# GYPSUM 

By Ronald F. Balazik

The United States continued to be the world leader in gypsum output and demand in 1996. Increased housing construction spurred domestic demand for gypsum building products during the year. The ownership of U.S. production facilities continued the consolidation trend of recent years as new companies entered the industry and others withdrew. For example, Georgia Pacific Corp. concluded its purchase of all gypsum mines and wallboard plants owned by the Canadian company, Domtar Inc. Also in 1996, three domestic producers planned to construct gypsum wallboard plants that would use only byproduct gypsum as feed material.

Data on the domestic gypsum industry are derived by the U.S. Geological Survey (USGS) from monthly, quarterly, and annual surveys of gypsum operations and from data provided by the Gypsum Association. The 1996 USGS survey, which canvassed more than 100 gypsum operations, had a response rate of $94 \%$, accounting for virtually all domestic production. The output of producers that did not respond to the survey was estimated from annual canvasses of previous years and from other sources.

## Production

The United States in 1996 continued to be the world's leading gypsum producer, accounting for $18 \%$ of global output. Domestic production of crude gypsum rose $5 \%$ during the year to 17.5 million metric tons, valued at $\$ 124$ million. (See table 1.)

Crude gypsum was mined domestically by 30 companies at 61 mines in 20 States. The top producing States, in descending order, were Oklahoma, Texas, Iowa, Michigan, Nevada, California, and Indiana. These States, with 36 mines, produced more than one million tons each and together accounted for $73 \%$ of total domestic output. (See table 2.)

Leading producers were U.S. Gypsum Co., 11 mines; Georgia-Pacific Corp., 9 mines; National Gypsum Co., 7 mines; and Harrison Gypsum Inc., 3 mines. These companies produced almost two-thirds of total U.S. crude gypsum. The 10 largest gypsum mines in the United States accounted for $39 \%$ of domestic output in 1996. These mines, owned by five companies, had an average output of 670,000 tons.

Gypsum was "calcined" (that is, partially dehydrated by heating) at 67 plants operated by 10 companies in 28 States during 1996, principally to produce feedstock for wallboard and plaster plants. The quantity and value of calcined output increased significantly relative to production in the preceding year. Leading States were (in descending order) Iowa, California, Texas, Florida, Oklahoma, and New York. These

States, with 25 plants, accounted for $43 \%$ of national output. (See table 3.)

Companies with the most calcining plants were U.S. Gypsum Co., 20; National Gypsum, 18; Georgia-Pacific, 17; and Celotex Corp., 4. These companies produced more than $80 \%$ of national output. The largest 10 calcining plants in the United States accounted for more than one-third of domestic production in 1996. These plants, owned by five companies, had an average output of almost 700,000 tons.

In addition to mined gypsum, byproduct gypsum is generated by various industrial processes and by flue gas desulfurisation (FGD) at many coal-burning electric powerplants. Byproduct gypsum is used principally for wallboard manufacturing, agriculture, roadbase, and fill material. In response to USGS surveys, 10 companies operating 14 plants in 11 States reported sales of 2.4 million tons of byproduct gypsum in 1996. Byproduct gypsum sales by the companies have been increasing in recent years. In addition to these companies, about 60 domestic coal-fired electric utilities generated 21.5 million tons of FGD gypsum during 1996, 15\% more than in 1995. Only 1.5 million tons of the FGD material generated in 1996 was used, primarily for wallboard production (American Coal Ash Association, 1997).

During 1996, 13 U.S. companies manufactured gypsum wallboard products at 75 plants. Total production capacity at the plants increased slightly during the year to 26.1 billion square feet ( 2.42 billion square meters). Wallboard shipments totaled 24 billion square feet ( 2.19 billion square meters), or $91 \%$ of production capacity.

Three domestic gypsum producers plan to build new wallboard plants designed to use FGD gypsum from electric utilities. The plants will be constructed in Bridgeport, AL, Clarksville, TN, and Shippingsport, PA. All of the plants are scheduled to be operational by the year 2000 (Drake, 1997; The McIlvaine Co., 1997).

