED COPPER (COPPER CONTENT), BY COUNTRY 1/

Country	Ore and concentrate		Matte, ash and precipitates		Blister and anode		Refined		Unalloyed scrap		Total	
	Quantity (metric tons)	Value 2/ (thousands)	Quantity (metric tons)	Value 2/ (thousands)	Quantity (metric tons)	Value 2/ (thousands)	Quantity (metric tons)	Value 2/ (thousands)	Quantity (metric tons)	Value 2/ (thousands)	Quantity (metric tons)	Value 2/ (thousands)
1994	81,900	\$131,000	1,180	\$1,380	77,300	\$152,000	470,000	\$1,070,000	44,700	\$75,100	675,000	\$1,430,000
1995:												
Brazil	--	--	--	--	--	--	15,500	45,800	--	--	15,500	45,800
Canada	(3/)	2	590	839	40,000	118,000	283,000	848,000	34,100	70,700	358,000	1,040,000
Chile	80,400	85,000	--	--	38,000	99,900	29,100	85,900	--	--	147,000	271,000
Costa Rica	--	--	--	--	--	--	--	--	848	1,280	848	1,280
Germany	--	--	--	--	--	--	12,300	51,500	--	--	12,300	51,500
Jamaica	--	--	--	--	--	--	--	--	765	1,230	765	1,230
Japan	--	--	4	7	(3/)	9	7,740	23,900	--	--	7,740	23,900
Malaysia	--	--	55	230	--	--	--	--	--	--	55	230
Mexico	11,700	15,000	2,190	2,440	2,350	7,940	58,600	174,000	28,500	62,000	103,000	261,000
Panama	--	--	--	--	--	--	--	--	994	2,180	994	2,180
Peru	34,900	28,900	--	--	10,400	25,700	9,860	27,500	76	108	55,300	82,300
Russia	--	--	--	--	--	--	11,600	33,500	--	--	11,600	33,500
Spain	--	--	--	--	3,260	6,020	--	--	--	--	3,260	6,020
Venezuela	--	--	--	--	--	--	20	53	3,170	4,810	3,190	4,860
Other	2	24	14	34	--	--	600	1,780	2,480	4,210	3,100	6,040
Total	127,000	129,000	2,860	3,550	94,100	257,000	429,000	1,290,000	71,000	146,000	724,000	1,830,000

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ C.i.f. value at U.S. port.

3/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 9
U.S. IMPORTS FOR CONSUMPTION OF COPPER SEMIMANUFACTURES, BY COUNTRY 1/

Country	Pipes and tubing		Plates, sheets, foil, and bars		Bare wire, including wire rod		Wire and cable, stranded		Copper sulfate	
	Quantity (metric tons)	Value 2/ (thousands)	Quantity (metric tons)	Value 2/ (thousands)	Quantity (metric tons)	Value 2/ (thousands)	Quantity (metric tons)	Value 2/ (thousands)	Quantity (metric tons)	Value 2/ (thousands)
1994	94	\$718	50,800	\$196,000	29,400	\$82,900	1,420	\$7,750	12,400	\$10,800
1995:										
Australia	--	--	221	850	--	--	--	--	--	--
Belgium	2	61	142	1,130	8	41	--	--	7	2
Brazil	--	--	654	2,680	--	--	1	14	--	--
Canada	57	285	12,500	51,700	38,900	122,000	74	282	1,960	1,510
Chile	9	38	1,320	4,660	197	643	--	--	250	243
China	(3/)	5	899	3,060	1,100	4,090	8	51	68	58
Czech Republic	9	55	--	--	26	93	--	--	--	--
Dominican Republic	--	--	--	--	(3/)	2	(3/)	1	--	--
Finland	2	21	5,030	23,200	316	1,620	--	--	--	--
France	(3/)	4	340	1,470	175	2,100	56	683	21	20
Germany	(3/)	6	6,870	29,000	62	775	271	2,350	52	127
Israel	--	--	--	--	27	194	1,660	12,500	1,680	1,570
Italy	--	--	53	165	16	133	41	412	--	--
Japan	3	259	8,240	47,100	97	2,100	187	1,700	18	80
Korea, Republic of	--	--	8	41	39	231	1	12	17	24
Luxembourg	--	--	698	5,910	--	--	--	--	--	--
Malaysia	--	--	1,150	7,670	8	151	--	--	--	--
Mexico	(3/)	2	6,330	21,000	127	370	246	616	5,570	5,640
Netherlands	--	--	445	1,900	62	480	--	--	542	538
Norway	--	--	--	--	(3/)	3	(3/)	4	--	--
Peru	--	--	7	25	--	--	--	--	579	547
Poland	--	--	732	2,300	--	--	--	--	404	347
Russia	(3/)	4	16	37	--	--	--	--	333	291
Sweden	--	--	10,300	46,600	--	--	(3/)	16	--	--
Taiwan	2	9	25	350	24	151	32	195	104	72
Turkey	--	--	--	--	477	2,050	233	370	--	--
United Kingdom	5	71	433	3,530	76	454	13	422	--	--
Venezuela	12	46	5	21	--	--	702	1,990	--	--
Other	(3/)	3	577	1,880	25	235	14	238	813	832
Total	103	869	57,000	256,000	41,800	137,000	3,540	21,900	12,400	11,900

