

## GYPSUM

(Data in thousand metric tons unless otherwise noted)

**Domestic Production and Use:** In 2008, domestic production of crude gypsum was estimated to be 12.7 million tons with a value of about \$95 million. The leading crude gypsum-producing States were, in descending order, Oklahoma, Arkansas, Iowa, California, Nevada, Texas, Indiana, and Michigan, which together accounted for 77% of total output. Overall, 46 companies produced gypsum in the United States at 51 mines in 29 States, and 9 companies calcined gypsum at 52 plants in 28 States. Approximately 85% of domestic consumption, which totaled approximately 23.8 million tons, was accounted for by manufacturers of wallboard and plaster products. Approximately 3 million tons for cement production, 1.1 million tons for agricultural applications, and small amounts of high-purity gypsum for a wide range of industrial processes, such as smelting and glassmaking, accounted for the remaining tonnage. At the beginning of 2008, the capacity of operating wallboard plants in the United States was about 26.8 billion square feet<sup>1</sup> per year.

<b>Salient Statistics—United States:</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008<sup>e</sup></b>
Production:					
Crude	17,200	21,100	21,100	17,900	12,700
Synthetic <sup>2</sup>	8,400	8,690	9,290	8,500	8,000
Calcined <sup>3</sup>	23,200	21,000	26,100	16,700	18,700
Wallboard products sold (million square feet <sup>1</sup> )	30,500	28,700	35,000	27,800	26,400
Imports, crude, including anhydrite	10,100	11,200	11,400	9,400	7,800
Exports, crude, not ground or calcined	149	148	143	147	159
Consumption, apparent <sup>4</sup>	35,600	40,800	41,600	35,700	28,000
Price:					
Average crude, f.o.b. mine, dollars per metric ton	7.21	7.48	8.83	7.50	7.25
Average calcined, f.o.b. plant, dollars per metric ton	21.07	20.26	19.80	17.37	17.00
Employment, mine and calcining plant, number <sup>e</sup>	5,900	5,900	5,900	6,000	5,400
Net import reliance <sup>5</sup> as a percentage of apparent consumption	28	27	27	26	27

**Recycling:** Some of the more than 4 million tons of gypsum waste that was generated by wallboard manufacturing, wallboard installation, and building demolition was recycled. The recycled gypsum was used primarily for agricultural purposes and for the manufacture of new wallboard. Other potential markets for recycled gypsum include athletic field marking, cement production as a stucco additive, grease absorption, sludge drying, and water treatment.

**Import Sources (2004-07):** Canada, 67%; Mexico, 24%; Spain, 7%; Dominican Republic, 1%; and other, 1%.

<b>Tariff:</b>	<b>Item</b>	<b>Number</b>	<b>Normal Trade Relations</b>
	Gypsum; anhydrite	2520.10.0000	<b>12-31-08</b> Free.

**Depletion Allowance:** 14% (Domestic and foreign).

**Government Stockpile:** None.

**Events, Trends, and Issues:** China was the world's leading producer of gypsum in 2008, evidence of that country's continued and dramatic economic growth. U.S. gypsum production declined as the housing and construction markets continued to falter, with apparent consumption decreasing by about 20%. The construction of new wallboard plants and the expansion of existing plants that began in 2005 slowed in 2008. Recently expanded or renovated facilities will consume synthetic gypsum produced through scrubbed emissions from coal-fired electric power plants. Demand for gypsum depends principally on the strength of the construction industry—particularly in the United States, where about 95% of the gypsum consumed is used for building plasters, the manufacture of portland cement, and wallboard products. Road building and repair are expected to continue to drive gypsum consumption in the cement industry. The construction of large wallboard plants designed to use synthetic gypsum as feedstock will result in less use of natural gypsum as these new plants become operational. In 2008, regional shortages of wallboard supplies, as a result of higher transportation costs from producing States, were met by imports. Imports decreased by approximately 20%. Exports, although very low compared with imports, increased by approximately 8%.

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

	Mine production		Reserves <sup>6</sup>	Reserve base <sup>6</sup>
	2007	2008 <sup>e</sup>		
United States	17,900	12,700	700,000	Large
Algeria	1,200	1,300		
Australia	4,200	4,100		
Austria	1,000	1,000		
Brazil	1,800	1,700	1,300,000	Large
Canada	7,700	7,300	450,000	Large
China	37,000	40,700		
Egypt	2,000	2,000		
France	4,800	4,700		
Germany	1,800	1,700		
India	2,500	2,800		
Iran	12,000	12,000		
Italy	5,500	5,500		
Japan	5,900	5,700		
Mexico	6,100	5,800		
Poland	1,600	1,700		
Russia	2,300	2,400		
Spain	11,500	11,300		
Thailand	8,600	8,800		
United Kingdom	1,700	1,700		
Uruguay	1,200	1,100		
Other countries	15,300	14,900		
World total (rounded)	154,000	151,000	Large	Large

Reserves and reserve base are large in major producing countries, but data are not available.

**World Resources:** Domestic gypsum resources are adequate but unevenly distributed. Large imports from Canada augment domestic supplies for wallboard manufacturing in the United States, particularly in the eastern and southern coastal regions. Imports from Mexico augment domestic supplies for wallboard manufacturing along portions of the U.S. western seaboard. Large gypsum deposits occur in the Great Lakes region, the midcontinent region, and several Western States. Foreign resources are large and widely distributed; 89 countries produce gypsum. China is the leading producer, producing more than twice the annual amount of the United States, the world's second ranked producer. Iran ranks third in world production and supplies much of the gypsum needed for construction in the Middle East. Spain, the leading European producer, ranked fourth in the world, and supplies both crude gypsum and gypsum products to much of Western Europe. An increased use of wallboard in Asia, coupled with new gypsum product plants, amplified production in that region. As more cultures recognize the economics and efficiency of wallboard, worldwide production of gypsum is expected to increase proportionally.

**Substitutes:** In such applications as stucco and plaster, cement and lime may be substituted; brick, glass, metallic or plastic panels, and wood may be substituted for wallboard. Gypsum has no practical substitute in the manufacturing of portland cement. Synthetic gypsum generated by various industrial processes, including flue gas desulfurization of smokestack emissions, is very important as a substitute for mined gypsum in wallboard manufacturing, cement production, and agricultural applications (in descending tonnage order). In 2008, synthetic gypsum accounted for 39% of the total domestic gypsum supply.

<sup>e</sup>Estimated.

<sup>1</sup>The standard unit used in the U.S. wallboard industry is square feet. Multiply square feet by  $9.29 \times 10^{-2}$  to convert to square meters.

<sup>2</sup>Data refer to the amount sold or used, not produced.

<sup>3</sup>From domestic crude.

<sup>4</sup>Defined as crude + total synthetic reported used + imports – exports + adjustments for industry stock changes.

<sup>5</sup>Defined as imports – exports + adjustments for industry stock changes.

<sup>6</sup>See Appendix C for definitions.