

HELIUM

(Data in million cubic meters of contained helium gas)¹

Domestic Production and Use: During 1995, the estimated value of Grade-A (99.995% or better) helium extracted at the U.S. Bureau of Mines Exell Helium Plant was \$13.5 million; the estimated value of Grade-A helium extracted by private industry was about \$190 million. The total sales value for domestic consumption and exports was \$203.5 million. Thirteen private industry plants and one Bureau facility extracted helium from natural gas: five of the privately owned plants were in Kansas, four in Texas, two in Colorado, one each in Utah and Wyoming. An additional six private industry plants refined helium directly from the Bureau's crude helium pipeline: four of the plants were in Kansas, one in Oklahoma, and one in Texas. The estimated 1995 domestic consumption of 78 million cubic meters (2.8 billion cubic feet) was used for cryogenic applications, 24%; welding cover gas, 20%; pressurizing and purging, 19%; controlled atmospheres, 11%; leak detection, 5%; mixtures, 3%; and other, 18%.

Salient Statistics—United States:	1991	1992	1993	1994	1995^e
Helium extracted from natural gas ²	86.4	92.0	99.3	112	117
Withdrawn from storage ³	1.7	2.4	(3.8)	(11.6)	(12.1)
Grade-A helium sales	88.1	94.4	95.6	100	104
Imports for consumption	—	—	—	—	—
Exports ⁴	27.1	30.7	28.0	25.0	26.0
Consumption, apparent ⁴	61.0	63.7	67.5	75.4	78.4
Employment, plant ^e	600	600	615	630	635
Net import reliance ⁵ as a percent of apparent consumption	E	E	E	E	E

Price: The price of Grade-A gaseous helium was \$1.983 per cubic meter (\$55 per thousand cubic feet) f.o.b. Bureau facilities in 1995. The Bureau's price for bulk liquid helium was \$2.524 per cubic meter measured as gas (\$70 per thousand cubic feet), with additional charges for container services and rent. Private industry's price for gaseous helium was about \$1.802 per cubic meter (\$50 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 boiloff recovery systems are used. In Western Europe and Japan, helium recycling is practiced when economically feasible.

Import Sources (1991-94): None.

Tariff: Item	Number	Most favored nation (MFN) 12/31/95	Non-MFN⁶ 12/31/95
Helium	2804.29.0010	3.7% ad val.	25.0% 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: The U.S. Bureau of Mines stockpile is a separate operation run pursuant to Public Law 86-777. During 1995, the Bureau accepted over 37 million cubic meters (1,340 million cubic feet) of private helium for storage and redelivered nearly 22 million cubic meters (800 million cubic feet) for a net increase in privately owned storage of more than 15 million cubic meters (541 million cubic feet). On September 30, 1995, 951 million cubic meters (34.3 billion cubic feet) of helium was in storage, of which 94 million cubic meters (3.4 billion cubic feet) was owned by private firms.

Events, Trends, and Issues: A refined helium plant near Keyes, OK, began production in 1995. A crude helium plant is being built near Baker, OK, and it is expected to be in production in 1996. Some of the crude helium production is being stored at the USBM storage field.

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It is estimated that in 1996, domestic production of helium will be more than 106 million cubic meters (3.8 billion cubic feet), and that U.S. apparent consumption will be more than 72 million cubic meters (2.6 billion cubic feet). Exports from the United States probably will continue to decline due to startup of an Algerian helium plant during 1995.

World Production, Reserves, and Reserve Base:

	Production		Reserves ⁷	Reserve base ⁷
	1994	1995 ^e		
United States	100.4	104.4	8,200	⁸ 13,000
Algeria	NA	3.8	NA	2,100
Canada	NA	NA	NA	2,100
China	NA	NA	NA	1,100
Netherlands	NA	NA	NA	720
Poland	1.4	1.4	NA	830
Former Soviet Union ⁹	4.2	4.2	4.2	9,200
Other countries	NA	NA	NA	2,100
World total (may be rounded)	106	114	NA	31,000

World Resources: The identified helium resources of the United States were estimated to be about 13 billion cubic meters (470 billion cubic feet) as of January 1, 1994. This includes 1.0 billion cubic meters (34 billion cubic feet) of helium stored in the Cliffside Field, 6.8 billion cubic meters (250 billion cubic feet) of helium in helium-rich natural gas (0.30% helium or more), and 5.2 billion cubic meters (190 billion cubic feet) in helium-lean natural gas (less than 0.30% helium). It is postulated that, by the end of the century, most of the helium-rich natural gasfields currently supplying helium will be exhausted except for the Hugoton and Riley Ridge Fields. These currently depleting gasfields contain an estimated 4.4 billion cubic meters (160 billion cubic feet) of helium. The remaining 2.4 billion cubic meters (86 billion cubic feet) of helium-rich gas resources is nondepleting. Riley Ridge contains 3.4 billion cubic meters (120 billion cubic feet) of helium of which 2.0 billion cubic meters (72 billion cubic feet) is now included in the depleting classification because this gas is now being produced. Future supplies will probably come from known helium-rich natural gas with little fuel value and helium-lean resources. The identified helium-lean resources of 5.2 billion cubic meters (190 billion cubic feet) include 1.3 billion cubic meters (46 billion cubic feet) of measured and 3.9 billion cubic meters (140 billion cubic feet) of indicated helium resources.

Helium resources of the world exclusive of the United States were estimated to be 18.0 billion cubic meters (650 billion cubic feet). The locations and volumes of the principal deposits, in billion cubic meters, are the Former Soviet Union, 9.2; Algeria, 2.1; Canada, 2.1; China, 1.1; Poland, 0.8; and the Netherlands, 0.7. An international consortium started production at a plant in Algeria that will recover about 8.3 million cubic meters of helium per year. As of January 1, 1995, the U.S. Bureau of Mines had analyzed nearly 20,000 gas samples from 26 countries and the United States in a program to identify world helium resources.

Substitutes: There is no substance that can be substituted for helium 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 flammability 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.

¹Measured at 101.325 kilopascals absolute (14.696 psia) and 15° C. 27.737 cubic meters of helium at 15° C, 101.325 kPa (absolute) = 1 Mcf of helium at 70° F and 14.7 psia.

²Helium content of both Grade-A and crude helium (consisting of approximately 70% helium and 30% nitrogen).

³Extracted from natural gas in prior years (injected in parentheses).

⁴Grade-A helium.

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

⁶See Appendix B.

⁷See Appendix C for definitions.

⁸All domestic measured and indicated helium resources in the United States.

⁹As constituted before Dec. 1991.