Go with the global leader in helium

“Reliable, worry-free supply, expert applications support, global coverage, pioneering technology—when it comes to helium supply and service, our track record speaks for itself.”

Ron Sheppard
General Manager
Worldwide Helium
ABOUT HELIUM

The only element to be discovered on the sun before being found on earth, helium was virtually unknown until 1900. Although helium is second in abundance only to hydrogen (it makes up 25 percent of the universe), it is rare in our atmosphere and found primarily in certain natural gas fields.

At room temperature and at atmospheric pressure, helium is a colorless, odorless, tasteless gas. It is completely inert to chemical reaction and radiation and has a thermal conductivity that far surpasses other gases. Liquefied helium boils at −452°F (4 K) — the lowest boiling point of any substance, close to absolute zero. After hydrogen, helium has the smallest molecular cross section of any gas, giving it a high rate of permeability and low solubility. Liquid helium’s extremely low temperature provides refrigeration for a number of vital medical, scientific, and industrial applications.

“ We really couldn’t take a chance on any other helium supplier. We needed to be sure of a reliable supply and confident in its purity.

Robert Hill, Jr., President
Solar Atmospheres of Western Pennsylvania, Inc.
Hermitage, Pennsylvania, USA

“ Air Products’ BIP® cylinder system means absolute peace of mind on helium purity.

Tony Rycroft
Analytical and Environmental Services, Ltd.
Howden, Horsley, Rugby
United Kingdom

“ During a scheduled maintenance check, a requirement for additional helium became evident. Air Products supplied within two hours, which was excellent. Thank you Air Products!

Adrian Croeser
The Lightship Group
Singapore
Helium is a unique, multipurpose molecule. But it is a finite resource. And global demand for it is growing.

As the world’s largest producer and supplier of helium, Air Products is in a unique position to help meet this increasing demand. More than four decades ago, we pioneered many of the helium extraction, production, distribution, and storage technologies still in use—including cryogenic equipment for most of the world’s helium recovery plants. Today, we have access to more supply capacity than any other industrial gas company.

As an Air Products helium customer, you can count on our global supply network, breadth of resources, world-class service, expert technical assistance, commitment to quality, and industry-recognized safety record. We understand your need for secure, reliable supply, coupled with attention to detail, supported by service—throughout the world.
Our experience spans today’s and tomorrow’s applications

Entire industries depend on helium’s unique and varied properties. No matter what your application, you’ll benefit from our helium expertise.

- **Magnetic Resonance Imaging**—More than 5,500 MRI magnets—two-thirds of those in the United States and over half of those around the world—count on Air Products’ helium and cryogenic gases to keep them cold and superconducting. We pioneered the full-service approach, providing both cryogen supply and fill services. Today, through our “KeepCOLD® Services program, our highly trained technicians perform more than 40,000 fills annually.

- **Lifting**—Air Products’ helium puts the rise in party balloons, advertising blimps, and high-altitude scientific research balloons. We serve the world’s current fleet of airships, not only with helium but also with mobile repurification systems. And our eyes are on the future as we help develop new airships that may transform global transportation and communications.

- **Fiber Optics/Semiconductor Manufacturing**—Used by the global electronics industry for decades, helium enhances heat transfer and provides the stable inert atmosphere necessary for increased productivity in semiconductor manufacturing. Our patented fiber optic helium recovery systems also save helium molecules.

- **Metallurgy**—Helium is a vital component of our Ferromaxx® and other shielding gas products that provide faster, cleaner welds at less total cost. Helium is also used for state-of-the-art laser welding and cutting and for protective atmospheres for producing reactive metals such as titanium and zirconium and the rapid quench of tool steels.

- **Breathing Atmospheres**—The diving industry relies on Air Products’ helium supply for the pursuit of new, offshore energy sources, exploration, and mapping activities. And helium increases a patient’s survivability when used in unique blood gas medical mixtures in clinical settings worldwide.
• **Scientific**—Industrial, university, and government labs use our helium to ensure the low-temperature refrigeration necessary for energy, physics, and superconductor development. Also, the near-absolute zero environment that only helium can provide is used with nuclear magnetic resonance imaging.

• **Analytical**—Providing helium with guaranteed specifications of <10 ppb of oxygen and <20 ppb of water, our patented BIP<sup>®</sup> cylinders have unique self-contained internal purifier systems. BIP cylinders provide the highest-purity helium available for use in analytical measurements and instrument carrier gas applications.

• **Pressurizing/Purging**—Defense, nuclear, and aerospace leaders such as NASA, Boeing, and Arianespace use helium for detecting leaks in critical equipment, including rocket engines, and for purging and propellant transfer. Our patented liquid helium pump allows these industries to pressurize large on-site gaseous storage vessels at lower costs, with less energy and at faster rates.

• **Leak Detection**—Many industries use mass spectrometers and helium to detect small holes or tears in equipment, preventing manufacturing defects from going unnoticed or even stopping impending failures before disaster strikes.

• **Other Applications**—In addition, we continue to work with leading edge customers to commercialize new applications for helium, including safe, next-generation nuclear reactors; acoustic refrigeration; magnetohydrodynamic ship propulsion; magnetic levitating trains; semiconductor cooling; metal coatings manufacture; plasma cleaning; and enhanced, noninvasive medical imaging devices.
U.S. government commits millions of dollars to helium recovery via Helium Conservation Program to meet projected demand for space and defense programs.

Helium first used for diving to rescue crew of submarine USS Squalus, which sank in 243 feet of water.

Air Products first supports U.S. Bureau of Mines helium activities in Keyes, Oklahoma.

