

# LIME<sup>1</sup>

(Data in thousand metric tons unless otherwise noted)

**Domestic Production and Use:** In 2021, an estimated 17 million tons of quicklime and hydrated was produced (excluding independent commercial hydrators<sup>2</sup>), valued at about \$2.3 billion. Twenty-eight companies produced 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 73 primary lime plants (plants operating quicklime kilns) in 28 States and Puerto Rico. One primary lime plant was idle in 2021. Five of the 28 companies operated only hydrating plants in nine States. In 2021, the five leading U.S. lime companies produced quicklime or hydrated in 22 States and accounted for about 78% of U.S. lime production. Principal producing States were, in alphabetical order, Alabama, Kentucky, Missouri, Ohio, and Texas. Major markets for lime were, in descending order of consumption, steelmaking, chemical and industrial applications (such as the manufacture of fertilizer, glass, paper and pulp, and precipitated calcium carbonate, and in sugar refining), flue gas treatment, construction, water treatment, and nonferrous-metal mining.

## **Salient Statistics—United States:**

	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021<sup>e</sup></b>
Production <sup>2, 3</sup>	17,600	18,000	16,900	15,800	17,000
Imports for consumption	367	370	342	308	330
Exports	391	424	347	266	310
Consumption, apparent <sup>4</sup>	17,600	18,000	16,900	15,900	17,000
Price, average value, dollars per ton at plant:					
Quicklime	120.8	125.2	128.3	132.1	140
Hydrated	147.1	151.6	154.6	156.4	160
Net import reliance <sup>5</sup> as a percentage of apparent consumption	E	E	E	<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 (2017–20):** Canada, 90%; Mexico, 7%; and other, 3%.

<b>Tariff:</b>	<b>Item</b>	<b>Number</b>	<b>Normal Trade Relations 12–31–21</b>
	Calcined dolomite	2518.20.0000	3% ad valorem.
	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 2021, domestic lime production was estimated to have increased by 8% from that in 2020. In 2020, a decline in lime production was a result of plants temporarily closing as a result of the global COVID-19 pandemic. As the economy continues to rebound from the effects of the pandemic, so does the lime industry. In Michigan, one sugar company announced plans to construct a desugarization facility to produce an additional 40,000 tons of refined sugar annually. The San Bernardino County, CA, government approved plans to build a lime plant near a limestone quarry at Trona, CA. In 2021, a total of 73 quicklime plants were in operation along with 10 hydrating plants. 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.

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### World Lime Production and Limestone Reserves:

	Production <sup>6</sup>		Reserves <sup>7</sup>
	<u>2020</u>	<u>2021<sup>e</sup></u>	
United States	15,800	17,000	Adequate for all countries listed.
Australia	1,980	2,000	
Belgium <sup>8</sup>	1,500	1,500	
Brazil	8,000	8,100	
Bulgaria	1,280	1,400	
Canada (shipments)	2,060	2,000	
China	310,000	310,000	
France	2,600	2,600	
Germany	7,100	7,100	
India	15,000	16,000	
Iran	3,600	3,600	
Italy <sup>8</sup>	3,400	3,500	
Japan (quicklime only)	5,820	7,000	
Korea, Republic of	5,100	5,200	
Malaysia	1,480	1,500	
Poland (hydrated and quicklime)	1,680	1,700	
Romania	1,280	1,500	
Russia (industrial and construction)	11,400	11,000	
Slovenia	1,200	1,200	
South Africa	1,200	1,200	
Spain	1,700	1,800	
Turkey	4,700	4,700	
Ukraine	2,340	2,300	
United Kingdom	1,500	1,500	
Other countries	<u>15,000</u>	<u>15,000</u>	
World total (rounded)	427,000	430,000	

**World Resources:**<sup>7</sup> 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. E Net exporter.

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

<sup>2</sup>To avoid double counting quicklime production, excludes independent commercial hydrators that purchase quicklime for hydration.

<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.