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ C.i.f. value at U.S. port.

3/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 10
COPPER: WORLD MINE PRODUCTION, BY COUNTRY 1/ 2/

(Metric tons)

Country	1991	1992	1993	1994	1995 e/
Albania	3,700 r/	900 r/	900 r/	800 r/	800
Argentina	400	300	300 e/	300 e/	300
Armenia e/	XX	2,000	500	500	1,000
Australia	320,000	371,000 r/	360,000 r/	391,000 r/	437,000 3/
Bolivia	100	101	94	79	127 3/
Botswana 4/	20,600	20,400	20,132	22,780	21,029 3/
Brazil	37,900	39,845	43,396	39,690 r/	41,000
Bulgaria	47,200	47,400	60,400	63,000 r/	63,000
Burma	4,592	3,731	3,581	5,025 r/	3,700
Canada:					
By concentration or cementation	807,800	765,500	729,900 r/	615,000 r/	726,380 3/
Leaching (electrowon)	3,300	3,100	2,700	2,300 r/	2,300 3/
Chile 5/	1,814,300	1,932,700	2,055,400	2,219,900	2,488,000 3/
China e/	304,000	334,000	345,000	396,000 r/	370,000
Colombia	3,640 r/	3,940 r/	4,000 e/	2,600 r/	2,800
Cuba e/	2,000	1,500	1,500	1,400	1,500
Czechoslovakia 6/ 7/ 8/	2,600	2,500 e/	XX	XX	XX
Ecuador e/	100	100	-- r/	-- r/	--
Finland	11,732	10,246 r/	11,131	13,243 r/	12,000
France	166 r/	149 r/	72	174 r/	--
Georgia e/	XX	5,000 r/	3,000 r/	2,000 r/	1,000
Honduras e/	1,000	1,600 3/	1,000	500 r/	390
India	50,430 r/	49,036 r/	49,416 r/	45,944 r/	63,000
Indonesia 6/	211,692	280,819	298,648	322,190	443,618 3/
Iran	84,300	105,000	86,600	100,040 r/	100,000
Japan	12,414	12,074	10,277	6,043	2,376 3/
Kazakstan e/	XX	300,000 r/	300,000 r/	285,000 r/ 3/	260,000 3/
Korea, North e/	15,000	16,000	16,000	16,000	16,000
Korea, Republic of	5	4	5	5 e/	5
Macedonia	XX	7,200 e/	5,800 r/	6,500 r/	6,500
Malaysia	25,605	28,556	25,182	25,267	21,900
Mexico:					
By concentration or cementation	260,000	251,100 r/	277,000 r/	279,700 r/	304,300 3/
Leaching (electrowon)	32,100	27,900	24,100 r/	25,800 r/	27,600
Mongolia	90,100	105,100	96,900	99,600	100,400 3/
Morocco	15,800	14,300	12,990 r/	13,020 r/	13,000
Namibia	31,700	31,300	29,500	26,555 r/	22,530 3/
Nepal	4	2	2	2 e/	2
Norway	17,393	12,668	8,696	7,408	6,800
Oman	14,000	13,600	12,000 e/	6,500 e/	--
Papua New Guinea	204,459	193,359	203,945	206,329	212,737 3/
Peru: 9/					
By concentration or cementation	337,600 r/	327,200 r/	328,000 r/	326,400 r/	352,100 3/
Leaching (electrowon)	19,600 r/	18,400 r/	20,300 r/	17,200 r/	28,600 3/
Philippines	148,347	123,523	136,257	112,075 r/	105,655 3/
Poland	320,000	331,900 r/	383,600 r/	378,000 r/	383,600 3/
Portugal	158,900 r/	152,311 r/	153,797 r/	133,629 r/	134,181 3/
Romania 6/	26,400 r/	24,700 r/	25,300 r/	26,034 r/	24,003 3/
Russia	XX	698,500	583,600	573,300	591,000
Saudi Arabia	900 e/	868 r/	925 r/	917 r/	925
Serbia and Montenegro	XX	97,811 r/	68,007 r/	65,000 r/	70,000
Slovakia e/ 8/	XX	XX	500	500	500
South Africa	184,556	176,074	166,348	183,900 r/	199,600 3/
Spain	8,322	9,432	3,518	4,940 r/	5,000
Sweden	81,650	89,145	88,909	79,384	83,600
Turkey 10/	41,797 r/	38,554 r/	39,163 r/	34,902 r/	34,100
U.S.S.R. e/ 11/	900,000	XX	XX	XX	XX
United Kingdom	300	--	--	--	--
United States: 6/					
By concentration or cementation	1,190,000	1,260,000	1,310,000	1,320,000	1,310,000 3/
Leaching (electrowon) 12/	441,000	502,000	491,000	493,000 r/	539,000 3/
Uzbekistan e/	XX	75,000	70,000	55,000 r/	45,000
Yugoslavia 13/ 14/	138,000 e/	XX	XX	XX	XX

