

**LIME<sup>1</sup>**(Data in thousand metric tons, unless otherwise noted)<sup>2</sup>

**Domestic Production and Use:** In 2001, quicklime and hydrate producers (excluding commercial hydrators) at 108 plants in 34 States and Puerto Rico sold or used 18.7 million metric tons (20.6 million short tons) of lime valued at about \$1.12 billion, a decrease of about 900,000 tons (990,000 short tons) and a decrease of about \$70 million from 2000 levels. Five companies, operating 38 lime plants and 6 hydrating plants, accounted for about 70% of the total output. Principal producing States, each with production over 1 million tons, were Alabama, Kentucky, Missouri, Ohio, Pennsylvania, and Texas. These six States produced about 10.7 million tons (11.8 million short tons), or 57% of the total output. Major markets for lime were steel, flue gas desulfurization, mining, construction, pulp and paper, precipitated calcium carbonate, and water treatment.

<b>Salient Statistics—United States:</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001<sup>e</sup></b>
Production <sup>3</sup>	19,700	20,100	19,700	19,600	18,700
Imports for consumption	276	231	140	113	104
Exports	80	56	59	73	90
Consumption, apparent	19,900	20,300	19,800	19,600	18,800
Quicklime average value, dollars per ton at plant	57.80	57.60	57.30	57.50	59.00
Hydrate average value, dollars per ton at plant	80.20	78.90	80.20	85.00	76.00
Stocks, yearend	NA	NA	NA	NA	NA
Employment, mine and plant, number	5,600	5,600	5,600	5,600	5,500
Net import reliance <sup>4</sup> as a percentage of apparent consumption	1	1	( <sup>5</sup> )	( <sup>5</sup> )	( <sup>5</sup> )

**Recycling:** Large quantities of lime are regenerated by paper mills. Some municipal water treatment plants regenerate lime from softening sludge. Quicklime is regenerated from waste hydrated lime in the carbide industry. Data for these sources were not included as production in order to avoid duplication.

**Import Sources (1997-2000):** Canada, 90%; Mexico, 8%; and other, 2%.

<b>Tariff: Item</b>	<b>Number</b>	<b>Normal Trade Relations 12/31/01</b>
Quicklime	2522.10.0000	Free.
Slaked lime	2522.20.0000	Free.
Hydraulic lime	2522.30.0000	Free.
Calcined dolomite	2518.20.0000	3% ad val.

**Depletion Allowance:** Limestone produced and used for lime production, 14% (Domestic and foreign).

**Government Stockpile:** None.

**Events, Trends, and Issues:** Graymont Ltd. acquired Con-Lime Inc., a producer of lime, limestone, and dimension stone, near Bellefonte, PA. Con-Lime operates two rotary kilns with a combined capacity of about 136,000 tons per year (150,000 short tons per year). Graymont already operates two plants in the area (Bellefonte plant and Pleasant Gap plant).<sup>6</sup>

Mississippi Lime Co. acquired Ash Grove Cement Co.'s lime plant located at Springfield, MO. The plant produces quicklime and hydrate, including Type S hydrate for construction and food grade hydrate.<sup>7</sup>

Lime sales to the steel industry (lime's largest market) were adversely affected by difficulties experienced by domestic steel producers. Steel companies suffered from low priced imports and slowing demand during the first 3 quarters of the year when U.S. steel production was down more than 10% compared with the same period in 2000. The terrorist attacks of September 11 deepened the contraction of the U.S. economy, and steel production in the fourth quarter was expected to decrease significantly. By the end of October, U.S. steel mills were only operating at 65% of capacity.

In 2000, the price of natural gas increased dramatically and peaked in the winter of 2000-2001 at levels that were 4 to 5 times higher than average prices in 1998 and 1999. Prices came down during 2001, but were still 40% to 50% higher than the 1998 and 1999 average. Consequently, the U.S. lime industry, which routinely consumes natural gas in vertical shaft kilns, shut down individual gas-fired kilns and in some case entire lime plants during 2000 and 2001.

## LIME

### World Lime Production and Limestone Reserves and Reserve Base:

	Production		Reserves and reserve base <sup>8</sup>
	2000	2001 <sup>e</sup>	
United States	19,600	18,700	Adequate for all countries listed.
Belgium	1,750	1,700	
Brazil	5,700	6,300	
Canada	2,600	2,500	
China	21,500	22,000	
France	2,400	2,400	
Germany	7,600	7,600	
Italy <sup>9</sup>	3,500	3,500	
Japan (quicklime only)	7,650	7,600	
Mexico	6,500	6,000	
Poland	2,500	2,500	
Romania	1,700	1,500	
Russia	8,000	8,000	
South Africa (sales)	1,345	1,300	
United Kingdom	2,500	2,500	
Other countries	<u>21,200</u>	<u>21,000</u>	
World total (rounded)	116,000	115,000	

**World Resources:** Domestic and world resources of limestone and dolomite suitable for lime manufacture are adequate.

**Substitutes:** Limestone is a substitute for lime in many applications, such as agriculture, fluxing, and sulfur removal. Limestone contains less reactive material, is slower to react, and may have other disadvantages compared with lime depending on the application; however, limestone is considerably less expensive than lime. Calcined gypsum is an alternative material in industrial plasters and mortars. Cement and lime kiln dust and fly ash are potential substitutes for some construction uses of lime. Magnesium hydroxide is a substitute for lime pH control, and magnesium oxide is a substitute for lime flux in steelmaking.

<sup>e</sup>Estimated. NA Not available.

<sup>1</sup>Data are for quicklime, hydrated lime, and refractory dead-burned dolomite. Excludes Puerto Rico, unless noted.

<sup>2</sup>To convert metric tons to short tons, multiply metric tons by 1.1023.

<sup>3</sup>Sold or used by producers.

<sup>4</sup>Defined as imports - exports + adjustments for Government and industry stock changes; stock changes are assumed to be zero for apparent consumption and net import reliance calculations.

<sup>5</sup>Less than ½ unit.

<sup>6</sup>National Lime Association, 2001a, Graymont acquires Con-Lime: *Limelites*, v. 67, no. 4, April-June, p. 4.

<sup>7</sup>———2001b, Mississippi Lime acquires Ash Grove's Springfield lime plant: *Limelites*, v. 67, no. 4, April-June, p. 4.

<sup>8</sup>See Appendix C for definitions.

<sup>9</sup>Includes hydraulic lime.