

**LIME<sup>1</sup>**

(Data in thousand metric tons unless otherwise noted)

**Domestic Production and Use:** In 2017, an estimated 18 million tons (20 million short tons) of quicklime and hydrate was produced (excluding independent commercial hydrators<sup>2</sup>), valued at about \$2.3 billion. At yearend, 28 companies were producing lime, which included 18 companies with commercial sales and 10 companies that produced lime strictly for internal use (for example, sugar companies). These companies had 74 primary lime plants (plants operating quicklime kilns) in 28 States and Puerto Rico. Three of these 28 companies operated only hydrating plants in five States. In 2017, the five leading U.S. lime companies produced quicklime or hydrate in 21 States and accounted for 76% of U.S. lime production. Principal producing States were, in descending order of production, Missouri, Alabama, Ohio, Texas, and Kentucky. Major markets for lime were, in descending order of consumption, steelmaking, flue gas treatment, construction, chemical and industrial applications [such as the manufacture of fertilizer, glass, paper and pulp, precipitated calcium carbonate (PCC), and in sugar refining], water treatment, and nonferrous mining.

<b>Salient Statistics—United States:</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017<sup>e</sup></b>
Production <sup>3</sup>	19,200	19,500	18,300	17,700	18,000
Imports for consumption	394	414	391	376	360
Exports	271	320	346	329	320
Consumption, apparent <sup>4</sup>	19,300	19,600	18,300	17,700	18,000
Quicklime average value, dollars per ton at plant	117.80	119.10	121.50	121.00	123.00
Hydrate average value, dollars per ton at plant	140.60	142.20	146.40	145.50	149.00
Employment, mine and plant, number	5,100	5,100	NA	NA	NA
Net import reliance <sup>5</sup> 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 (2013–16):** Canada, 95%; Mexico, 5%; and other, negligible.

<b>Tariff: Item</b>	<b>Number</b>	<b>Normal Trade Relations</b>
		<b>12–31–17</b>
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 2017, domestic lime production was estimated to increase slightly from that of 2016, owing primarily to an increase in hydrated lime output. This also led to the slight increase in estimated value of production year over year.

In 2016, there were three companies that shut down quicklime production at 3 plants, bringing the total number of operating quicklime plants to 74 in 2017 from 77. One company shut down quicklime and PCC processes at its plant in Tacoma, WA, choosing instead to focus on hydrated lime production. One sugar cooperative closed its sugar beet processing facility in Torrington, WY, thereby eliminating one quicklime kiln from its manufacturing portfolio. One company shut down quicklime production at its Branchton facility in Slippery Rock, PA; since then, only hydrated lime has been produced at this location. In June 2017, another company acquired the Branchton plant's hydrated lime operations. Hydrated lime is a dry calcium hydroxide powder made from reacting quicklime with a controlled amount of water in a hydrator. It is used in chemical and industrial, construction, and environmental applications. In 2017, the leading uses of hydrated lime were flue gas desulfurization at utility powerplants (13%); production of building construction materials, such as some mortars, plasters, and stuccos (10%); and treatment of wastewater (6%) and drinking water (5%).

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**World Lime Production and Limestone Reserves:**

	Production <sup>e 6</sup>		Reserves <sup>7</sup>
	2016	2017	
United States	17,700	18,000	Adequate for all countries listed.
Australia	2,000	2,000	
Belgium	1,500	1,500	
Brazil	8,100	8,300	
Bulgaria	1,400	1,500	
Canada (shipments)	1,900	1,900	
China	230,000	230,000	
Czechia	1,100	1,000	
France	2,500	2,600	
Germany	6,800	6,900	
India	16,000	16,000	
Iran	2,900	3,100	
Italy <sup>8</sup>	3,600	3,600	
Japan (quicklime only)	7,300	7,400	
Korea, Republic of	5,100	5,200	
Malaysia (sales)	1,600	1,600	
Poland	1,900	2,000	
Romania	2,000	2,000	
Russia (industrial and construction)	11,000	11,000	
South Africa (sales)	1,100	1,100	
Spain (sales)	1,800	1,800	
Turkey (sales)	4,300	4,500	
Ukraine	2,800	2,700	
United Kingdom	1,500	1,500	
Other countries	14,000	15,000	
World total (rounded) <sup>9</sup>	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.

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

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

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

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

<sup>4</sup>Defined as production + imports – exports. Includes some double counting based on nominal, undifferentiated reporting of company export sales as U.S. production.

<sup>5</sup>Defined as imports – exports.

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

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

<sup>8</sup>Includes hydraulic lime.

<sup>9</sup>World 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.