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

**Domestic Production and Use:** Domestic mine production in 1995 continued its upward trend, begun in 1984, rising to almost 1.9 million metric tons valued at about \$5.7 billion. The five principal mining States, in descending order, Arizona, Utah, New Mexico, Montana, and Michigan, accounted for 97% of domestic production; copper was also recovered at mines in seven other States. While copper was recovered at about 40 mines operating in the United States, 15 mines accounted for about 95% of production. Seven primary and 4 secondary smelters, 7 electrolytic and 6 fire refineries, and 15 solvent extraction-electrowinning operations were operating at yearend. Refined copper and direct melt scrap were consumed at about 35 brass mills, 15 rod mills, and 600 foundries, chemical plants, and miscellaneous consumers. Copper and copper alloy products were consumed<sup>1</sup> in building construction, 42%; electric and electronic products, 22%; industrial machinery and equipment, 13%; transportation equipment, 13%; and consumer and general products, 10%.

| Salient Statistics—United States:<br>Production: Mine | <u>1<b>991</b></u><br>1,630 | <u>1<b>992</b></u><br>1,760 | <u><b>1993</b></u><br>1,800 | <u>1<b>994</b></u><br>1,810 | <u>1995</u> °<br>1,890 |
|---|-----------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------|
| Refinery: Primary <sup>2</sup>                        | 1,580                       | 1,710                       | 1,790                       | 1,830                       | 1,910                  |
| Secondary <sup>3</sup>                                | 418                         | 433                         | 460                         | 392                         | 370                    |
| Copper from all old scrap                             | 518                         | 554                         | 543                         | 500                         | 490                    |
| Imports for consumption:                              |                             |                             |                             |                             |                        |
| Ores and concentrates                                 | 61                          | 102                         | 37                          | 82                          | 150                    |
| Refined   | 289                         | 289                         | 343                         | 470                         | 420                    |
| All imports   | 512                         | 593                         | 637                         | 763                         | 830                    |
| Exports: Ores and concentrates                        | 253                         | 266                         | 227                         | 261                         | 250                    |
| Refined   | 263                         | 177                         | 217                         | 157                         | 240                    |
| All exports   | 806                         | 676                         | 685                         | 752                         | 850                    |
| Consumption: Refined, reported                        | 2,050                       | 2,180                       | 2,360                       | 2,680                       | 2,590                  |
| Apparent, primary and old scrap <sup>4</sup>          | 2,090                       | 2,300                       | 2,510                       | 2,680                       | 2,570                  |
| Price, average, cents per pound:                      | ·                           |                             |                             |                             |                        |
| Domestic producer, cathode                            | 109.3                       | 107.4                       | 91.6                        | 111.0                       | 137                    |
| London Metal Exchange, high-grade                     | 106.0                       | 103.7                       | 86.8                        | 104.6                       | 132                    |
| Stocks, yearend, refined <sup>5</sup>                 | 132                         | 205                         | 153                         | 119                         | 135                    |
| Employment, mine and mill, thousands                  | 13.7                        | 13.6                        | 13.3                        | 13.2                        | 13.3                   |
| Net import reliance <sup>6</sup> as a percent of      |                             |                             |                             |                             |                        |
| apparent consumption                                  | Е                           | 2                           | 7                           | 13                          | 6                      |

**<u>Recycling</u>**: Old scrap, converted to refined metal and alloys, provided 460,000 tons of copper or 18% of apparent consumption. Purchased new scrap, derived from copper fabricating operations, yielded 850,000 tons of contained copper; 80% of the copper contained in new scrap was consumed at brass mills. Of the total copper recovered from scrap, copper smelters and refiners recovered 27%; ingot makers, 10%; brass mills, 58%; and miscellaneous manufacturers, foundries, and chemical plants, 5%. Copper in all old and new, refined or remelted scrap comprised 39% of U.S. copper supply.

**Import Sources (1991-94):** Canada unalloyed, 49%; Chile, 18%; Mexico, 12%; and other, 21%. Refined copper comprised 57% of imports of unwrought copper.

| <u>Tariff</u> : Item                               | Number                                       | Most favored<br>nation (MFN)               | Canada                               | Mexico               | Non-MFN <sup>7</sup>                     |
|--|--|--|--------------------------------------|----------------------|--|
|  | <u>12/31/95</u>                              | <u>12/31/95</u>                            | <u>12/31/95</u>                      | <u>12/31/95</u>      |  |
| Unrefined copper;<br>anodes<br>Refined and alloys; | 7402.00.0000                                 | 0.8% ad val. <sup>8</sup>                  | Free                                 | 0.6% ad val.8        | 6% ad val. <sup>8</sup>                  |
| unwrought<br>Copper powder<br>Copper wire (bare)   | 7403.00.0000<br>7406.10.0000<br>7408.11.6000 | 1% ad val.<br>4.3% ad val.<br>3.8% ad val. | Free<br>1.6% ad val.<br>1.2% ad val. | Free<br>Free<br>Free | 6% ad val.<br>49% ad val.<br>28% ad val. |