## Consumption

A 9\% growth in housing starts during 1996 (Bureau of the Census, 1997) stimulated gypsum consumption during the year. Apparent U.S. consumption of gypsum (defined as mine output plus net imports, industry stock changes, and byproduct use) reached at least 26.5 million tons during the year; consumption may have been greater if unreported byproduct gypsum was utilized. Domestic sources (mining plus 3.9 million tons of byproduct gypsum) met $81 \%$ of domestic consumption requirements; remaining needs were satisfied with imports.

Gypsum output is categorized as either calcined or
uncalcined. About 19 million tons of gypsum was calcined for use in wallboard and plaster products during 1996, accounting for $71 \%$ of total gypsum use in the United States. Uncalcined gypsum, used for portland cement production, agriculture, and filler material, accounted for virtually all the remaining consumption. (See table 4.)

Most of the calcined gypsum consumed in wallboard manufacturing during 1996 (86\%) was used to produce regular $1 / 2$-inch wallboard and fire-resistant type X wallboard. Mobilehome board, water/moisture-resistant board, lath, veneer base, and sheathing composed most of the balance. (See table 5.) The leading sales areas for these gypsum wallboard products were (in descending order) the South Atlantic, the Eastern North-Central, the Western South-Central, and the Pacific regions of the United States.

More than two-thirds of the uncalcined gypsum consumed in the United States during 1996 was used in portland cement production, while the remainder was used primarily for agricultural purposes. Gypsum is added to cement to retard the setting time; gypsum composes about $2 \%$ to $5 \%$ of cement output (Dutton, 1997). Finely ground gypsum rock is used in agriculture to neutralize alkaline soils, to improve the permeability, and to provide sulfur and catalytic support for maximum fertilizer benefits. Small amounts of pure gypsum also are employed in a wide range of industrial uses, including glassmaking, papermaking, and pharmaceutical applications.

## Stocks

At yearend 1996, stocks of crude gypsum at mines and calcining plants totaled 4.5 million tons. Reported stocks had been 2.1 million tons at the beginning of the year.

## Prices

The average values per ton (f.o.b. mine or plant) reported by producers for 1996 decreased slightly to $\$ 7.10$ for crude gypsum and increased $17 \%$ to $\$ 20.27$ for calcined gypsum. The average per-ton values of gypsum for plaster, wallboard, and uncalcined products were $\$ 148, \$ 102$, and $\$ 12$, respectively. Delivered prices for uncalcined gypsum to agricultural markets and cement plants reportedly ranged from $\$ 13$ to $\$ 40$ per ton, depending on transport mode and distance shipped (Glasscock, 1996).

Yearend prices for comparable gypsum wallboard products in 20 U.S. cities varied considerably. Regular $1 / 2$-inch wallboard prices ranged from $\$ 93$ per 1,000 square feet ( 928 square meters) in Cincinnati to $\$ 210$ in Minneapolis. The average yearend price for the 20 cities was $\$ 155$ per 1,000 square feet, about $\$ 4$ more than at the beginning of the year (Stussman, 1996).

## Foreign Trade

The United States is a world leader in the international trade of gypsum and gypsum products; in 1996, crude gypsum was
imported from 12 countries and gypsum wallboard was exported to 62 countries. Only a small amount of crude gypsum is exported by the United States. (See tables 6 and 7.)

Net imports of crude gypsum, which decreased slightly during the year, accounted for almost one-third of apparent consumption. Much of this import dependance can be attributed to the lack of adequate gypsum resources near large East Coast markets. Canada and Mexico, the major U.S. sources of crude gypsum imports, primarily supplied wallboard plants in coastal markets; most imports from Canada went to East Coast plants, while Mexican sources chiefly served the West Coast. Foreign subsidiaries of some domestic gypsum companies produced much of the gypsum that was imported for the wallboard plants. Smaller gypsum imports were used for portland cement production as well.

Wallboard exports totaling about 92 million square feet (8.5 million square meters) and valued at $\$ 23$ million were shipped to Asia, Europe, and Latin America. Wallboard imports were about 860 million square feet ( 80 million square meters), valued at $\$ 89$ million. The imports were from four countries, but virtually all came from Canada and Mexico.

