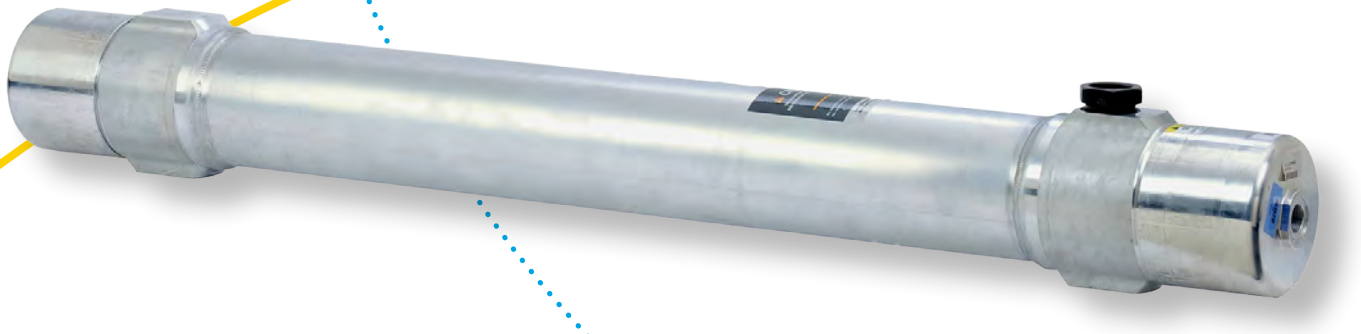
AIR PRODUCTS



PRISM® PA nitrogen membrane separators . . . tell me more

PRISM membranes overview

PRISM membrane separators are used to generate high-purity nitrogen from compressed air. These robust and durable separators use hollow fiber membrane technology to molecularly separate nitrogen from other components in compressed air. The resulting stream of nitrogen is pure, dry, and ready to use in most industrial applications.

Every PRISM membrane separator is hand assembled and tested in our AS9100 certified facility. You can be confident that each separator will perform as promised.

PRISM PA membrane advantages

Applications for nitrogen

- Tire filling
- Inerting/blanketing
- Gas processing
- Oil and gas
- Circuit board manufacturing
- Food packaging
- Food storage
- Controlled atmospheres
- Metals processing
- Controlled combustion
- Plasma cutting
- Autoclave inerting
- Pipeline purge
- Fuel tank inerting
- Beverage dispensing
- Chemical sparging

A PRISM PA membrane separator's primary role is to separate compressed air into nitrogen. The majority of applications are to generate nitrogen for use as an inerting gas to eliminate flammable atmospheres or to preserve items that oxidize in air. PRISM PA membrane separators are assembled with N1, N2, or P3 membrane fibers. The PA membrane separators will generate nitrogen purity up to 99.9%.

N1 fiber is used in applications where high volumes of nitrogen are required from the system. Application examples include inerting produce warehouses and cargo holds of ships, inerting oil and gas transport ships, hypoxic air, fire prevention and dozens of other applications where nitrogen is used.