See footnotes at end of table.

TABLE 10--Continued
COPPER: WORLD MINE PRODUCTION, BY COUNTRY 1/ 2/

(Metric tons)

Country	1991	1992	1993	1994	1995 e/
Zaire: 15/					
By concentration or cementation	57,500	21,900 r/	7,300 r/	6,900 r/	6,800 3/
Leaching (electrowon)	180,000 e/	111,000 r/	33,000 r/ e/	39,400 r/	22,000
Total	237,500	132,900	40,300	46,300	28,800 3/
Zambia: 16/					
By concentration or cementation (smelted)	280,700	321,800	284,900	272,800	263,800 3/
Leaching (electrowon)	109,900	107,700	111,300	111,600	65,400 3/
Total	390,600	429,500	396,200	384,400	329,200 3/
Zimbabwe e/ 6/	14,400	10,100	9,000	9,350	9,500
Grand total	9,090,000 r/	9,490,000 r/	9,420,000 r/	9,490,000 r/	10,000,000

e/ Estimated. r/ Revised. XX Not applicable.

1/ World totals, U.S. data, and estimated data are rounded to three significant digits; may not add to totals shown.

2/ Data represent copper content by analysis of concentrates produced except where otherwise noted. Table includes data available through Aug. 12, 1996.

3/ Reported figure.

4/ Copper content of pelletized nickel-copper matte produced in smelter.

5/ Reported by Comision Chilena del Cobre (COCHILCO). Includes recoverable copper content of nonduplicative mine and metal products produced from domestic ores and concentrates, and leach production for electrowinning. Mine production data reported by Servicio Nacional de Geologia y Minería (SERNAGEOMIN) were as follows, in metric tons: 1991--1,855,000; 1992--1,967,000; 1993--2,078,522 (revised); 1994--2,233,937 (revised); and 1995--2,509,644.

6/ Recoverable content.

7/ Dissolved Dec. 31, 1992.

8/ Production in Czechoslovakia for 1991-92 came from Slovakia.

9/ Prior to 1993 nonduplicative shipments of concentrates, smelter and refinery products. Beyond 1992, recoverable mine production sourced from Ministry Energy and Mines, General Directorate of Mines.

10/ Excludes copper content of pyrite.

11/ Dissolved in Dec. 1991.

12/ Includes electrowon from concentrates roast-leached.

13/ Dissolved in Apr. 1992.

14/ Copper content by analysis of ore mined.

15/ Recoverable content of blister, black copper, and Sodimiza concentrate.

16/ Data are for fiscal years beginning Apr. 1 of year stated. Zambian-mined copper reported recovered during smelting and electrowinning.