## World Review

More than 90 countries produce gypsum throughout the world. (See table 8.) Global production of gypsum is estimated to have reached about 100 million tons in 1996. This estimate may be low because in some countries output that is used by the gypsum producers themselves to make other products is not reported. Moreover, production from small deposits in developing countries is intermittent and frequently unreported.

As a low-value, high-bulk commodity drawn from deposits widely distributed throughout the world, gypsum tends to be consumed within the many countries that mine it. It is estimated that less than $20 \%$ of world gypsum production enters international trade. Nevertheless, a few countries are significant exporters. Canada and Mexico, for example, export much of their output to large, nearby markets in the United States.

Industrialized nations such as the United States use gypsum primarily for wallboard products. However, in developing countries (particularly those of Asia) most gypsum is utilized by cement plants.

Estimated world production capacity for gypsum wallboard in 1996 was approximately 54 billion square feet ( 5 billion square meters) at about 240 plants worldwide (Mields, 1996). Most of this capacity was in the United States (45\%), Western Europe (20\%), and Asia (20\%). Plans for the construction of new wallboard plants in several countries; for example, China, Germany, and the United States) were announced in 1996 (McCaffrey, 1996; Tradeship Publications, 1997).

## Outlook

Market demand for gypsum in the United States is projected to increase approximately $2 \%$ per year in the remaining 1990's (Weiss, 1997). Domestic gypsum prices are expected to remain
stable during the forecast period. World demand will be driven primarily by the construction industry, particularly in the United States where more than $90 \%$ of the gypsum currently consumed is used for gypsum wallboard products, building plasters, and the manufacture of portland cement. In developing nations, the rate of gypsum use for wallboard will grow as new wallboard plant capacity is added.

The utilization of byproduct gypsum generated by industrial processes and the desulfurization of electric powerplant emissions will accelerate as new wallboard plants that use byproduct feedstock are opened. However, more favorable economic circumstances that support byproduct gypsum as a replacement for natural gypsum (for example, rising ore costs) are necessary to encourage further substitution.

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${ }^{1}$ Prior to January 1996, published by U.S. Bureau of Mines.

TABLE 1
SALIENT GYPSUM STATISTICS $1 /$
(Thousand metric tons and thousand dollars)

|  | 1992 | 1993 | 1994 | 1995 | 1996 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| United States: |  |  |  |  |  |
| Active mines and plants $2 /$ | 109 | 112 | 108 | 115 | 111 |
| Crude: |  |  |  |  |  |
| Mined | 14,800 | 15,800 | 17,200 | 16,600 | 17,500 |
| Value | \$101,000 | \$107,000 | \$115,000 | \$121,000 | \$124,000 |
| Imports for consumption | 7,180 | 7,390 | 8,470 | 8,160 | 8,050 |
| Byproduct gypsum sales | 630 | 846 | 950 | 1,220 | 2,420 |
| Calcined: |  |  |  |  |  |
| Produced | 15,100 | 15,200 | 16,700 | 16,700 | 18,800 |
| Value | \$250,000 | \$272,000 | \$288,000 | \$290,000 r/ | \$381,000 |
| Products sold (value) | \$1,350,000 3/ | \$1,780,000 3/ | \$2,630,000 3/ | \$2,120,000 | \$2,380,000 |
| Exports (value) | \$97,000 | \$77,600 | \$73,400 | \$75,100 | \$81,400 |
| Imports for consumption (value) | \$96,000 | \$111,000 | \$141,000 | \$166,000 | \$196,000 |
| World: Production | 98,800 r/ | 97,100 r/ | 96,200 r/ | 96,500 r/ | 99,700 e/ |
| e/ Estimated. r/ Revised. |  |  |  |  |  |
| 1/ Data are rounded to three signific <br> 2/ Each mine, calcining plant, or con <br> 3/ Does not include value of plasters | its. <br> n mine and plant | ounted as one es | lishment; inclu | plants that sold | pproduct gypsum |

