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(Data in thousand metric tons of copper content, unless otherwise noted)

Domestic Production and Use: Domestic mine production in 1999 declined to 1.66 million metric tons and was valued at about \$2.8 billion. The five principal mining States, in descending order, Arizona, Utah, New Mexico, Nevada, and Montana, accounted for 99% of domestic production; copper was also recovered at mines in three other States. While copper was recovered at about 35 mines operating in the United States, 15 mines accounted for about 98% of production. Four primary and 2 secondary smelters, 6 electrolytic and 4 fire refineries, and 16 solvent extraction-electrowinning facilities were operating at yearend. Refined copper and direct melt scrap were consumed at about 35 brass mills; 17 rod mills; and 600 foundries, chemical plants, and miscellaneous consumers. Copper and copper alloy products were consumed in building construction, 42%; electric and electronic products, 26%; transportation equipment, 12%; industrial machinery and equipment, 11%; and consumer and general products, 9%.

Salient Statistics—United States:	<u> 1995</u>	<u> 1996</u>	<u> 1997</u>	<u> 1998</u>	<u>1999</u> °
Production: Mine	1,850	1,920	1,940	1,860	1,660
Refinery: Primary ²	1,930	2,010	2,070	2,140	1,870
Secondary ³	352	345	383	336	240
Copper from all old scrap	442	428	496	466	400
Imports for consumption:					
Ores and concentrates	127	72	44	217	150
Refined	429	543	632	683	860
Unmanufactured	825	961	999	1,190	1,230
Exports: Ores and concentrates	239	195	127	37	40
Refined	217	169	93	86	25
Unmanufactured	894	748	628	412	360
Consumption: Reported refined	2,530	2,610	2,790	2,880	2,950
Apparent unmanufactured ⁴	2,540	2,830	2,950	3,010	3,090
Price, average, cents per pound:					
Domestic producer, cathode	138.3	109.0	107.0	78.6	75.7
London Metal Exchange, high-grade	133.1	104.0	103.2	75.0	71.2
Stocks, yearend, refined ⁵	163	146	314	532	550
Employment, mine and mill, thousands	13.8	13.3	13.2	13.0	12.0
Net import reliance ⁶ as a percent of					
apparent consumption	7	14	13	14	27

Recycling: Old scrap, converted to refined metal and alloys, provided 400,000 tons of copper, equivalent to 13% of apparent consumption. Purchased new scrap, derived from fabricating operations, yielded 950,000 tons of contained copper; about 80% of the copper contained in new scrap was consumed at brass mills. Of the total copper recovered from scrap, brass mills recovered 67%; copper smelters and refiners,19%; ingot makers, 10%; brass mills, 67%; and miscellaneous manufacturers, foundries, and chemical plants, 4%. Copper in all old and new, refined or remelted scrap contributed 33% of the U.S. copper supply.

<u>Import Sources (1995-98)</u>: Unmanufactured: Canada, 43%; Chile, 21%; Mexico, 15%; and other, 21%. Refined copper accounted for 58% of imports of unwrought copper.

Tariff: Item	Number	Normal Trade Relations 12/31/99	Canada and Mexico 12/31/99		
Unrefined copper; anodes	7402.00.0000	Free	Free.		
Refined and alloys; unwrought	7403.00.0000	1.0% ad val.	Free.		
Copper powder	7406.10.0000	Free	Free.		
Copper wire (rod)	7408.11.6000	3.0% ad val.	Free.		

Depletion Allowance: 15% (Domestic and foreign).

<u>Government Stockpile</u>: The stockpile of about 20,000 tons of refined copper was liquidated in 1993. The stockpile of about 8,100 tons of brass was liquidated in 1994. For details on inventories of beryllium-copper master alloys (4% beryllium), see the section on beryllium.

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Events, Trends, and Issues: World mine capacity rose for the fifth consecutive year, rising by about 600,000 tons, 4.5% in 1999 and almost 30% since 1994. Australia, Chile, and Peru accounted for most of the increase. Production rose about 3% in 1999 and 32% since 1994.