TABLE 11
COPPER: WORLD SMELTER PRODUCTION, BY COUNTRY 1/ 2/

(Metric tons)

Country 3/	1991	1992	1993	1994	1995 e/
Albania, primary	4,800	2,300	2,300	1,500 e/	1,500
Australia:					
Primary	195,200	304,300	323,100	315,000 e/	326,700 4/
Secondary e/	10,000	10,000	10,000	10,000	10,000
Total e/	205,000	314,000	333,000	325,000	337,000
Austria, secondary	44,800	48,975 r/	46,856 r/	49,562 r/	53,400
Belgium: e/					
Primary	1,000	800	200 r/	2,600 r/	1,000
Secondary	105,000	102,000	142,000 r/	145,000 r/	146,000
Total	106,000	103,000	142,000 r/	148,000 r/	147,000
Brazil, primary	141,443	157,950	161,102	170,033 r/	170,000
Bulgaria: e/					
Primary	11,000 r/	61,000 r/	58,500 r/	108,000 r/	105,000
Secondary	-- r/	5,000 r/	5,000 r/	5,000 r/	5,000
Total	11,000 r/	66,000 r/	63,500 r/	113,000 r/	110,000
Canada:					
Primary	505,400	515,000	518,000	515,000	522,467 4/
Secondary	26,800	37,400	44,100	45,000 e/	90,929 4/
Total	532,200	552,400	562,100	560,000 e/	613,396 4/
Chile, primary 5/	1,176,000 r/	1,191,000 r/	1,234,000 r/	1,259,400 r/	1,293,800 4/

See footnotes at end of table.

TABLE 11--Continued
COPPER: WORLD SMELTER PRODUCTION, BY COUNTRY 1/ 2/

(Metric tons)

Country 3/	1991	1992	1993	1994	1995 e/
China: e/					
Primary	385,000	418,000	443,000	482,400 r/	490,000
Secondary	171,000	128,000	183,000	212,000	281,000
Total	556,000	546,000	626,000	694,000	771,000
Czech Republic, primary	XX	XX	500	-- e/	--
Czechoslovakia: 6/					
Primary e/	5,000	5,000	XX	XX	XX
Secondary e/	3,000	3,000	XX	XX	XX
Total	8,000	8,000	XX	XX	XX
Finland:					
Primary	90,055	110,502	107,201	129,265 r/	130,000
Secondary e/	12,000	12,000	12,000	12,000	12,000
Total e/	102,000	123,000	119,000	141,000 r/	142,000
France, secondary e/	5,800	6,100	5,900	4,400 r/	5,000
Germany:					
Primary	186,200	164,900	141,300	237,400	242,000
Secondary e/	70,000	70,000	60,000	54,800 4/	66,000
Total e/	256,000	234,900	201,000	292,200 4/	308,000
Hungary, secondary e/	100	100	100	100	100
India, primary	45,531	47,712	37,372 r/	51,232 r/	48,600
Iran: 7/					
Primary	81,900	86,400	85,000	125,000	136,000 4/
Secondary e/	6,300	6,400	7,000	8,000	8,500
Total e/	88,200	92,800	92,000	133,000	145,000
Japan:					
Primary	967,700	1,046,200	1,099,100	1,025,500	1,040,300 4/
Secondary	117,700	128,700	85,700	96,500	128,200 4/
Total	1,085,400	1,174,900	1,184,800	1,122,000	1,168,500 4/
Kazakhstan: e/					
Primary	XX	300,000	300,000	275,000	300,000
Secondary	XX	20,000	20,000	20,000	20,000
Total	XX	320,000	320,000	295,000	320,000
Korea, North: e/					
Primary	20,000	21,000	23,000	23,000	24,000
Secondary	5,000	5,000	5,000	5,000	5,000
Total	25,000	26,000	28,000	28,000	29,000
Korea, Republic of, primary	148,600	170,100	142,000 e/	160,000 e/	165,000
Mexico, primary	182,565	228,200	282,000	277,000	298,000 4/
Namibia, primary 8/	33,500	37,500	34,800 e/	29,781 r/	29,799 4/
Norway, primary	38,445	39,259	37,205	39,416	36,000
Oman, primary	12,200	14,973	27,700	31,200 r/	34,200 4/
Peru, primary	324,000 r/	336,000 r/	343,400 r/	349,900 r/	362,000 4/
Philippines, primary	167,462	168,831	212,400 r/	200,300 r/	198,000 4/
Poland:					
Primary e/	358,000 r/	385,486 r/ 4/	396,000 r/	350,000 r/	350,000
Secondary e/	15,000 r/	15,963 r/ 4/	16,000 r/	15,000 r/	15,000
Total	373,100	401,449 r/ 4/	412,000 r/	365,000 r/	365,000
Portugal, secondary e/	2,000	1,000	1,000	-- r/	--
Romania:					
Primary	27,800 e/	23,400 r/	25,200 r/ e/	23,449 r/	23,345 4/
Secondary e/	1,000	1,000	1,000	1,000 r/	1,000
Total	28,800	24,400 r/	26,200 r/	24,449 r/	24,300
Russia: e/					
Primary	XX	706,000	589,000	579,000	690,000
Secondary	XX	10,000	10,000	10,000	10,000
Total	XX	716,000	599,000	589,000	700,000
Serbia and Montenegro:					
Primary	XX	79,953	44,112	69,000 r/	70,100
Secondary	XX	47,967	13,286	17,400 r/	17,300
Total	XX	127,920	57,398	86,400 r/	87,400
Slovakia, primary e/	XX	XX	3,000	3,000	3,000
South Africa, primary	164,700	158,700	156,600	165,900	154,400 4/