TABLE 2
CRUDE GYPSUM MINED IN THE UNITED STATES, BY STATE OR REGION 1/

|  | 1995 |  |  | 1996 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Active mines | Quantity (thousand metric tons) | Value (thousands) | Active mines | Quantity (thousand metric tons) | Value <br> (thousands) |
| Arizona and New Mexico | 5 | 880 | \$6,332 | 6 | 1,200 | \$8,875 |
| Arkansas, Kansas, Louisiana | 5 | 1,490 | 11,400 | 5 | 1,580 | 12,400 |
| California, Nevada, Utah | 12 | 3,000 | 16,600 | 13 | 3,310 | 20,700 |
| Colorado, South Dakota, Wyoming | 5 | 756 | 5,380 | 7 | 883 | 6,720 |
| Indiana, New York, Ohio, Virginia | 5 | 2,000 | 19,300 | 5 | 1,950 | 19,200 |
| Iowa | 6 | 2,240 | 13,800 | 6 | 2,090 | 12,800 |
| Michigan | 5 | 1,510 | 14,900 | 5 | 1,590 | 14,400 |
| Oklahoma | 8 | 2,380 | 17,000 | 7 | 2,690 | 16,500 |
| Texas | 6 | 1,880 | 16,200 | 6 | 2,240 | 12,100 |
| Total | 57 | 16,600 | 121,000 | 60 | 17,500 | 124,000 |

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

TABLE 3
CALCINED GYPSUM PRODUCED IN THE UNITED STATES, BY STATE OR REGION 1/

|  | 1995 |  |  | 1996 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Active <br> plants | Quantity (thousand metric tons) | Value (thousands) | Active plants | Quantity (thousand metric tons) | Value (thousands) |
| Arizona, Colorado, New Mexico, Utah | 5 | 1,040 | \$8,400 | 5 | 1,150 | \$9,340 |
| Arkansas, Louisiana, Oklahoma | 7 | 1,990 | 24,100 | 7 | 2,240 | 30,900 |
| California | 5 | 1,360 | 23,400 | 5 | 1,450 | 66,000 |
| Delaware, Maryland, North Carolina, Virginia | 6 | 1,320 | 33,300 | 6 | 1,420 | 84,600 |
| Florida | 3 | 1,180 | 28,000 | 3 | 1,290 | 30,900 |
| Georgia | 3 | 506 | 8,860 | 3 | 638 | 15,700 |
| Illinios, Indiana, Kansas | 6 | 1,400 | 23,500 | 6 | 1,270 | 21,700 |
| Iowa | 5 | 1,470 | 22,400 | 5 | 1,730 | 20,900 |
| Massachusetts, New Hampshire, New Jersey | 5 | 1,100 | 23,500 | 5 | 1,050 | 23,200 |
| Michigan | 4 | 601 | 13,400 | 4 | 544 | 12,400 |
| Nevada | 4 | 1,180 | 13,600 | 3 | 805 | 7,060 |
| New York | 4 | 1,020 | 22,000 | 4 | 1,010 | 18,100 |
| Ohio | 3 | 425 | 8,940 | 3 | 2,250 | 9,300 |
| Texas | 5 | 1,290 | 20,100 | 5 | 1,320 | 18,900 |
| Washington and Wyoming | 4 | 859 | 16,600 | 3 | 636 | 12,000 |
| Total | 69 | 16,700 | 290,000 | 67 | 18,800 | 381,000 |

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

TABLE 4
GYPSUM PRODUCTS (MADE FROM DOMESTIC, IMPORTED, AND BYPRODUCT GYPSUM) SOLD OR USED IN THE UNITED STATES, BY USE 1/
(Thousand metric tons and thousand dollars)

|  | 1995 |  | 1996 |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Quantity | Value | Quantity | Value |
| Uncalcined: |  |  |  |  |
| Portland cement | 4,680 | 54,600 | 5,310 | 59,000 |
| Agriculture and miscellaneous 2/ | 2,140 | 33,600 | 2,280 | 35,000 |
| Total | 6,810 | 88,200 | 7,600 | 94,000 |
| Calcined: |  |  |  |  |
| Plasters | 806 | 89,300 | 653 | 96,500 |
| Prefabricated products 3/ | 18,700 | 1,950,000 | 21,200 | 2,180,000 |
| Total calcined | 19,500 | 2,030,000 | 21,900 | 2,280,000 |
| Grand total | 26,300 | 2,120,000 | 29,500 | 2,380,000 |

1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Includes byproduct gypsum.
3/ Includes weight of paper, metal, or other materials and some byproduct gypsum.

