

## HELIUM

(Data in million cubic meters, helium gas<sup>1</sup> content, unless otherwise specified)

**Domestic Production and Use:** In 2024, sales of Grade-A helium (99.997% helium or greater) and gaseous helium (generally greater than 98% helium) were an estimated 81 million cubic meters (2.9 billion cubic feet) valued at an estimated \$1.1 billion. Five plants (three in Texas and two in Kansas) extracted helium from natural gas and produced crude helium that generally ranged from 50% to 80% helium. Twelve plants (three in New Mexico, two each in Arizona, Colorado, and Kansas, and one each in Montana, Oklahoma, and Utah) produced gaseous helium. Four plants (two in Colorado and one each in Texas and Wyoming) extracted helium from natural gas and produced Grade-A helium. Four plants (three in Kansas and one in Oklahoma) accepted crude helium from other producers and the Bureau of Land Management (BLM) pipeline and purified it to Grade-A helium. In 2024, estimated domestic apparent consumption of Grade-A and gaseous helium was 56 million cubic meters (2.0 billion cubic feet), and it was used for, in decreasing quantity of use, analytical, engineering, lab, science, and specialty gases (22%); lifting gas (18%); magnetic resonance imaging (17%); controlled atmospheres, fiber optics, and semiconductors (15%); welding (8%); aerospace, pressuring, and purging (7%); leak detection (5%); diving (5%); and various other minor applications (3%).

<b>Salient Statistics—United States:</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024<sup>e</sup></b>
Helium extracted from natural gas <sup>2</sup>	72	69	65	64	68
Withdrawn from storage <sup>3</sup>	10	7	12	18	13
Grade-A and gaseous helium sales	82	76	77	81	81
Imports for consumption	7	8	6	8	12
Exports	35	33	32	33	42
Consumption, apparent <sup>4</sup>	53	51	51	56	<sup>5</sup> 56
Net import reliance <sup>6</sup> as a percentage of apparent consumption	E	E	E	E	E

The estimated base price<sup>7</sup> for Grade-A helium was about \$14 per cubic meter (\$390 per thousand cubic feet) in 2024, with 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 (2020–23):** Qatar, 40%; Canada, 36%; Algeria, 10%; Russia, 4%; and other, 10%.

<b>Tariff:</b>	<b>Item</b>	<b>Number</b>	<b>Normal Trade Relations 12–31–24</b>
	Helium	2804.29.0010	3.7% ad valorem.

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

**Government Stockpile:**<sup>8</sup> The Federal Helium System included operations of the Cliffside helium facilities, the Cliffside Field helium storage reservoir, and the Government's crude helium pipeline system. The Crude Helium Enrichment Unit (CHEU) was privately owned and leased to the BLM. The Helium Stewardship Act of 2013 (HSA) mandated the privatization of the Federal Helium System. The BLM was directed to sell at auction the Federal Conservation Helium stored in Bush Dome at the Cliffside Field. The last auction was completed in summer 2018. In December 2022, the management of the Federal Helium System was transferred from the BLM to the General Services Administration to dispose of all assets. On January 25, 2024, the Federal Helium System assets were sold in two lots. Lot 1 included approximately 28 million cubic meters (1.0 billion cubic feet) of Federally owned crude helium. Lot 2 included the Federal Helium System and approximately 22 million cubic meters (800 million cubic feet) of crude helium. Both lots were sold to one company and were transferred on June 27, 2024.

**Events, Trends, and Issues:** In 2024, Grade-A and gaseous helium sales were unchanged, whereas helium extracted from natural gas increased by 7% compared with those in 2023. The increase in helium extracted from natural gas was mainly due to new operations that came online in 2023 and 2024 but was offset by a 26% decrease in helium withdrawn from the Cliffside Field compared with that in 2023. Four new helium operations (one each in Colorado, Montana, New Mexico, and Texas) began producing helium in the United States.

The CHEU, which is the helium purification unit at the Cliffside Field, was not part of the sale of the Federal Helium System. The CHEU is owned by a private entity and was previously leased to the BLM. The lease of the CHEU ended on August 11, 2024, and a new lease agreement was not completed by the expiration date. The District Court of Amarillo, TX, allowed the new owner of the Cliffside Field to operate the equipment and keep the domestic supply available while negotiations continued. An agreement had not been reached by the end of year.