See footnotes at end of table.

TABLE 11--Continued
COPPER: WORLD SMELTER PRODUCTION, BY COUNTRY 1/ 2/

(Metric tons)

Country 3/	1991	1992	1993	1994	1995 e/
Spain:					
Primary	111,100	110,000	135,700	141,600	134,300
Secondary	38,000	37,000 r/	44,800 r/	46,800	47,100
Total	149,100	147,000 r/	180,500 r/	188,400	181,400
Sweden:					
Primary	68,113	77,804	76,298	79,100 e/	78,000
Secondary	29,437	20,596	22,102	19,600 e/	20,000
Total	97,550	98,400	98,400	98,700 e/	98,000
Turkey, undifferentiated 9/					
	32,401	31,568	39,638	30,400 r/	33,700
U.S.S.R.: e/ 10/					
Primary	1,360,000	XX	XX	XX	XX
Secondary	50,000	XX	XX	XX	XX
Total	1,410,000	XX	XX	XX	XX
United States:					
Primary 11/	1,120,000	1,180,000	1,270,000	1,310,000	1,240,000 4/
Secondary	364,000	394,000	415,000	397,000	358,000 4/
Total	1,490,000	1,570,000	1,680,000	1,710,000	1,800,000 4/
Uzbekistan: e/					
Primary	XX	70,000	65,000	50,000	40,000
Secondary	XX	5,000	5,000	5,000	5,000
Total	XX	75,000	70,000	55,000	45,000
Yugoslavia: 12/					
Primary	95,800	XX	XX	XX	XX
Secondary	58,724	XX	XX	XX	XX
Total	154,524	XX	XX	XX	XX
Zaire, primary: e/					
Electrowon	180,000	111,000	40,000 r/	22,800 r/	22,000
Other	52,500	19,900	6,500 r/	7,200 r/	5,600
Total	233,000	131,000	46,500 r/	30,000 r/	27,600
Zambia, primary: 13/					
Electrowon	64,500	64,000	62,400	26,700 r/	30,100
Other	300,000	356,000	305,000	257,000 r/	237,000
Total	365,000	420,000	368,000	284,000 r/	267,000
Zimbabwe, primary e/ 14/					
Grand total	9,810,000 r/	9,930,000 r/	9,990,000 r/	10,100,000 r/	10,400,000
Of which:					
Primary:					
Electrowon	245,000	175,000	102,000 r/	49,500 r/	52,100
Other	8,400,000 r/	8,600,000 r/	8,690,000 r/	8,850,000 r/	8,990,000
Secondary	1,140,000 r/	1,120,000 r/	1,150,000 r/	1,180,000 r/	1,300,000
Undifferentiated	32,400	31,600	39,600	30,400 r/	33,700

e/ Estimated. r/ Revised. XX Not applicable.