TABLE 5
PREFABRICATED GYPSUM PRODUCTS SOLD OR USED IN THE UNITED STATES 1/

| Product | 1995 |  |  | 1996 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Thousand square feet | Thousand metric tons 2/ | Value (thousands) | Thousand square feet | Thousand metric tons 2/ | Value (thousands) |
| Lath: |  |  |  |  |  |  |
| 3/8 inch | 6,100 | 4 | \$1,250 | 5,360 | 3 | \$1,160 |
| 1/2 inch | 57 | (3/) | 11 | 76 | (3/) | -- |
| Other | -- | -- | -- | 9,510 | 10 | 2,470 |
| Total | 6,160 | 4 | 1,270 | 14,900 | 13 | 3,640 |
| Veneer base | 394,000 | 352 | 36,300 | 467,000 | 458 | 41,500 |
| Sheathing | 314,000 | 266 | 36,800 | 346,000 | 319 | 42,000 |
| Regular gypsumboard: |  |  |  |  |  |  |
| 3/8 inch | 839,000 | 661 | 63,400 | 868,000 | 785 | 75,600 |
| 1/2 inch | 10,600,000 | 8,440 | 928,000 | 11,400,000 | 9,540 | 1,010,000 |
| 5/8 inch | 1,510,000 | 1,290 | 80,500 | 1,750,000 | 1,750 | 100,000 |
| 1 inch | 169,000 | 156 | 31,300 | 186,000 | 199 | 38,100 |
| Other 4/ | 195,000 | 154 | 24,000 | 347,000 | 328 | 31,700 |
| Total | 13,300,000 | 10,700 | 1,130,000 | 14,500,000 | 12,600 | 1,250,000 |
| Type X gypsumboard | 6,080,000 | 5,510 | 486,000 | 5,840,000 | 5,790 | 556,000 |
| Predecorated wallboard | 84,200 | 75 | 27,300 | 89,600 | 87 | 30,700 |
| 5/16-inch mobile home board | 1,260,000 | 943 | 139,000 | 1,630,000 | 1,200 | 156,000 |
| Water-moisture-resistant board | 880,000 | 740 | 75,700 | 703,000 | 640 | 88,100 |
| Other | 139,000 | 116 | 14,100 | 121,000 | 103 | 13,100 |
| Grand total | 22,500,000 | 18,700 | 1,950,000 | 23,700,000 | 21,200 | 2,180,000 |

1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Includes weight of paper, metal, or other materials.
3/ Less than $1 / 2$ unit.
4/ Includes $1 / 4,7 / 16$, and 3/4-inch gypsumboard.

TABLE 6
IMPORTS FOR CONSUMPTION OF CRUDE GYPSUM, BY COUNTRY 1/
(Thousand metric tons and thousand dollars)

| Country | 1995 |  | 1996 |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Quantity | Value | Quantity | Value |
| Australia | 33 | 272 | 3 | 72 |
| Bahamas, The | 298 | 1,490 | 163 | 759 |
| Canada 2/ | 5,560 | 43,800 | 5,490 | 45,200 |
| China | (3/) | 4 | -- | -- |
| Dominican Republic | (3/) | 8 | (3/) | 31 |
| Hong Kong | (3/) | 4 | (3/) | 2 |
| Italy | (3/) | 2 | (3/) | 1 |
| Japan | (3/) | 22 | (3/) | 44 |
| Mexico | 1,890 | 11,600 | 1,860 | 11,700 |
| Philippines | -- | -- | (3/) | 17 |
| Spain | 379 | 2,730 | 541 | 4,400 |
| United Kingdom | (3/) | 95 | 1 | 251 |
| Total | 8,160 | 60,000 | 8,050 | 62,500 |

1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Includes anhydrite.
3/ Less than $1 / 2$ unit.

