

COPPER

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

Domestic Production and Use: Domestic mine production in 2006 rose to more than 1.2 million tons and was valued at about \$8.6 billion. The principal mining States, in descending order of production—Arizona, Utah, New Mexico, Nevada, and Montana—accounted for 99% of domestic production; copper was also recovered at mines in two other States. Although copper was recovered at 26 mines operating in the United States, 17 mines accounted for more than 99% of production. Three primary smelters, 4 electrolytic and 3 fire refineries, and 14 solvent extraction-electrowinning facilities operated during the year. Refined copper and direct-melt scrap were consumed at about 30 brass mills; 16 rod mills; and 500 foundries, chemical plants, and miscellaneous consumers. Copper and copper alloy products were used in building construction, 49%; electric and electronic products, 20%; transportation equipment, 11%; consumer and general products, 11%; and industrial machinery and equipment, 9%.¹

Salient Statistics—United States:	2002	2003	2004	2005	2006^e
Production:					
Mine	1,140	1,120	1,160	1,140	1,220
Refinery:					
Primary	1,440	1,250	1,260	1,210	1,290
Secondary	70	53	55	51	50
Copper from all old scrap	208	206	186	182	170
Imports for consumption:					
Ores and concentrates	72	27	23	(²)	(²)
Refined	927	882	807	1,000	1,120
Unmanufactured	1,230	1,140	1,060	1,130	1,300
Exports:					
Ores and concentrates	23	9	24	137	140
Refined	26	93	118	40	90
Unmanufactured	506	703	789	820	920
Consumption:					
Reported refined	2,370	2,290	2,410	2,270	2,260
Apparent unmanufactured ³	2,610	2,430	2,550	2,400	2,440
Price, average, cents per pound:					
Domestic producer, cathode	75.8	85.2	133.9	173	320
London Metal Exchange, high-grade	70.7	80.7	130.0	168	309
Stocks, yearend, refined, held by U.S. producers, consumers, and metal exchanges	1,030	657	134	66	115
Employment, mine and mill, thousands ^e	7.0	6.8	7.0	7.0	7.2
Net import reliance ⁴ as a percentage of apparent consumption	37	40	43	42	40

Recycling: Old scrap, converted to refined metal and alloys, provided 170,000 tons of copper, equivalent to 7% of apparent consumption. Purchased new scrap, derived from fabricating operations, yielded 840,000 tons of contained copper; about 88% of the copper contained in new scrap was consumed at brass or wire-rod mills. Of the total copper recovered from scrap (including aluminum- and nickel-base scrap), brass mills recovered 74%; miscellaneous manufacturers, foundries, and chemical plants, 12%; ingot makers, 10%; and copper smelters and refiners, 4%. Copper in all old and new, refined or remelted scrap contributed about 31% of the U.S. copper supply.

Import Sources (2002-05): Unmanufactured: Chile, 34%; Canada, 33%; Peru, 19%; Mexico, 6%; and other, 8%. Refined copper accounted for 78% of unwrought copper imports.

Tariff: Item	Number	Normal Trade Relations⁵ 12-31-06
Copper ores and concentrates	2603.00.0000	1.7¢/kg lead content.
Unrefined copper; anodes	7402.00.0000	Free.
Refined and alloys; unwrought	7403.00.0000	1.0% ad val.
Copper wire (rod)	7408.11.6000	3.0% ad val.

Depletion Allowance: 15% (Domestic), 14% (Foreign).

Government Stockpile: 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. Details on inventories of beryllium-copper master alloys (4% beryllium) can be found in the section on beryllium.

