

HELIUM

(Data in million cubic meters of contained helium gas¹ unless otherwise noted)

Domestic Production and Use: The estimated value of Grade-A helium (99.997% or better) extracted domestically during 2014 by private industry was about \$930 million. Ten plants (five in Kansas, four in Texas, and one in Wyoming) extracted helium from natural gas and produced only a crude helium product that varied from 50% to 99% helium. Two plants (one in Colorado and one in Wyoming) extracted helium from natural gas and produced a Grade-A helium product. Six plants (four in Kansas, one in Oklahoma, and one in Texas) accepted a crude helium product from other producers and the Bureau of Land Management (BLM) pipeline and purified it to a Grade-A helium product. Estimated 2014 domestic consumption of helium was 34 million cubic meters (1.2 billion cubic feet) and was used for cryogenic applications, 32%; for pressurizing and purging, 18%; for controlled atmospheres, 18%; for welding cover gas, 13%; leak detection, 4%; breathing mixtures, 2%; and other, 13%.

Salient Statistics—United States:	2010	2011	2012	2013	2014^e
Helium extracted from natural gas ²	75	71	73	69	73
Withdrawn from storage ³	53	59	60	49	30
Grade-A helium sales	128	130	133	118	103
Imports for consumption	—	—	—	—	—
Exports ⁴	77	82	85	81	69
Consumption, apparent ⁴	51	48	48	37	34
Net import reliance ⁵ as a percentage of apparent consumption	E	E	E	E	E

Price: In fiscal year (FY) 2014, the price for crude helium to Government users was \$2.49 per cubic meter (\$69.00 per thousand cubic feet) and to nongovernment users was \$3.43 per cubic meter (\$95.00 per thousand cubic feet). The price for Government-owned helium is mandated by the Helium Privatization Act of 1996 (Public Law 104–273). The estimated price range for private industry's Grade-A gaseous helium was about \$7.21 per cubic meter (\$200 per thousand cubic feet), with some producers posting surcharges to this price.

Recycling: In the United States, helium used in large-volume applications is seldom recycled. Some low-volume or liquid boil-off recovery systems are used. In the rest of the world, helium recycling is more common.

Import Sources (2010–13): None.

Tariff: Item	Number	Normal Trade Relations
Helium	2804.29.0010	<u>12–31–14</u> 3.7% ad val.

Depletion Allowance: Allowances are applicable to natural gas from which helium is extracted, but no allowance is granted directly to helium.

Government Stockpile: Under Public Law 113–40, the BLM manages the Federal Helium Program, which includes all operations of the Cliffside Field helium storage reservoir, in Potter County, Texas, and the Government's crude helium pipeline system. Private firms that sell Grade-A helium to Federal agencies are required to purchase a like amount of (in-kind) crude helium from the BLM. The Helium Stewardship Act of 2013 mandated that the BLM sell Federal Conservation helium stored in Bush Dome at the Cliffside Field annually at sale and auction. The amounts sold are to be approximately equal to the amount the Federal helium system can produce each year. By 2021, or when the remaining conservation helium is less than 83 million cubic meters, the Federal Government is to dispose of all helium related-assets.

In FY 2014, privately owned companies purchased about 42.3 million cubic meters (83 million cubic feet) of in-kind crude helium. In addition to this, privately owned companies also purchased 16.9 million cubic meters (610 million cubic feet) of open market sales helium. During FY 2014, the BLM's Amarillo Field Office, Helium Operations (AMFO), accepted about 10.7 million cubic meters (387 million cubic feet) of private helium for storage and redelivered nearly 43.2 million cubic meters (1,558 million cubic feet). As of September 30, 2014, about 50.6 million cubic meters (1,826 million cubic feet) of privately owned helium remained in storage at Cliffside Field.

Material	Inventory	Stockpile Status—9–30–14⁶		
		Authorized for disposal	Disposal plan FY 2014	Disposals FY 2014
Helium	251.1	251.1	38.8	30.5

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Events, Trends, and Issues: In 2014, as part of the implementation of the Helium Stewardship Act of 2013, the BLM began an auction process to price helium more closely to the open market value. The average price of helium sold to private buyers as a result of this process was \$3.82 per cubic meter (\$106 per thousand cubic feet). By the end of the decade, international helium extraction facilities are likely to become the main source of supply for world helium users. Seven international helium plants are in operation and more are planned for the next 3 to 5 years. Expansions to facilities have been completed as planned in Algeria and Qatar. In 2014, demand for helium worldwide increased, but domestic demand continued to decrease. Additionally in 2014, new domestic production began in Wyoming and more production was expected to start in southwest Colorado in 2015. As a result, demand for the Government's helium production has decreased by 50% over the past 2 years.

World Production and Reserves:

	Production		Reserves ⁸
	2013 ^e	2014 ^e	
United States (extracted from natural gas)	69	73	3,900
United States (from Cliffside Field)	49	30	(⁹)
Algeria	17	25	1,800
Australia	6	6	NA
Canada	NA	NA	NA
China	NA	NA	NA
Poland	3	3	25
Qatar	25	40	NA
Russia	6	5	1,700
Other countries	NA	NA	NA
World total (rounded)	175	180	NA

World Resources: As of December 31, 2006, the total helium reserves and resources of the United States were estimated to be 20.6 billion cubic meters (744 billion cubic feet). This includes 4.25 billion cubic meters (153.2 billion cubic feet) of measured reserves, 5.33 billion cubic meters (192.2 billion cubic feet) of probable resources, 5.93 billion cubic meters (213.8 billion cubic feet) of possible resources, and 5.11 billion cubic meters (184.4 billion cubic feet) of speculative resources. Included in the measured reserves are 0.67 billion cubic meters (24.2 billion cubic feet) of helium stored in the Cliffside Field Government Reserve, and 0.065 billion cubic meters (2.3 billion cubic feet) of helium contained in Cliffside Field native gas. The depleting fields from which most U.S.-produced helium is extracted are Hugoton in Kansas, Oklahoma, and Texas; Panhandle West in Texas; Panoma in Kansas; Riley Ridge in Wyoming; and Cliffside in Texas. These fields contained an estimated 3.9 billion cubic meters (140 billion cubic feet) of helium.

Helium resources of the world, exclusive of the United States, were estimated to be about 31.3 billion cubic meters (1.13 trillion cubic feet). The locations and volumes of the major deposits, in billion cubic meters, are Qatar, 10.1; Algeria, 8.2; Russia, 6.8; Canada, 2.0; and China, 1.1. As of December 31, 2010, the AMFO had analyzed about 22,000 gas samples from 26 countries and the United States, in a program to identify world helium resources.

Substitutes: There is no substitute for helium in cryogenic applications if temperatures below -429 °F are required. Argon can be substituted for helium in welding, and hydrogen can be substituted for helium in some lighter-than-air applications in which the flammable nature of hydrogen is not objectionable. Hydrogen is also being investigated as a substitute for helium in deep-sea diving applications below 1,000 feet.

^eEstimated. E Net exporter. NA Not available. — Zero.

¹Measured at 101.325 kilopascals absolute [14.696 pounds per square inch absolute (psia)] and 15 °C; 27.737 cubic meters of helium = 1 Mcf of helium at 70 °F and 14.7 psia.

²Both Grade-A and crude helium.

³Extracted from natural gas in prior years.

⁴Grade-A helium.

⁵Defined as imports – exports + adjustments for Government and industry stock changes.

⁶See [Appendix B](#) for definitions.

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⁸See [Appendix C](#) for resource/reserve definitions and information concerning data sources.

⁹Included in United States (extracted from natural gas) reserves.