U.S. mine capacity, however, declined in 1999 owing to indefinite closure of sulfide operations in Arizona and New Mexico in addition to other announced reductions and production fell by over 200,000 tons to 1.66 million tons. In addition to announced closures in 1999, the full effect of cutbacks during 1998 were felt in 1999. In June Broken Hill Propriety Ltd. (BHP) announced that it would cease operations at its North American properties by September, including its San Manuel Mine in Arizona and Robinson Mine in Nevada. The San Manuel smelter remained closed following its April renovation shutdown, and closure of the refinery and rod mill followed later in the year. In June, Phelps Dodge Corp., which had already cut back production at its Chino Mine and closed its Cobre Mine, announced the shutdown of its Hidalgo, NM, smelter and the smaller of its two concentrators at Morenci, AZ. By yearend, only four primary smelters remained open. In July 1999, an announced merger-of-equals transaction between Cyprus Amax Minerals Company and ASARCO Incorporated, initiated competition between North American copper producers for control of the U.S. copper industry. Following numerous offers and counter offers, including an attempt by Phelps Dodge to acquire the assets of both Asarco and Cyprus Amax, a realigned industry emerged by mid-October: Phelps Dodge acquired Cyprus Amax and Mexico's Grupo Mexico S.A. de C.V. acquired the assets of Asarco. (For details see Copper Mineral Industry Surveys for July and August 1999.)

The above closures and ownership changes were part of cost-cutting measures encouraged by the low prevailing copper prices and the perception that the underlying oversupply would continue at least through 2000. Worldwide exchange warehouse inventories of copper rose to 975,000 tons in August, up from 177,000 tons at yearend 1996.

World Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves ¹⁰	Reserve base ¹⁰
	<u>1998</u>	<u>1999</u> °		
United States	1,860	1,660	45,000	90,000
Australia	604	730	7,000	23,000
Canada	707	630	10,000	23,000
Chile	3,691	4,360	88,000	160,000
China	476	450	18,000	37,000
Indonesia	781	765	19,000	25,000
Kazakhstan	337	350	14,000	20,000
Mexico	385	375	15,000	27,000
Peru	522	540	19,000	40,000
Poland	415	450	20,000	36,000
Russia	515	520	20,000	30,000
Zambia	320	280	12,000	34,000
Other countries	<u>1,590</u>	1,530	50,000	105,000
World total (may be rounded)	12,200	12,600	340,000	650,000

<u>World Resources</u>: Land-based resources are estimated at 1.6 billion tons of copper, and resources in deep-sea nodules are estimated at 0.7 billion tons.

<u>Substitutes</u>: Aluminum substitutes for copper in various products, such as electrical power cables, electrical equipment, automobile radiators, and cooling/refrigeration tubing. Titanium and steel are used in heat exchangers, and steel is used for artillery shell casings. Optical fiber substitutes for copper in some telecommunications applications. Plastics also substitute for copper in water pipe, plumbing fixtures, and many structural applications.

eEstimated.

¹Some electrical components are included in each end use. Distribution by Copper Development Association, 1999.

²From both domestic and imported ores and concentrates.

³From both primary and secondary refineries.

⁴Defined as primary refined production + copper from old scrap converted to refined metal and alloys + refined imports - refined exports ± changes in refined stocks. In 1998 and 1999 general imports of 725,000 tons and 880,000 tons, respectively were used to calculate apparent consumption. ⁵Held by industry, COMEX, and London Metal Exchange warehouses in the United States.

⁶Defined as imports - exports + adjustments for Government and industry stock changes for refined copper.

⁷Value of copper content.

⁸Broken Hill Propriety Ltd., 1999, BHP 1999 profit result: Melbourne, Australia, BHP press release, June 25, 2 p.

⁹Phelps Dodge Corp., 1999, Phelps Dodge Curtails Copper Production and restructures wire and cable business: Phoenix, AZ, Phelps Dodge financial news, June 30, 2 p.

¹⁰See Appendix C for definitions.