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Events, Trends, and Issues: Copper prices continued their upward trend during the first 5 months of the year, and in May the COMEX spot price reached a record-high price of \$4.08 per pound, nearly twice the previous record-high price of \$2.28 set in December 2005. The refined copper production deficit that had persisted over the preceding 3 years resulted in tight supplies, limited stock availability, and concerns over supply adequacy. Higher metal prices also led to increased speculative interest in metal markets. Global mine production in 2006 fell short of expectations owing to production problems in Indonesia, Chile, and the United States, as well as labor disruptions in Chile and Mexico. According to data compiled by the International Copper Study Group,⁶ world production and use of refined copper during the first 7 months of 2006 were essentially balanced. China remained the largest user, accounting for about 20% of world consumption. Though volatile, prices remained at unprecedented levels, and the COMEX spot price averaged about \$3.54 per pound during the third quarter of the year. Record-high profits led to competition for and consolidation of international copper mining companies.

In the United States, mine production rose to its highest level since 2001, following return to full production of mines affected by a 16-week strike in 2005; startup of new mines in Montana, Nevada, and Utah; and restart of concentrate production at a major mine in Arizona. After final permits were received, construction began on a major new mine-for-leach operation in Arizona. Consumption of refined copper declined slightly owing to the compound effects of a turndown in the housing market, substitution for copper tubing occasioned by the high copper prices, and greater import penetration by foreign copper wire rod. By yearend, at least one copper tube mill had closed. U.S. mine and refinery production were expected to increase in 2007 as the new operations started up or reached capacity.

World Mine Production, Reserves, and Reserve Base: Official reserves reported by Poland include properties being considered for future development.

	Mine production		Reserves ⁷	Reserve base ⁷
	2005	2006 ^e		
United States	1,140	1,220	35,000	70,000
Australia	927	950	24,000	43,000
Canada	567	600	9,000	20,000
Chile	5,320	5,400	150,000	360,000
China	755	760	26,000	63,000
Indonesia	1,070	800	35,000	38,000
Kazakhstan	402	430	14,000	20,000
Mexico	429	380	30,000	40,000
Peru	1,010	1,050	30,000	60,000
Poland	523	525	30,000	48,000
Russia	700	720	20,000	30,000
Zambia	436	540	19,000	35,000
Other countries	<u>1,720</u>	<u>1,920</u>	<u>60,000</u>	<u>110,000</u>
World total (rounded)	15,000	15,300	480,000	940,000

World Resources: A recent assessment of U.S. copper resources indicated 550 million tons of copper in identified (260 million tons) and undiscovered resources (290 million tons), more than double the previous estimate.⁸ A preliminary assessment similarly indicates that global land-based resources exceed 3 billion tons, about double the previously published estimate. Deep-sea nodules were estimated to contain 700 million tons of copper.

Substitutes: Aluminum substitutes for copper in power cables, electrical equipment, automobile radiators, and cooling/refrigeration tube; titanium and steel are used in heat exchangers; optical fiber substitutes for copper in some telecommunications applications; and plastics substitute for copper in water pipe, drain pipe, and plumbing fixtures.

^eEstimated.

¹Some electrical components are included in each end use. Distribution for 2005 by the Copper Development Association, 2006.

²Less than ½ unit.

³Defined as primary refined production + copper from old scrap converted to refined metal and alloys + refined imports – refined exports ± changes in refined stocks. In 2002, 2003, 2004, 2005, and 2006, general imports of 1,060,000 tons, 687,000 tons, 704,000 tons, and 977,000 tons, and 1,120,000 tons, respectively, were used to calculate apparent consumption.

⁴Defined as imports – exports + adjustments for Government and industry stock changes for refined copper.

⁵No tariff for Canada and Mexico for items shown. Tariffs for other countries for some items may be eliminated under special trade agreements.

⁶International Copper Study Group, 2006, July 2006 data: Lisbon, Portugal, International Copper Study Group press release, October 17, 1 p.

⁷See Appendix C for definitions.

⁸U.S. Geological Survey National Mineral Resource Assessment Team, 2000, 1998 assessment of undiscovered deposits of gold, silver, copper, lead, and zinc in the United States: U.S. Geological Survey Circular 1178, 21 p.