Source: Bureau of the Census.

TABLE 7
SUMMATION OF U.S. GYPSUM AND GYPSUM PRODUCTS TRADE DATA 1/
(Thousand metric tons and thousands dollars)

| Year | Crude 2/ |  | Plasters 3/ |  | Boards 4/ |  | Other 5/ Value | Total value |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Quantity | Value | Quantity | Value | Quantity | Value |  |  |
| Exports: |  |  |  |  |  |  |  |  |
| 1995 | 79 | 4,240 | 159 | 23,900 | 64 | 17,300 | 29,600 | 75,100 |
| 1996 | 136 | 6,120 | 142 | 25,800 | 80 | 22,800 | 26,700 | 81,400 |
| Imports for consumption: |  |  |  |  |  |  |  |  |
| 1995 | 8,160 | 60,000 | 8 | 1,520 | 560 | 64,400 | 40,300 | 166,000 |
| 1996 | 8,050 | 62,500 | 11 | 2,220 | 748 | 89,300 | 42,400 | 196,000 |

1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Import and export data are for "Gypsum; anhydrite," Harmonized Tariff Schedule 2520.10.0000.
3/ Import and export data are for "Plasters, " Harmonized Tariff Schedule 2520.20.0000.
4/ Import and export data are for " Boards, sheets, panels, tiles and similar articles, not ornamented: Faced or reinforced with paper or paperboard only,"
Harmonized Tariff Schedule 6809.11.0000.
5/ Import and export data are for "Boards, sheets, panels, tiles, and similar articles, not ornamented: other, " Harmonized Tariff Schedule 6809.19.000 and
"Other articles," Hamonized Tariff Schedule 6809.90.0000.

Source: Bureau of the Census.

TABLE 8
GYPSUM: WORLD PRODUCTION, BY COUNTRY 1/ 2/
(Thousand metric tons)

