

POTASH

(Data in thousand metric tons of K₂O equivalent unless otherwise noted)

Domestic Production and Use: In 2008, the production value of marketable potash, f.o.b. mine, was about \$895 million. Domestic potash was produced in Michigan, New Mexico, and Utah. Most of the production was from southeastern New Mexico, where two companies operated three mines. New Mexico sylvinitic and langbeinite ores were beneficiated by flotation, dissolution-recrystallization, heavy-media separations, or combinations of these processes, and provided more than 77% of total U.S. producer sales. In Utah, which has three operations, one company extracted underground sylvinitic ore by deep-well solution mining. Solar evaporation crystallized the sylvinitic ore from the brine solution, and a flotation process separated the potassium chloride (muriate of potash or MOP) from byproduct sodium chloride. Two companies processed surface and subsurface brines by solar evaporation and flotation to produce MOP, potassium sulfate (sulfate of potash or SOP), and byproducts. In Michigan, one company used deep-well solution mining and mechanical evaporation for crystallization of MOP and byproduct sodium chloride.

The fertilizer industry used about 85% of U.S. potash sales, and the chemical industry used the remainder. More than 60% of the produced potash was MOP. Potassium magnesium sulfate (sulfate of potash-magnesia or SOPM) and SOP, which are required by certain crops and soils, also were produced.

Salient Statistics—United States:	2004	2005	2006	2007	2008^e
Production, marketable ¹	1,200	1,200	1,100	1,100	1,200
Imports for consumption	4,920	4,920	4,470	4,970	5,250
Exports	233	200	332	199	275
Consumption, apparent ¹	6,000	5,900	5,200	5,900	6,200
Price, dollars per metric ton of K ₂ O, average, muriate, f.o.b. mine ²	200	280	290	400	717
Employment, number:					
Mine	520	500	500	500	500
Mill	620	630	630	630	630
Net import reliance ³ as a percentage of apparent consumption	80	80	79	81	81

Recycling: None.

Import Sources (2004-07): Canada, 90%; Belarus, 6%; Russia, 2%; Germany, 1%; and other, 1%.

Tariff:	Item	Number	Normal Trade Relations
			12-31-08
	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.
	Potassium-sodium nitrate mixtures	3105.90.0010	Free.

Depletion Allowance: 14% (Domestic and foreign).

Government Stockpile: None.

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Events, Trends, and Issues: About 93% of the world potash production was consumed by the fertilizer industry. The United States ranked seventh in world production. Potassium chloride is the main fertilizer product, containing an average 61% of K₂O equivalent. Other potassium fertilizers include potassium nitrate, potassium magnesium sulfate, and potassium sulfate. Potash demand and prices increased throughout the year domestically and worldwide as a result of more crop acres that required potash fertilizer being planted, owing in part to high grain prices and tight world supplies. Initiatives promoting the production of biofuels (transportation fuels made from agricultural products) have spurred increased plantings and increased fertilizer consumption; however, this use is not likely to increase in the United States, as future emphasis will be on other technologies such as biodiesel and cellulosic ethanol.

U.S. production has been relatively stable for several years, but the increased demand has prompted some producers in New Mexico and Utah to begin expanding their production capacity, with work expected to be completed by 2010. Canada continued to lead the world in potash production, and output reached record levels despite a strike by miners at three mines in Saskatchewan that began in August 2008. In addition to restarting idled operations, plans were announced to expand current facilities in Saskatchewan and explore for potash in Manitoba.

Production in 2008 was estimated to have increased slightly. From 2009 to 2012, world potash production capacity was anticipated to increase by 20% owing to expansions to existing facilities in Belarus, Canada, China, Israel, Russia, and the United States, and from a new mine in Argentina.

World Mine Production, Reserves, and Reserve Base:

	Mine production		Reserves ⁴	Reserve base ⁴
	2007	2008 ^e		
United States	1,100	1,200	90,000	300,000
Belarus	4,970	5,100	750,000	1,000,000
Brazil	405	430	300,000	600,000
Canada	11,100	11,000	4,400,000	11,000,000
Chile	500	580	10,000	50,000
China	2,000	2,100	8,000	450,000
Germany	3,600	3,600	710,000	850,000
Israel	2,200	2,400	⁵ 40,000	⁵ 580,000
Jordan	1,090	1,200	⁵ 40,000	⁵ 580,000
Russia	6,600	6,900	1,800,000	2,200,000
Spain	580	590	20,000	35,000
Ukraine	12	12	25,000	30,000
United Kingdom	427	480	22,000	30,000
Other countries	—	—	50,000	140,000
World total (rounded)	34,600	36,000	8,300,000	18,000,000

World Resources: 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 Saskatchewan, Canada. The Paradox Basin in Utah contains approximately 2 billion tons, mostly at depths of more than 1,200 meters. The Holbrook Basin of Arizona contains resources of about 1 billion tons. A large potash resource lies about 2,100 meters under central Michigan. The U.S. reserve figure above includes approximately 40 million tons in central Michigan. Estimated world resources total about 250 billion tons. The potash deposits in Russia and Thailand contain large amounts of carnallite; it is not clear if this can be profitably mined.

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

^eEstimated. — Zero.

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

²Average prices based on actual sales; excludes soluble and chemical muriates.

³Defined as imports – exports + adjustments for Government and industry stock changes.

⁴See Appendix C for definitions.

⁵Total reserves and reserve base in the Dead Sea are arbitrarily divided equally between Israel and Jordan for inclusion in this tabulation.