POTASH

(Data in thousand metric tons of K_2O equivalent unless otherwise noted)

Domestic Production and Use: In 2020, the estimated sales value of marketable potash, free on board (f.o.b.) mine, was $430 million, which was 10% higher than that in 2019. Potash denotes a variety of mined and manufactured salts that contain the element potassium in water-soluble form. In agriculture, the term potash refers to potassic fertilizers, which are potassium chloride (KCl), potassium sulfate or sulfate of potash (SOP), and potassium magnesium sulfate (SOPM) or langbeinite. Muriate of potash (MOP) is an agriculturally acceptable mix of KCl (95% pure or greater) and sodium chloride for fertilizer use. The majority of U.S. production was from southeastern New Mexico, where two companies operated two underground mines and one deep-well solution mine. Sylvinite and langbeinite ores in New Mexico were beneficiated by flotation, dissolution-recrystallization, heavy-media separation, solar evaporation, and (or) combinations of these processes, and accounted for about 50% of total U.S. producer sales. In Utah, two companies operated three facilities. One company extracted underground sylvinite ore by deep-well solution mining. Solar evaporation crystallized the sylvinite ore from the brine solution, and a flotation process separated the MOP from byproduct sodium chloride. The firm also processed subsurface brines by solar evaporation and flotation to produce MOP at its other facility. Another company processed brine from the Great Salt Lake by solar evaporation to produce SOP and other byproducts.

The fertilizer industry used about 85% of U.S. potash sales, and the remainder was used for chemical and industrial applications. About 65% of the potash produced was SOPM and SOP, which are required to fertilize certain chloride-sensitive crops. The remaining 35% of production was MOP and was used for agricultural and chemical applications.

Salient Statistics—United States:	**2016**	**2017**	**2018**	**2019**	**2020[e]**
Production, marketable[1]	510	480	520	510	470
Sales by producers, marketable[1]	600	490	520	480	520
Imports for consumption	4,550	5,870	5,710	4,940	5,100
Exports	96	128	105	145	140
Consumption, apparent[1, 2]	5,100	6,200	6,100	5,300	5,500
Price, average, all products, f.o.b. mine,[3] dollars per ton of K_2O	680	770	750	820	830
Price, average, muriate, f.o.b. mine, dollars per ton of K_2O	350	410	440	480	500
Employment, mine and mill, number	1,150	900	900	900	900
Net import reliance[4] as a percentage of apparent consumption	88	92	92	90	90

Recycling: None.

Import Sources (2016–19): Canada, 83%; Belarus and Russia, 6% each; and other, 5%.

Tariff: Item	**Number**	**Normal Trade Relations 12–31–20**
Potassium nitrate	2834.21.0000	Free.
Potassium chloride	3104.20.0000	Free.
Potassium sulfate	3104.30.0000	Free.
Potassic fertilizers, other	3104.90.0100	Free.

Depletion Allowance: 14% (domestic and foreign).

Government Stockpile: None.

Events, Trends, and Issues: The COVID-19 pandemic had a minimal effect on the domestic potash market. Potash is an essential plant nutrient and fertilizers were designated as essential products in most countries. Financial assistance was provided to farmers and agribusinesses in the United States and other countries. Domestic potash consumption was estimated to have increased by about 4% from that of 2019, owing to fertilizer application rates recovering after unfavorable weather conditions in 2019 affected the spring planting season. Industrial potash use was lower, primarily for oil- and gas-well-drilling additives because those industries were affected severely by the economic downturn caused by the COVID-19 pandemic. Domestic potash production was lower because of higher than average inventories carried over from 2019 and lower production in the first half because of lower evaporation rates at some solar evaporation facilities.

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The company that was developing the Sevier Playa SOP project, which is about 225 kilometers southwest of Salt Lake City, UT, was unable to secure financing because of economic conditions caused by the COVID-19 pandemic. The project, which had planned to begin construction in 2020, was expected to be put on hold. Production was scheduled to begin in 2022 at 30,000 tons per year of SOP with rampup to full capacity of 372,000 tons per year of SOP in 2025.

World potash production increased, owing to increased output in Canada and Russia. World potash consumption was estimated to have been about the same as in 2019 at about 41 million tons of K_2O. Asia and South America were the leading consuming regions. World consumption of potash was projected to increase slightly in 2021, with Asia and South America as the leading regions for growth.

World potash capacity was projected to increase to 69 million tons in 2024 from 64 million tons in 2020. Most of the increase would be MOP from new mines and expansion projects in Belarus, Canada, and Russia. Other projects that were ongoing included new SOP mines in Australia, China, and Eritrea and new MOP mines in Brazil, Ethiopia, and Spain. The startup for some of the other projects was likely to be delayed to beyond 2025 because of unfavorable economic conditions.

World Mine Production and Reserves: Reserves for Brazil and Canada were revised with information reported by the producing companies. Reserves for Laos were revised with official Government data.

	Mine production		Reserves[5]	
	2019	2020[e]	Recoverable ore	K_2O equivalent
United States[1]	510	470	970,000	220,000
Belarus	7,350	7,300	3,300,000	750,000
Brazil	247	250	10,000	2,300
Canada	12,300	14,000	4,500,000	1,100,000
Chile	840	900	NA	100,000
China	5,000	5,000	NA	350,000
Germany	3,000	3,000	NA	150,000
Israel	2,040	2,000	NA	[6]Large
Jordan	1,520	1,500	NA	[6]Large
Laos	400	400	500,000	75,000
Russia	7,340	7,600	NA	600,000
Spain	500	470	NA	68,000
Other countries	310	300	1,500,000	300,000
World total (rounded)	41,300	43,000	NA	>3,700,000

World Resources:[5] Estimated domestic potash resources total about 7 billion tons. Most of these lie at depths between 1,800 and 3,100 meters in a 3,110-square-kilometer area of Montana and North Dakota as an extension of the Williston Basin deposits in Manitoba and Saskatchewan, Canada. The Paradox Basin in Utah contains resources of about 2 billion tons, mostly at depths of more than 1,200 meters. The Holbrook Basin of Arizona contains resources of about 0.7 to 2.5 billion tons. A large potash resource lies about 2,100 meters under central Michigan and contains more than 75 million tons. Estimated world resources total about 250 billion tons.

Substitutes: No substitutes exist for potassium as an essential plant nutrient and as an essential nutritional requirement for animals and humans. Manure and glauconite (greensand) are low-potassium-content materials that can be profitably transported only short distances to crop fields.

[e]Estimated. NA Not available.

[1]Data are rounded to no more than two significant digits to avoid disclosing company proprietary data.

[2]Defined as sales + imports – exports.

[3]Includes MOP, SOP, and SOPM. Does not include other chemical compounds that contain potassium.

[4]Defined as imports – exports.

[5]See Appendix C for resource and reserve definitions and information concerning data sources.

[6]Israel and Jordan recover potash from the Dead Sea, which contains nearly 2 billion tons of potassium chloride.