| Country | 1992 | 1993 | 1994 | 1995 | 1996 e/ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Afghanistan e/ | 3 | 3 | 3 | 3 | 3 |
| Algeria e/ | 150 | 150 | 150 | 175 | 175 |
| Angola e/ | 57 | 50 | 50 | 50 | 50 |
| Argentina | 514 | 519 | 515 r/ | 532 r/ | 520 |
| Australia e/ | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 |
| Austria 3/ | 792 | 876 | 1,069 | 873 r/ | 900 |
| Azerbaijan e/ | 100 | 75 | 60 | 50 | 55 |
| Bhutan | 25 | $20 \mathrm{e} /$ | 45 | 52 | 40 |
| Bolivia | $6 \mathrm{e} /$ | $4 \mathrm{e} /$ | 1 | 2 | 55 4/ |
| Bosnia and Herzegovina e/ | 50 | 30 | 30 | 30 | 30 |
| Brazil 3/ | 888 | 874 | 789 | 935 r/ | 935 |
| Bulgaria 3/ | 125 | 143 | -- r/ | 163 r/ | 169 4/ |
| Burma | 31 | 28 | 38 | 35 | 38 |
| Canada 3/ | 7,566 | 7,880 | 8,500 | 8,055 r/ | 8,333 p/ |
| Chile | 424 | 511 | 552 | 550 e/ | 550 |
| China e/ | 11,000 | 10,600 | 6,820 r/ | 7,340 r/ | 8,000 |
| Colombia | 671 | 439 | 450 | $450 \mathrm{r} / \mathrm{e} /$ | 450 |
| Croatia e/ | 50 | 50 | 50 | 97 r/ | 86 4/ |
| Cuba e/ | 125 | 125 | 125 | 130 | 130 |
| Cyprus | 35 | 40 | 89 | $90 \mathrm{e} /$ | 90 |
| Czech Republic 5/ | XX | 560 e/ | 591 | 542 | 550 |
| Czechoslovakia e/ 6/ | 600 | XX | XX | XX | XX |
| Dominican Republic e/ | 83 4/ | 85 | 83 | 85 r/ | 85 |
| Ecuador e/ | -- r/ | -- r/ | -- r/ | -- r/ | -- |
| Egypt 3/ | 1,425 | 1,199 | 1,200 e/ | 1,200 e/ | 1,200 |
| El Salvador e/ | 5 | 5 | 5 | 5 | 5 |
| Eritrea | XX | XX | (7/) | (7/) | (7/) 4/ |
| Ethiopia e/ 3/8/ | 3 | 3 | 31 | 54 | 50 |
| France 3/ | 5,160 | 5,000 e/ | 5,200 | 4,800 r/ | 5,000 |
| Germany (marketable) 3/ | 4,353 | 2,678 | 2,264 | 2,500 r/ | 2,500 |
| Greece 3/ | 452 | 446 r/ | 454 | 450 e/ | 450 |
| Guatemala | 73 r/ | $75 \mathrm{r} / \mathrm{e} /$ | 89 r/ | $90 \mathrm{r} / \mathrm{e} /$ | 90 |
| Honduras e/ | 26 | 26 | 26 | 26 | 26 |
| Hungary 3/ | $120 \mathrm{r} / \mathrm{e} /$ | 125 r/ | $150 \mathrm{r} / \mathrm{e} /$ | 198 r/ | 190 |
| India | 1,301 | 1,805 | 1,730 r/ | 1,739 r/ | 1,700 |
| Indonesia | $400 \mathrm{e} /$ | 2 | 1 | 1 | 1 |
| Iran 9/ | 8,253 | 7,799 | 8,430 | 8,230 | 8,300 |
| Iraq e/ 10/ | 380 | 450 | 450 | 450 | 450 |
| Ireland | 343 | 318 | 367 r/ | 406 r/ | 400 |
| Israel | 48 | 48 | $48 \mathrm{e} /$ | $48 \mathrm{e} /$ | 48 |
| Italy | 835 r/ | 1,200 e/ | 1,361 r/ | 1,200 e/ | 1,200 |
| Jamaica | 145 | 152 | 204 | 208 | 210 |
| Japan | 4,322 | 3,953 | 3,873 | 5,334 r/ | 5,350 |
| Jordan | 83 | 195 | 193 | 190 e/ | 190 |
| Kenya e/ 3/ | 36 | 36 | 36 | 36 | 36 |
| Laos e/ | 80 4/ | 80 | 85 | 85 | 85 |
| Latvia | 350 e/ | 300 e/ | 61 | 81 r/ | 77 4/ |
| Lebanon e/ | 2 | 2 | 2 | 2 | 2 |
| Libya e/ | 180 | 160 | 160 | 160 | 160 |
| Luxembourg e/ 3/ | (7) | (7/) | (7/) | (7/) | (7) |
| Macedonia e/ | 30 | 30 | 25 | 25 | 25 |
| Mali e/ | 1 | 1 | 1 | 1 | 1 |
| Mauritania | 3 | 3 | -- | -- | -- |
| Mexico 3/ | 5,160 | 5,340 | 5,040 | 4,854 r/ | 5,262 4/ |
| Moldova | $75 \mathrm{e} /$ | $25 \mathrm{e} /$ | 15 | 14 | 14 |
| Mongolia e/ | 25 | 25 | 25 | 25 | 25 |
| Morocco e/ | 450 | 450 | 450 | 450 | 450 |
| Namibia e/ | (7) | (7) | (7/) $4 /$ | -- | -- |
| Nicaragua 3/ | 9 | 11 | $11 \mathrm{e} /$ | $13 \mathrm{e} /$ | 13 |
| Niger e/ | 2 4/ | 2 | 2 | 2 | 2 |
| Pakistan | 462 | 535 | 607 | 314 | 504 4/ |
| Paraguay e/ | 5 | 5 | 5 | 5 | 5 |

See footnotes at end of table.