1/ World totals, U.S. data, and estimated data are rounded to three significant digits; may not add to totals shown.

2/ This table includes total production of copper metal at the unrefined stage, including low-grade cathode produced by electrowinning methods. The smelter feed may be derived from ore, concentrates, copper precipitate or matte (primary), and/or scrap (secondary). To the extent possible, primary and secondary output of each country is shown separately. In some cases, total smelter production is officially reported, but the distribution between primary and secondary has been estimated. Table includes data available through Aug. 12, 1996.

3/ Argentina presumably produces some smelter copper utilizing its own small mine output together with domestically produced cement copper, and possibly using other raw materials including scrap, but the levels of such output cannot be reliably estimated.

4/ Reported figure.

5/ Data include low-grade electrowon which is re-refined.

6/ Dissolved Dec. 31, 1992.

7/ Data are for year beginning Mar. 21 of year stated. Secondary production is estimated to be about 5% of total.

8/ Includes products of imported concentrate.

9/ Secondary production is estimated to be about 5% to 10% of total.

10/ Dissolved in Dec. 1991.

11/ Figures for U.S. primary smelter production may include a small amount of copper derived from precipitates shipped directly to the smelter for further processing; production derived from electrowinning and fire-refining is not included. Copper content of precipitates shipped directly to smelter are as follows, in metric tons: 1991--27,684; 1992--27,196; 1993--19,043; 1994--26,400; and 1995--21,500.

12/ Dissolved in Apr. 1992.

13/ For fiscal year beginning Apr. 1 of year stated. Electrowon is total electrowon production reported, less the quantity reported as "finished production, leach cathodes."

14/ Includes impure cathodes produced by electrowinning in nickel processing.

TABLE 12
COPPER: WORLD REFINERY PRODUCTION, 1/ 2/ BY COUNTRY

(Metric tons)

Country	1991	1992	1993	1994	1995 e/
Albania, primary e/	4,400	1,500 r/	1,500 r/	1,000 r/	1,000
Argentina, secondary e/	12,000	15,000	15,000	15,000	15,000
Australia:					
Primary	244,000	271,000	285,000	311,900	310,000 3/
Secondary	35,000	32,000	24,000	24,000	26,700
Total	279,000	303,000	309,000	335,900	337,000
Austria:					
Primary	8,079	5,705	5,871	2,904 r/	1,500
Secondary	44,758	48,975	46,856	49,562 r/	50,000
Total	52,837	54,680	52,727	52,466 r/	51,500
Belgium: 4/					
Primary	191,593	253,318 r/	275,900	227,600 r/	253,000
Secondary	106,000	114,000 r/	103,000	147,600 r/	140,000
Total	297,593	367,318 r/	378,900	375,200 r/	393,000
Brazil:					
Primary	141,443	157,950	161,102	170,033 r/	165,000
Secondary	-- r/	-- r/	-- r/	-- r/	--
Total	141,443 r/	157,950 r/	161,102 r/	170,033 r/	165,000
Bulgaria:					
Primary	7,849	13,008	24,300 r/ e/	21,500 r/ e/	22,000
Secondary e/	5,000 3/	5,000	2,000 r/	5,000	5,000
Total e/	12,849 3/	18,000	26,347 r/ 3/	26,500 r/	27,000
Canada:					
Primary	511,500 r/	501,900 r/	521,200 r/	504,600	469,000
Secondary	26,800 r/	37,400 r/	40,400 r/	45,400 r/	91,100
Total	538,300	539,300	561,600	550,000	559,997 3/
Chile, primary	1,228,300	1,242,300	1,268,200	1,277,000	1,485,000 3/
China: e/					
Primary	400,000	430,000	485,000	482,000 r/	520,000
Secondary	160,000	229,000	245,000	254,000 r/	323,000
Total	560,000	659,000	730,000	736,000 r/	843,000
Czech Republic, primary	XX	XX	500	--	--
Czechoslovakia: 5/					
Primary	10,000	8,000	XX	XX	XX
Secondary	15,873	20,561	XX	XX	XX
Total	25,873	28,561	XX	XX	XX
Egypt, secondary e/	3,600	4,000 r/	4,000 r/	4,000 r/	4,000
Finland:					
Primary	61,500	65,900	67,700	58,400	60,000
Secondary	3,000	5,000	6,000	10,800	10,000
Total	64,500	70,900	73,700	69,200	70,000
France:					
Primary e/	15,600 r/	16,600 r/	18,400 r/	16,600 r/	5,200
Secondary e/	28,000 r/	26,200 r/	26,000 r/	25,200 r/	38,400
Total	43,600 r/	42,800 r/	44,400	41,800 r/	43,600
Germany:					
Primary	203,245	236,282	270,592	253,400 e/	247,200 3/
Secondary e/	318,300	345,400	361,487	338,500	369,100 3/
Total	521,545	581,682	632,079	591,859	616,300 3/
Hungary, primary and secondary e/	12,000	12,000	11,000	11,000	11,000
India:					
Primary: Electrolytic	38,600 r/	38,300 r/	30,100 r/	40,100 r/	32,200
Secondary	8,600 r/	8,500 r/	6,700 r/	8,900 r/	7,300
Total e/	47,200	46,800 r/	36,800	49,000 r/	39,500
Iran, primary 6/ 7/	79,700	101,800	84,900	90,200 r/	90,200
Italy, primary and secondary	83,400 r/ e/	76,000 e/	90,300	84,000 r/	98,000
Japan:					
Primary	967,721	1,046,155	1,099,083	1,025,510	1,040,314 3/
Secondary	108,562	114,704	89,693	93,658	147,645 3/
Total	1,076,283	1,160,859	1,188,776	1,119,168	1,187,959 3/
Kazakstan: e/					
Primary	XX	360,000 r/	360,000 r/	326,600 r/ 3/	333,000 3/
Secondary	XX	20,000	20,000	20,000	20,000
Total	XX	380,000 r/	380,000 r/	347,000 r/	353,000

