

# Timely and reliable nitrogen supply for oilfield operations



To place nitrogen where you need it, we've built plants dedicated to the Oilfield industry, such as Mooreland, Oklahoma and Odessa, Texas (Mooreland is shown here under construction).

## National coverage and responsive service for unconventional oil and gas well intervention

With increasing drilling activity for unconventional oil and gas resources, particularly in shale plays, the demand for high-volume nitrogen supply is growing. Strategically located production facilities, coupled with an extensive fleet of tankers and a dedicated customer service team, enable Air Products to offer a responsive, reliable source of the nitrogen you need for fracturing, coil tubing, jetting, snubbing, and other oilfield applications.

### Fast, flexible supply to meet high-volume demand

Horizontal drilling and fracturing operations require increasingly higher volumes of nitrogen. Air Products is well positioned to supply nitrogen for even the largest operations with minimal or no ancillary costs.

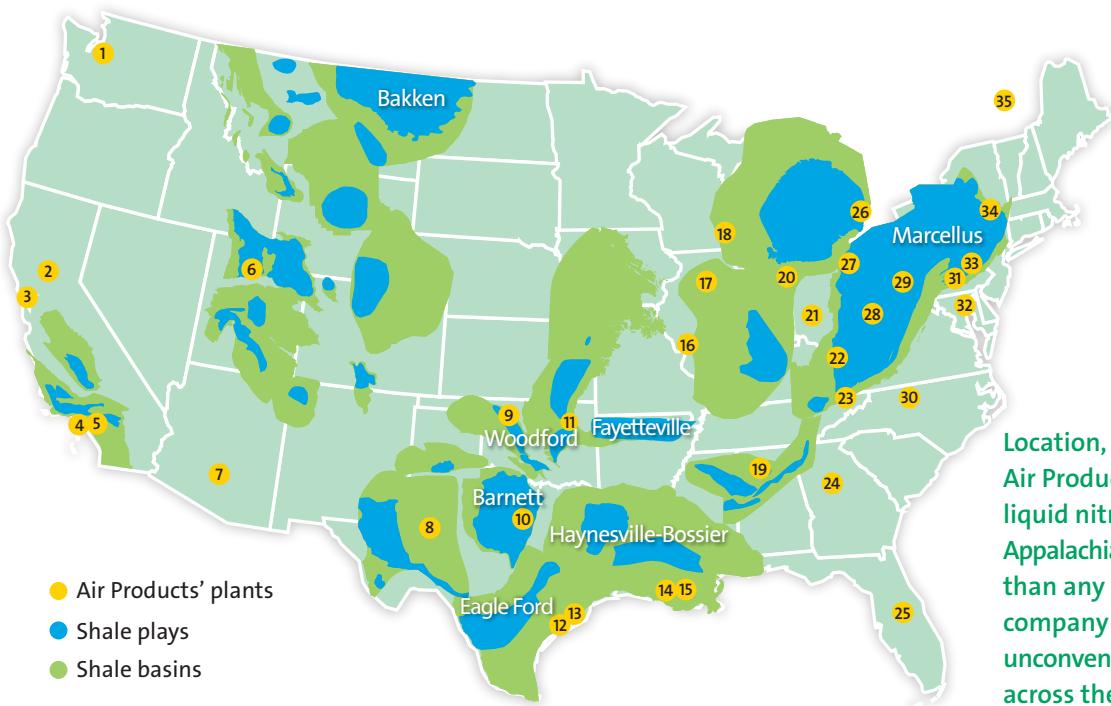
**Located where you are:** Air Products has multiple nitrogen plants surrounding key drilling areas in North

America. We have more plants than other industrial gas suppliers in the Marcellus, the liquids-rich Utica, and other plays in the Appalachian basin. The same is true for the Anadarko basin and other Oklahoma and Texas shale and tight sands plays. Further proof of our commitment to the oilfield service industry is our newest production facility located in Mooreland, Oklahoma.

**Flexible delivery options:** With a large fleet of tankers, including off-road trucks with sleeper cabs, we

deliver to customer yards and field sites. Plus you can pick up nitrogen at our production facilities 24/7.

**Unique mobile storage:** Our ability to deliver and store nitrogen at field sites is a priority. To optimize product delivery in real time, especially during high-volume jobs, Air Products has both queen- (16,500 gal) and king- (24,000 gal) sized storage vessels available for lease on either a short- or long-term basis.



**Location, location, location:**  
Air Products has more liquid nitrogen plants in the Appalachian and Mid-Con regions than any other industrial gas company—and plants near key unconventional oil and gas plays across the United States.