TABLE 8--Continued
GYPSUM: WORLD PRODUCTION, BY COUNTRY 1/ 2/
(Thousand metric tons)

| Country | 1992 | 1993 | 1994 | 1995 | 1996 e/ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Peru e/ | 35 | 35 | 35 | 35 | 35 |
| Philippines e/ 3/ | 25 4/ | 25 | 25 | 25 | 25 |
| Poland 3/ | 843 r/ | 832 | 1,055 | 1,023 r/ | 1,100 |
| Portugal 3/ | 417 | 459 | 450 e/ | 450 e/ | 450 |
| Romania | 800 e/ | 100 | 124 | 111 r/ | 72 4/ |
| Russia e/ | 1,800 | 1,500 | 1,200 | 1,200 | 850 |
| Saudi Arabia | 269 | 327 | 375 e/ | 375 e/ | 375 |
| Serbia and Montenegro | 48 | -- | 40 | 40 | 44 4/ |
| Sierra Leone e/ | 4 | 4 | 4 | (7/) r/ | (7/) |
| Slovakia 3/ 5/ | XX | 75 | 122 | 131 r/ | 110 |
| Slovenia e/ | 10 | 10 | 10 | 10 | 10 |
| Somalia e/ | 2 | 2 | 2 | 2 | 2 |
| South Africa | 334 | 284 | 304 | 288 | 317 4/ |
| Spain 3/ | 6,760 | 7,250 | 7,250 e/ | 7,500 e/ | 8,000 |
| Sudan e/ 3/ | 10 | 10 | 10 | 10 | 5 |
| Switzerland e/ | 200 | 200 | 200 | 200 | 200 |
| Syria | 234 | 300 | 302 | 336 r/ | 340 |
| Taiwan | 2 | 3 | 3 | $3 \mathrm{e} /$ | 3 |
| Tajikistan e/ | 500 | 400 | 300 | 200 | 150 |
| Tanzania 3/ | 27 | 1 | 8 | 1 | 1 |
| Thailand | 7,111 | 7,455 | 8,140 | 8,533 | 8,900 |
| Tunisia e/ | 650 | 650 | 650 | 700 | 700 |
| Turkey | 278 | 493 | 597 r/ | $600 \mathrm{r} / \mathrm{e} /$ | 600 |
| Turkmenistan e/ | 250 | 200 | 150 | 216 r/ 4/ | 170 4/ |
| United Arab Emirates e/ | 95 | 95 | 95 | 90 | 90 |
| United Kingdom e/ 3/ | 3,000 | 2,500 | 2,500 | 2,000 r/ | 2,000 |
| United States 11/ | 14,800 | 15,800 | 17,200 | 16,600 | 17,500 4/ |
| Uruguay e/ | 145 | 145 | 145 | 145 | 145 |
| Venezuela | 175 | 224 | 135 | $135 \mathrm{e} /$ | 135 |
| Vietnam e/ | 30 | 30 | 30 | 30 | 30 |
| Yemen | 80 | 90 | 80 e/ | 80 e/ | 80 |
| Zambia e/ 10/ 12/ | 13 | 13 | 13 | 13 | 13 |
| Total | 98,800 r/ | 97,100 r/ | 96,200 r/ | 96,500 r/ | 99,700 |

e/ Estimated. p/ Preliminary. 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/ Table includes data available through July 15, 1997.
3/ Includes anhydrite.
4/ Reported figure.
5/ Formerly part of Czechoslovakia; data were not reported separately until 1993.
6/ Dissolved Dec. 31, 1992.
7/ Less than $1 / 2$ unit.
8/ Data are for years ending July 7 of that stated. Reported in cubic meters and estimated at mean weight of 1.5 tons per cubic meter. Data for 1992-93 probably do not include production for cement manufacture (normally 3\%-5\% of finished cement, equivalent of an additional 10,000 to 15,000 tons per year).
9/ Data are for years beginning Mar. 21 of that stated.
10/ For cement production only. Information is insufficient to formulate reliable estimates for output for other uses (plaster, mortar, etc.).
11/ Excludes byproduct gypsum.
12/ Data are for years beginning Mar. 1 of that stated.