See footnotes at end of table.

TABLE 12--Continued
COPPER: WORLD REFINERY PRODUCTION, 1/ 2/ BY COUNTRY

(Metric tons)

Country	1991	1992	1993	1994	1995 e/
Korea, North: e/					
Primary	19,000	20,000	22,000	22,000	22,000
Secondary	5,000	5,000	5,000	5,000	5,000
Total	24,000	25,000	27,000	27,000	27,000
Korea, Republic of:					
Primary	201,911	209,000	218,000	222,000 e/	220,000
Secondary e/	1,000	2,000	2,000	2,000	2,000
Total	202,911	211,000	220,000 e/	224,000 e/	222,000
Mexico:					
Primary:					
Electrowon	32,059	27,940	24,100 r/	25,800 r/	27,600 3/
Other	73,900	82,600	69,800 r/	78,500 r/	75,500 3/
Secondary	53,000	80,500	77,200	92,700 r/	98,800
Total	158,959	191,040	171,100 r/	197,000 r/	202,000
Norway, primary 7/	38,445	39,259	37,205	39,416	36,000
Oman, primary	11,413	16,236	20,539	24,194 r/	33,900 3/
Peru, primary	285,562	275,872	277,811	282,903 r/	285,000
Philippines, primary	115,471	112,460 r/	165,954 r/	154,713 r/	192,400 3/
Poland:					
Primary	378,500	387,010	404,170	405,000 e/	407,000 3/
Secondary	50,000 r/	67,420 r/	56,989 r/	20,000 r/ e/	29,000 3/
Total	428,500 r/	454,430 r/	461,159 r/	425,000 r/ e/	436,000 3/
Portugal, primary	300	--	--	--	--
Romania: e/					
Primary	29,838 3/	21,000	22,000	22,113 3/	23,345 3/
Secondary	4,000	3,080	3,000	4,600	1,000
Total	33,800	24,100	25,000	26,700	24,300
Russia:					
Primary e/	XX	525,000	522,000	481,000 r/	486,000
Secondary e/	XX	50,000	40,000	35,000 r/	35,000
Total	XX	575,000	562,000	516,000 r/	521,000
Serbia and Montenegro:					
Primary	XX	78,560	43,410	61,000 e/	60,000
Secondary	XX	36,203	7,890	11,100 e/	20,000
Total	XX	114,763	51,300	72,100 e/	80,000
Slovakia, primary and secondary	XX	XX	28,000	25,000 r/	25,000
South Africa, primary 7/	127,000	120,100	127,900	129,622	124,000 3/
Spain:					
Primary	125,000 r/ e/	134,325	137,230	142,000 e/	117,000
Secondary	65,000 r/ e/	44,775	42,000	46,800 e/	47,100
Total	189,900 r/	179,100	179,230	188,000 e/	164,200 3/
Sweden:					
Primary	67,587	71,634	76,300	77,300 e/	75,000
Secondary	29,000 e/	30,000 e/	22,486	25,750	25,000
Total	96,587	101,634	98,786	103,000 e/	100,000
Taiwan, secondary e/	12,000	12,000	10,000	10,000	8,000
Turkey, primary	80,800	104,000	92,400	82,700 r/	98,500
U.S.S.R.: e/ 8/					
Primary	950,000	XX	XX	XX	XX
Secondary	120,000	XX	XX	XX	XX
Total	1,070,000	XX	XX	XX	XX
United Kingdom:					
Primary	16,606	10,363	10,629	11,078	8,900
Secondary	53,454	31,704	35,949	35,586	43,000
Total	70,060	42,067	46,578	46,664	51,900 3/
United States:					
Primary:					
Electrowon	441,000	502,000	491,000	493,000	539,000 3/
Other	1,140,000	1,210,000	1,300,000	1,350,000 r/	1,390,000 3/
Secondary	418,000	433,000	460,000	392,000	352,000 3/
Total	2,000,000	2,140,000	2,250,000	2,230,000	2,280,000 3/