Look to the world leader for secure, reliable helium supply

Largest production capacity

Because helium is rare in our atmosphere, it is too costly to recover by atmospheric separation like other industrial gases. The primary source is from certain natural gas fields; even then, it occurs at concentrations well below 2 percent. Also, there are only a few places in the world that have the composition of natural gas required to economically extract helium. And even fewer companies have the resources and expertise to keep a reliable supply of helium flowing to their customers.

Air Products designed and built the first cryogenic system for extracting helium from natural gas in the 1950s and first developed coiled wound heat exchangers for the industry in the 1960s. Today, we’ve built over two-thirds of the helium plants in use around the world. We also designed and built the world’s largest mobile helium liquefier in 1959 and continue to supply innovative technology, such as our new Helium Enrichment Unit designed in 2002, to keep the largest U.S. supply system in peak operation.

More importantly, no other industrial gas company has access to as much helium as Air Products, and no other supplier has as many owned and operated helium facilities. Our production plants include our Liberal, Kansas facility, with a capacity of over 1 billion standard cubic feet per year and the world’s largest helium liquefier. Other locations include our plant in Gruver, Texas and sourcing from Keyes, Oklahoma; La Barge, Wyoming; and Arzew, Algeria (through our Helios joint venture with Sonatrach, the Algerian state-owned oil and gas company).

Because we understand the need to conserve this nonrenewable resource, all of our facilities are designed with many levels of backup redundancy. Also, each facility is driven to operational excellence through Air Products’ rigorous global improvement process. Together, these approaches provide the highest onstream reliability in the industry.
We maintain the world’s largest helium production and distribution system
Air Products introduces KeepCOLD® Cryogenic Fill Services program for helium supply to MRI units.

Distribution network around the globe

Because helium is a rare element, efficient distribution and storage for reliable backup are just as important as access to sources to ensure your supply. With a global network of more than 40 storage and transfill facilities for refined liquid helium, Air Products can deliver the support and service that all customers require.

In fact, Gardner Cryogenics, a division of Air Products, is the recognized market leader in the manufacture of helium and hydrogen distribution and storage equipment. Gardner’s state-of-the-art shipping containers, tankers, and stationary storage tanks provide the highest performance with the lowest heat leak and longest hold times available. This means liquid containers arrive with as much helium as is technically possible, whether the journey was right down the road or across many oceans.

State-of-the-art equipment and technology—the kind you won’t find anywhere else—is key to our unmatched record in the helium industry. Even our patented vacuum-jacketed helium transfer lines and stingers provide the highest product transfer efficiency in the industry.

Variety of supply options

We offer a variety of helium distribution and storage options to match your needs and budget. Most of our customers with small demand receive liquid helium economically in engineered, vacuum-insulated dewars ranging in size from 30 to 500 liters. We transport larger quantities of liquid helium in containers and over-the-road tankers with capacities up to 64,000 liters (17,000 gallons).

Our strategically located transfill facilities also produce gaseous helium. Depending on the quantity you require, we ship and store helium gas in high-pressure cylinders, tubes, or tube trailers.
Conservation means cost savings for our customers

Since helium is irreplaceable, we are always looking for new recovery, purification, and recycling technologies to reduce its consumption. Our conservation technologies help customers large and small optimize their helium usage, increasing productivity and saving money:

- A patented recycle system adaptable to a variety of fiber optic production processes, with recycle rates in excess of 90 percent
- A recovery system that captures helium flash gas during MRI manufacturing, then purifies and pressurizes it for later resale
- Mobile membrane purification systems that follow airships as they move from site to site, cleaning the helium of weight-limiting air and moisture
- Recovery systems that remove contaminants from spent diving gas and return it to the highest levels of gas purity
- Systems that capture and clean helium from plasma hearth furnaces or heat treating applications so it can be recycled for furnace resupply or other uses
- Reclamation systems that capture helium used to inspect radiators, vessels, and tubular products for leaks
Air Products employees like Lisa Kicska, one of our MRI delivery schedulers, are passionate about their commitment to provide flawless customer service.

Our people make the difference

We have the entire infrastructure in place to get you the helium you need—and the highly trained and experienced specialists in our network make sure you get it safely, efficiently, and on time.

Our service technicians are certified to the toughest service specifications in the industry, ISO-9002. Also, each of our MRI technicians must complete months of rigorous training and certification on each manufacturer’s MRI equipment before they are allowed to provide magnet service.

Standing behind our technicians are the other heroes of our system. From our highly skilled drivers, to our scheduling specialists, to our plant personnel—each is dedicated to flawless execution, 24 hours a day, 365 days a year. Our people are our most valuable asset because they deliver the difference that characterizes our helium products and services. And our exceptional level of service has earned us recognition—year after year—from customers of all sizes.

Put our resources to work for you

Air Products’ position as the leading helium producer and supplier, along with our world-class technology and engineering expertise, has earned the confidence of many forward-looking companies around the globe. Let us put those resources to work for you.
About Air Products

Air Products serves customers in technology, energy, healthcare, and industrial markets worldwide with a unique portfolio of products, services, and solutions, providing atmospheric gases, process and specialty gases, performance materials, and chemical intermediates. The company is the largest global supplier of electronic materials, hydrogen, helium, and select performance chemicals. Founded in 1940, Air Products is recognized for its innovative culture, operational excellence, and commitment to safety and the environment. With annual revenues of $5.7 billion and operations in 30 countries, the company’s 18,000 employees build lasting relationships with their customers and communities based on understanding, integrity, and passion.

For More Information

To learn more about our global helium capabilities or to tell us more about your needs, contact the office nearest you. Or visit us on the Web at www.airproducts.com/helium.

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