

LIME¹(Data in thousand metric tons, unless otherwise noted)²

Domestic Production and Use: In 2000, quicklime and hydrate producers at 117 plants in 37 States and Puerto Rico sold or used 20.1 million tons (22.2 million short tons) of lime valued at about \$1.2 billion, an increase of about 500,000 tons (551,000 short tons) and an increase of about \$20 million from 1999 levels. Five companies, operating 39 lime plants and 6 hydrating plants, accounted for about 68% 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 11.2 million tons (12.3 million short tons) or 56% of the total output. Major markets for lime were steel, flue gas desulfurization, mining, construction, pulp and paper, precipitated calcium carbonate, and water treatment.

Salient Statistics—United States:	1996	1997	1998	1999	2000^e
Production ³	19,200	19,700	20,100	19,600	20,100
Imports for consumption	262	274	231	152	221
Exports	50	80	56	59	72
Consumption, apparent ⁴	19,400	19,900	20,300	19,700	20,300
Quicklime average value, dollars per ton at plant	56.68	57.80	57.60	57.20	56.60
Hydrate average value, dollars per ton at plant	79.64	80.20	78.90	79.70	76.00
Stocks, yearend	NA	NA	NA	NA	NA
Employment, mine and plant, number	5,600	5,600	5,600	5,600	5,600
Net import reliance ⁵ as a percent of apparent consumption	1	1	1	(⁶)	1

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 plants were not included as production in order to avoid duplication.

Import Sources (1996-99): Canada, 89%; Mexico, 10%; and other 1%.

Tariff: Item	Number	Normal Trade Relations 12/31/00
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: 14% for limestone produced and used for lime production (Domestic and foreign).

Government Stockpile: None.

Events, Trends, and Issues: Graymont Ltd., the Canadian parent company of Continental Lime Inc. and others, reorganized and renamed its lime subsidiaries into the following: Graymont Western US Inc., Graymont Western Canada Inc., Graymont Dolime (OH) Inc., Graymont (PA) Inc., Graymont (QC) Inc., and Graymont (NB) Inc. Graymont produces lime in six U.S. States and five Canadian Provinces (Graymont Ltd., 2000, Related companies, accessed July 11, 2000, at URL <http://www.graymont.com/related.htm>).

Baker Refractories, headquartered in York, PA, and Wülfrath Refractories GmbH, headquartered in Hilden, Germany, signed an agreement to merge. Wülfrath is part of the Lhoist Group, which is a major lime and stone producer in Europe and North America. Baker is the leading producer of refractory dolomite in North America, and produces refractory products from plants in the United States, the United Kingdom, and at a joint-venture operation in Mexico.⁷

Despite a surge in steel imports in 2000 similar to what occurred in 1998, domestic production reached an estimated 106 million tons for the year. This was an increase of about 8% over 1998 production levels. This increase in steel production was expected to help lime sales to the steel market recover from the downturn experienced in 1998. Lime sales for iron and steel manufacturing were expected to reach 6.1 to 6.2 million tons. The high level of imports is still a major issue to domestic steel companies. Production is expected to decrease in 2001, owing to the high levels of imports and the large inventories that have accumulated, which will affect lime sales to the steel industry.

LIME

The rise in petroleum and natural gas prices affected lime producers in varying degrees. All were affected to some extent by the increase in diesel prices, which increased operating costs of mining equipment and shipping costs. Producers that operate vertical kilns were also affected by higher kiln fuel prices because most vertical shaft kilns burn fuels such as natural gas. Because of low inventories and rising demand, natural gas wellhead prices increased by 110% between December 1999 and September 2000, and further increases were expected during the peak winter season.

The most common fuel used to produce lime in the United States is coal. Emissions generated in the combustion of coal and other fuels make the lime industry subject to regulation under the Clean Air Act. Of immediate concern to the lime industry are the costs and obligations expected for additional monitoring, reporting, and control of particulate matter and hazardous air pollutants such as hydrogen chloride. Of longer term concern, but with potentially greater impacts, are the international discussions on the reduction of greenhouse gas emissions, particularly carbon dioxide.

World Lime Production and Limestone Reserves and Reserve Base:

	Production		Reserves and reserve base ⁸
	1999	2000 ^e	
United States	19,600	20,100	Adequate for all countries listed.
Belgium	1,750	1,700	
Brazil	5,700	5,700	
Canada	2,580	2,600	
China	21,500	22,000	
France	2,400	2,400	
Germany	7,600	7,600	
Italy ⁹	3,500	3,500	
Japan (quicklime only)	7,750	7,700	
Mexico	6,600	6,600	
Poland	2,500	2,500	
Romania	1,700	1,700	
Russia	7,000	7,000	
South Africa (sales)	1,500	1,500	
United Kingdom	2,500	2,500	
Other countries	<u>21,700</u>	<u>22,000</u>	
World total (rounded)	116,000	117,000	

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.

^eEstimated. NA Not available.

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

²See Appendix A for conversion to short tons.

³Sold or used by producers.

⁴Stocks data are not available; stock changes are assumed to be zero for apparent consumption and net import reliance calculations.

⁵Defined as imports - exports + adjustments for Government and industry stock changes.

⁶Less than ½ unit.

⁷Industrial Minerals, 2000, Refractory dolomite consolidation: Industrial Minerals, no. 397, October, p. 8-9.

⁸See Appendix C for definitions.

⁹Includes hydraulic lime.