Prepared by **Robert C. Goodin [(703) 648–7710, rgoodin@usgs.gov]**

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Estimated total world helium production increased by 4% compared with that in 2023. Three new helium facilities began operations in Canada, and imports of helium from Canada increased in 2024. Multiple companies explored for and developed helium deposits throughout the world. Some of these helium deposits are nonhydrocarbon sourced. On June 25, 2024, the European Union adopted a sanctions package, effective September 26, 2024, that imposed an import ban on helium from Russia.

**World Production and Reserves:** Reserves for the United States were revised based on Government reports.

	Production		Reserves <sup>9</sup>
	2023	2024 <sup>e</sup>	
United States (extracted from natural gas)	64	68	8,500
United States (from the Cliffside Field)	18	13	50
Algeria	<sup>e9</sup>	11	<sup>e1</sup> 1,800
Australia	<sup>e1</sup>	—	NA
Canada	5	6	NA
China	2	3	NA
Poland	3	3	24
Qatar	<sup>e66</sup>	64	<sup>e1</sup> Large
Russia	<sup>e8</sup>	17	<sup>e1</sup> 1,700
South Africa	—	( <sup>10</sup> )	NA
World total (rounded)	<sup>e176</sup>	180	NA

**World Resources:**<sup>9</sup> The U.S. Geological Survey (USGS) and the BLM coordinated efforts to complete a national helium gas assessment, which was published by the USGS in fall 2021.<sup>11</sup> The mean volume of recoverable helium within the known geologic natural gas reservoirs in the United States was estimated to be 8,490 million cubic meters (306 billion cubic feet). This does not include the remaining 51.5 million cubic meters (1.86 billion cubic feet) in the Federal helium inventory. The estimated mean for the Midcontinent region was 4,330 million cubic meters (156 billion cubic feet); the Rocky Mountain region, 4,110 million cubic meters (148 billion cubic feet); the North Central region, 52.7 million cubic meters (1.9 billion cubic feet); the Gulf Coast region, 12.5 million cubic meters (0.45 billion cubic feet); and the Alaska region, 1.11 million cubic meters (0.04 billion cubic feet).

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.

**Substitutes:** Nothing substitutes for helium in cryogenic applications if temperatures below –429 degrees Fahrenheit are required. Superconductors, including those in magnetic resonance imaging scanners, are being developed to operate at higher temperatures using nitrogen instead of helium as a coolant. Hydrogen can be substituted for helium in some lighter-than-air applications in which the flammable nature of hydrogen is not objectionable. Argon can be substituted for helium in welding. Hydrogen can be used as a substitute for helium in deep-sea diving applications.

<sup>e</sup>Estimated. E Net exporter. NA Not available. — Zero.

<sup>1</sup>Measured at 101.325 kilopascals absolute (14.696 pounds per square inch [psia]) and 15 degrees Celsius (°C) [59 degrees Fahrenheit (°F)]; 27.737 cubic meters of helium = 1,000 cubic feet of helium at 101.325 kilopascals absolute (14.696 psia) and 21.1 °C (70 °F).

<sup>2</sup>As Grade-A, gaseous, or crude helium.

<sup>3</sup>Extracted from natural gas in prior years.

<sup>4</sup>Grade-A and gaseous helium. Defined as sales + imports – exports.

<sup>5</sup>Consumption was estimated by the U.S. Geological Survey for 2024 because the export data reported by the U.S. Census Bureau were unusually high and may have contained misclassified items.

<sup>6</sup>Defined as imports – exports.

<sup>7</sup>Not including free on board (f.o.b.) or other costs associated with transporting helium from the producer to the buyer.

<sup>8</sup>See Appendix B for definitions.

<sup>9</sup>See Appendix C for resource and reserve definitions and information concerning data sources.

<sup>10</sup>Less than ½ unit.

<sup>11</sup>Brennan, S.T., Rivera, J.L., Varela, B.A., and Park, A.J., 2021, National assessment of helium resource within known natural gas reservoirs: U.S. Geological Survey Scientific Investigations Report 2021–5085, 5 p., <https://doi.org/10.3133/sir20215085>.