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

Events, Trends, and Issues: World mine production of copper, which had declined in the previous 2 years, rose by

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about 400,000 tons, principally owing to major increases in production in Canada, Chile, Indonesia, and the United States. Higher prices allowed several Canadian mines to reopen. In Chile, a full year's production from a mine commissioned late in 1994 and expansions of existing mines accounted for most of the increase. Though plans were underway to recapture some lost capacity in Zaire, political turmoil continued to keep that country's copper production all but shuttered. While world production of refined copper rose by about 400,000 tons, world consumption rose by more than 500,000 tons. As a result, global inventories declined for the second consecutive year; in June, the combined stocks held on both the Commodity Exchange, Inc. (COMEX) and the London Metal Exchange, Ltd. (LME) fell to the lowest level in 5 years. Conversely, prices rose to their highest levels in 5 years. The LME opened U.S. warehouses early in the year: The first deliveries to these warehouses were made in July, when LME copper traded at a slight premium compared with that on COMEX.

In the United States, mine production rose as a result of capital investments made at several mines during the past 2 years, increased capacity utilization at several leaching operations that had been affected by heavy rains in 1993-94, and a major expansion at one mine late in 1994. Several small operations were also scheduled for startup late in 1995. One underground mine in Michigan that had experienced rising costs during 1994 closed in September, along with its associated refinery; the smelter had closed earlier in the year. In Utah, a large new smelter, replacing an existing smelter, started production at midyear. A major secondary smelter closed at yearend 1994, followed by its associated refinery and wire rod mill in February and October, respectively. Domestic demand for refined copper declined in 1995, following 3 years of exceptional growth.

Domestic copper companies continued to look toward South American investments to increase their capacity and lower their average production costs. Three domestic companies continued to invest in Peruvian properties acquired in 1994, and one company acquired the rights to develop the El Abre project in Chile.

## World Mine Production, Reserves, and Reserve Base:

|                       | Mine production |               | <b>Reserves</b> <sup>9</sup> | Reserve base <sup>9</sup> |
|-----------------------|-----------------|---------------|------------------------------|---------------------------|
|                       | <u>1994</u>     | <u>1995</u> ° |                              |                           |
| United States         | 1,810           | 1,890         | 45,000                       | 90,000                    |
| Australia             | 416             | 420           | 7,000                        | 23,000                    |
| Canada                | 623             | 740           | 11,000                       | 23,000                    |
| Chile                 | 2,220           | 2,350         | 88,000                       | 163,000                   |
| China                 | 350             | 350           | 3,000                        | 8,000                     |
| Indonesia             | 322             | 380           | 11,000                       | 15,000                    |
| Kazakstan             | 202             | 220           | 14,000                       | 20,000                    |
| Peru                  | 399             | 400           | 7,000                        | 24,000                    |
| Philippines           | 110             | 115           | 7,000                        | 11,000                    |
| Poland                | 328             | 340           | 20,000                       | 36,000                    |
| Russia                | 573             | 600           | 20,000                       | 30,000                    |
| Zaire                 | 40              | 40            | 10,000                       | 30,000                    |
| Zambia                | 385             | 350           | 12,000                       | 34,000                    |
| Other countries       | 1,660           | 1,600         | 55,000                       | 100,000                   |
| World total (rounded) | 9,430           | 9,800         | 310,000                      | 610,000                   |

World Resources: 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.

**Substitutes:** Aluminum substitutes for copper in various products, such as electrical equipment, automobile radiators, and refrigerator 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.

<sup>e</sup>Estimated. E Net exporter.

<sup>1</sup>Some electrical components are included in each end use. Estimated after Copper Development Association, 1994.

<sup>2</sup>Includes production from imported ores and concentrates.

<sup>3</sup>From both primary and secondary refineries.

<sup>4</sup>Defined as primary refined production + copper from old scrap converted to refined metal and alloys + refined imports - refined exports ± changes in refined stocks.

<sup>5</sup>Held by industry, Government, and the Commodity Exchange, Inc.; Government stocks were liquidated in 1993.

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

<sup>7</sup>See Appendix B.

<sup>8</sup>Value of copper content.

<sup>9</sup>See Appendix C for definitions.