

LIME¹

(Data in thousand metric tons unless otherwise noted)

Domestic Production and Use: In 2016, an estimated 17 million tons (19 million short tons) of quicklime and hydrate was produced (excluding independent commercial hydrators²), valued at about \$2.1 billion. At yearend, 29 companies were producing lime, which included 19 companies with commercial sales and 10 companies that produced lime strictly for internal use (for example, sugar companies). These companies had 77 primary lime plants (plants operating lime kilns) in 29 States and Puerto Rico. The five leading U.S. lime companies produced quicklime or hydrate in 24 States and accounted for 76% of U.S. lime production. Principal producing States were, in descending order of production, Missouri, Alabama, Kentucky, Ohio, and Texas. Major markets for lime were, in descending order of consumption, steelmaking, flue gas desulfurization, construction, water treatment, mining, paper and pulp, and precipitated calcium carbonate (PCC).

Salient Statistics—United States:	2012	2013	2014	2015	2016^e
Production ³	18,800	19,200	19,500	18,300	17,000
Imports for consumption	468	394	414	391	350
Exports	212	270	320	346	260
Consumption, apparent ⁴	19,100	19,300	19,600	18,300	17,000
Quicklime average value, dollars per ton at plant	115.40	117.80	119.10	120.00	120.00
Hydrate average value, dollars per ton at plant	136.90	140.60	142.20	146.40	144.00
Employment, mine and plant, number	5,100	5,100	5,100	NA	NA
Net import reliance ⁵ as a percentage of apparent consumption	1	1	1	<1	<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 sources were not included as production in order to avoid duplication.

Import Sources (2012–15): Canada, 95%; Mexico, 4%; and other, 1%.

Tariff:	Item	Number	Normal Trade Relations
			12–31–16
	Calcined dolomite	2518.20.0000	3% ad val.
	Quicklime	2522.10.0000	Free.
	Slaked lime	2522.20.0000	Free.
	Hydraulic lime	2522.30.0000	Free.

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

Government Stockpile: None.

Events, Trends, and Issues: In 2016, domestic lime production was expected to decrease by about 5%, owing primarily to lesser amounts of lime needed for the desulfurization of flue gases in coal-fired utility powerplants. During the first 9 months of 2016, the amount of coal used to fuel utility powerplants was 16% less than that consumed during the same period in 2015.

One existing lime plant was refurbished in Winchester, VA, and reopened in May of 2016. The work comprised the installation of two new natural-gas-fired vertical-shaft kilns. Another company continued with its construction project in Pennsylvania to install a new natural-gas-fired vertical-shaft kiln. Low interest rates and low energy prices have provided opportunities for lime companies to add new capacity or replace existing old capacity with natural-gas-fired kilns. In June 2016, one company decided to shut down its quicklime and PCC processes at its plant in Tacoma, WA; the remainder of the plant was converted to a bulk hydrate, pulverized limestone, and terminal operation. PCC is used in many industrial applications, including the following: as filler and coating pigment for premium-quality paper products; to manufacture vinyl siding and fencing; and to make calcium-based antacid tablets and liquids. One sugar cooperative closed its sugar beet processing facility in Torrington, WY, towards yearend 2016; sugar production was shifted to the company's existing plants in Colorado and Nebraska. In sugar refining, milk-of-lime is used to raise the pH of the product stream to precipitate out colloidal impurities. The lime itself is then removed by reaction with carbon dioxide to precipitate calcium carbonate.

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World Lime Production and Limestone Reserves:

	Production ⁶		Reserves ⁷
	2015	2016 ^e	
United States	18,300	17,000	Adequate for all countries listed.
Australia	1,990	2,000	
Belgium	1,400	1,400	
Brazil	8,300	8,300	
Bulgaria	1,500	1,500	
Canada (shipments)	1,850	1,800	
China	230,000	230,000	
Czech Republic	1,000	1,000	
France	3,800	3,700	
Germany	6,400	6,400	
India	16,000	16,000	
Iran	2,800	2,800	
Italy ⁸	3,500	3,500	
Japan (quicklime only)	7,340	7,300	
Korea, Republic of	5,100	5,100	
Malaysia (sales)	1,500	1,500	
Poland	1,940	1,900	
Romania	1,910	1,700	
Russia (industrial and construction)	11,000	11,000	
South Africa (sales)	1,120	1,100	
Spain (sales)	1,800	1,900	
Turkey (sales)	4,200	4,300	
Ukraine	2,720	2,800	
United Kingdom	1,600	1,400	
Other countries	13,700	13,600	
World total (rounded) ⁹	350,000	350,000	

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

Substitutes: Limestone is a substitute for lime in many applications, such as agriculture, fluxing, and sulfur removal. Limestone, which 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, cement kiln dust, fly ash, and lime kiln dust are potential substitutes for some construction uses of lime. Magnesium hydroxide is a substitute for lime in pH control, and magnesium oxide is a substitute for dolomitic lime as a flux in steelmaking.

^eEstimated. NA Not available.

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

²Excludes independent commercial hydrators that purchase quicklime for hydration to avoid double counting quicklime production.

³Sold or used by producers.

⁴Includes some double counting based on nominal, undifferentiated reporting of company export sales as U.S. production.

⁵Defined as imports – exports.

⁶Only countries that produced 1 million tons of lime or more are listed separately.

⁷See [Appendix C](#) for resource and reserve definitions and information concerning data sources.

⁸Includes hydraulic lime.

⁹World production data are rounded to no more than two significant digits when estimated. Data reported by countries such as Canada, Japan, and the United States are rounded to three significant digits. Data may not add to totals shown.