See footnotes at end of table.

TABLE 12--Continued
COPPER: WORLD REFINERY PRODUCTION, 1/ 2/ BY COUNTRY

(Metric tons)

Country	1991	1992	1993	1994	1995 e/
Uzbekistan: e/					
Primary	XX	70,000	65,000	55,000 r/	50,000
Secondary	XX	10,000 r/	10,000 r/	5,000	5,000
Total	XX	80,000 r/	75,000 r/	60,000 r/	55,000
Yugoslavia: 9/					
Primary	107,200	XX	XX	XX	XX
Secondary	27,000 e/	XX	XX	XX	XX
Total	134,200	XX	XX	XX	XX
Zaire, primary 10/	103,992	47,503	40,000	29,000 r/	23,900 3/
Zambia, primary: 11/					
Electrowon	45,390	43,712	48,845	67,300 r/	51,400 3/
Other	357,063	428,495	363,247	284,800 r/	272,000 3/
Total	402,453	472,207	412,092	352,100 r/	323,400 3/
Zimbabwe: 12/					
Primary	13,811	9,673	8,187	9,350 r/	10,000
Secondary e/	8,200	8,200	8,200	6,000	6,000
Total e/	22,000	17,900	16,400	15,400 r/	16,000
Total, primary	8,750,000 r/	9,180,000 r/	9,430,000 r/	9,230,000 r/	9,550,000
Total, secondary	1,710,000 r/	1,830,000 r/	1,760,000	1,720,000 r/	1,920,000
Total, primary and secondary, undifferentiated	222,000	208,000	257,000	250,000 r/	258,000
Grand total	10,700,000 r/	11,200,000 r/	11,400,000	11,200,000 r/	11,700,000

e/ Estimated. r/ Revised. XX Not applicable.

1/ World totals, U.S. data, and estimated data are rounded to three significant digits; may not add to totals shown.

primary unrefined copper or from scrap. Copper cathode derived from electrowinning processing is also included. Table includes data available through Aug. 12, 1996.

3/ Reported figure.

4/ Includes leach cathode from Zaire, which is processed.

5/ Dissolved Dec. 31, 1992.

6/ Data are for Iranian years beginning Mar. 21 of that stated.

7/ May include secondary.

8/ Dissolved in Dec. 1991.

9/ Dissolved in Apr. 1992.

10/ Excludes leach cathode exported for processing in Belgium.

11/ Data are for fiscal year beginning Apr. 1 of that stated. Electrowon covers only presumably high-grade electrowon cathodes reported as "finished production leach cathodes." Other, in addition to electrowon cathodes, includes a smaller amount of "finished product shapes" presumably cast from electrorefined cathodes, or any blister-anodes and low-anodes and low-grade electrowon cathodes that were furnace- or fire-refined.

12/ May include copper-nickel matte (copper content more than 6,000 tons per year) imported from Botswana for toll refining.