1. Puyallup
2. Galt
3. Santa Clara
4. El Segundo
5. Santa Fe Springs
6. Bountiful
7. Chandler
8. Odessa
9. Mooreland
10. Midlothian
11. Pryor
12. LaPorte
13. Baytown
14. Convent
15. New Orleans
16. Granite City
17. LaSalle
18. Oak Creek
19. Decatur
20. Butler
21. Middletown
22. Ashland
23. Kingsport
24. Conyers
25. Orlando
26. Nanticoke
27. Cleveland
28. New Martinsville
29. Creighton
30. Reidsville
31. Lancaster
32. Sparrows Point
33. Bethlehem
34. Glenmont
35. St Augustin

## N<sub>2</sub> production plants

N<sub>2</sub> produced at multiple plants is routed directly to the well or staging areas to optimize supply.



## Air Products' complex network of multiple delivery solutions enables us to meet variable, high-volume demand.

Nitrogen can be supplied directly from multiple production plants (which could be located hundreds of miles from the well), from permanent staging areas, and from mobile staging areas nearer the well that can be moved as jobs move.

### Permanent staging area

N<sub>2</sub> stored in permanent tanks at various locations.



### Staging and delivery at well site



Delivery to customer transport.



### Mobile staging area near well site

N<sub>2</sub> stored in mobile queens.



Staging/storage in mobile queens.

# Personalized customer service to meet your needs

The fast-changing dynamics of oilfield operations require readily accessible and knowledgeable customer service. You need to interface with an experienced customer service team that understands your need for timely and reliable supply.

**Dedicated customer service:** Our team of oilfield customer service and logistics representatives is available to meet your needs 24/7. When you call, you can select the “Oilfield Service” option to speak with our dedicated customer service team for fast and accurate feedback regarding our ability to meet a specific nitrogen requirement and associated delivery window.

**World-class supply chain and logistics:** When you are ready to begin your operation, you can't afford a delay. Air Products understands, and we make timely delivery a top priority. Our world-class logistics team uses advanced continuous improvement techniques, such as Lean Six Sigma, and a rigorous Sales and Operations Planning process that enable us to integrate the dynamic oilfield nitrogen demand into our distribution system. Our teams work around the clock to maintain an outstanding global reliability record of 99.94%—supplying industrial gases on time at the flow, purity, and pressure our customers specify.

**Oilfield sales force:** The oilfield industry is unique in its dynamic nature and delivery requirements. Our sales account managers speak your language and understand your needs. Plus they bring the voice of the customer to Air Products, so that we can keep improving our service offerings to you.

**On-site job coordination:** Some jobs require a job coordinator to make sure deliveries can be made safely and on time. Our job coordinators inspect job sites in advance, guide drivers to the agreed-upon delivery point, and are the main communication conduit between you and Air Products during job execution. That allows our deliveries to adjust to customer demand in real time, helping to reduce or eliminate ancillary costs.



Air Products customer service representatives Jane Martin (left) and Judy Watkins work closely with our logistics team to coordinate deliveries.

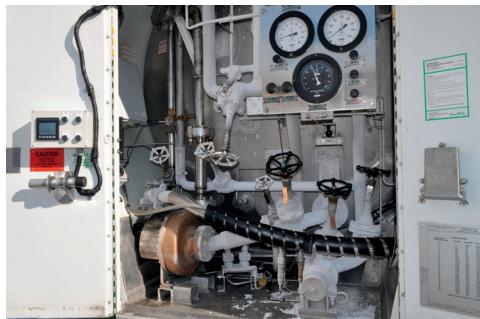


Business Development Manager Travis Payne brings over 33 years' experience working with customers in the oilfield and related industries.

## Emphasis on safety

At Air Products, nothing is more important than safety—not sales, not production, not profits. It is a commitment we share with our customers. We design and operate our gas facilities and delivery operations worldwide to the highest safety standards. We stand among the leaders in industrial gas safety performance and among the top performers of the American Chemistry Council's Responsible Care® program.

As a demonstration of our commitment to delivering to oilfield customers within the highest safety standards, we have retrofitted our trailers with a state-of-the-art electronic pressure-limiting system to reduce the risk of a hazardous overpressure condition while pumping into low-pressure oilfield customer transports.



Air Products' trailers feature a new pressure-limiting system for delivery into low-pressure transports that exceeds industry safety standards.

## How much nitrogen do you need? Use our weight/volume conversion table.

Weight of Liquid or Gas		Volume of Liquid at Normal Boiling Point		Volume of Gas at 70°F (21°C) and 1 atm	
lb	kg	L	gal	cf	m³
1.000	0.454	0.561	0.148	13.80	0.391
2.205	1.000	1.237	0.327	30.42	0.862
1.782	0.808	1.000	0.264	24.60	0.697
6.747	3.060	3.785	1.000	93.11	2.637
72.464	32.869	40.655	10.740	1000.00	28.317
2.559	1.161	1.436	0.379	35.31	1.000

## About Air Products

Air Products serves customers in virtually every industry in more than 50 countries around the globe. Our employees work hard every day to build lasting relationships with our customers and communities based on understanding, integrity, and passion.

**For orders, please contact Air Products  
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