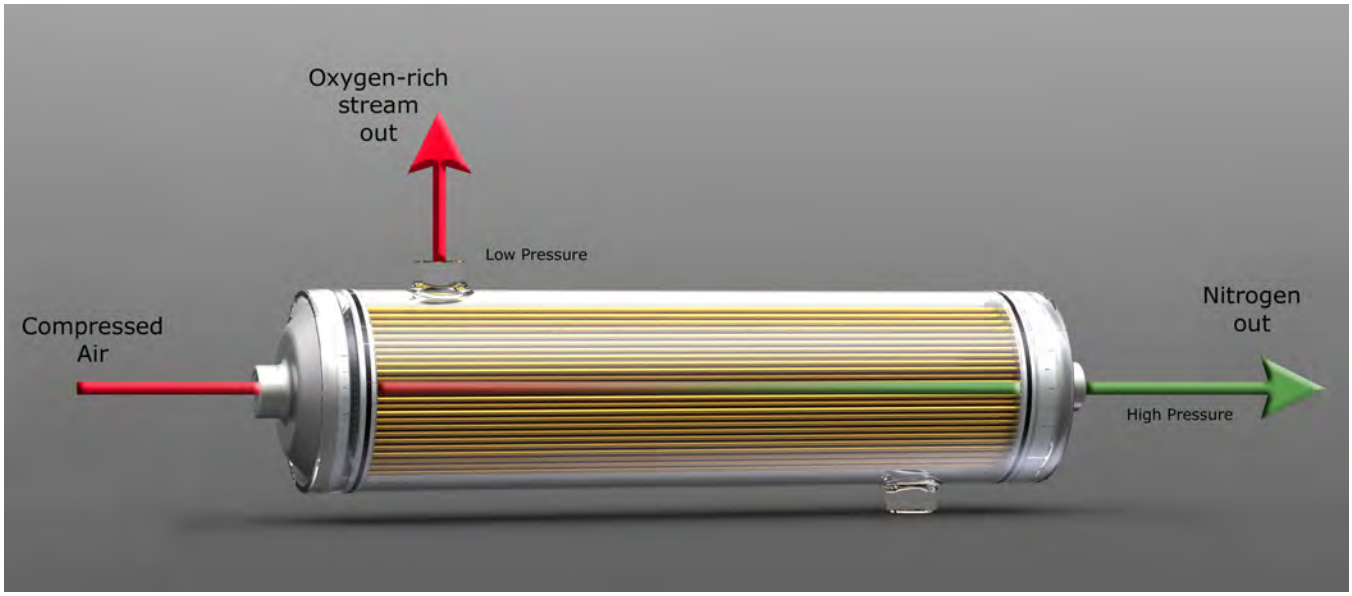
N2 fiber is similar to N1 but is used where there is extreme cycling of the membranes. Applications for N2 fiber include beverage dispensing and tire filling applications.

P3 fiber is a highly selective membrane. This membrane has a lower volume throughput when compared to the N1 fiber, but it produces more nitrogen per volume of compressed feed air. The P3 fiber has the highest selectivity that is commercially available. This is used where compressed air is limited or power resources for generating input air need to be conserved. Application examples include off-shore oil platforms and marine use.

Ordering information

Catalog Number	Product Number	Shell Materials	Connection Thread Type	Connection Size	Cap Materials
179702	PA3010-N1-3A-00	High performance ABS	NPT	⅜-inch	6061 Aluminum
179703	PA3010-N1-3B-00	High performance ABS	BSPP	⅜-inch	6061 Aluminum
174325	PA3020-N1-3A-00	High performance ABS	NPT	⅜-inch	6061 Aluminum
175596	PA3020-N1-3B-00	High performance ABS	BSPP	⅜-inch	6061 Aluminum
175594	PA3030-N1-3A-00	High performance ABS	NPT	⅜-inch	6061 Aluminum
175595	PA3030-N1-3B-00	High performance ABS	BSPP	⅜-inch	6061 Aluminum
155778	PA4030-N1-4A-00	High performance ABS	NPT	½-inch	6061 Aluminum
161930	PA4030-N1-6B-00	High performance ABS	BSPP	¾-inch	6061 Aluminum
161931	PA4030-N1-7C-00	High performance ABS	SAE J1926	⅞-inch	6061 Aluminum
412442	PA4030-N2-4A-00	High performance ABS	NPT	½-inch	6061 Aluminum
412443	PA4030-N2-6B-00	High performance ABS	BSPP	¾-inch	6061 Aluminum
412444	PA4030-N2-7C-00	High performance ABS	SAE J1926	⅞-inch	6061 Aluminum
107011	PA4030-P3-4A-D0	High performance ABS	NPT	½-inch	6061 Aluminum
107012	PA4030-P3-6B-D0	High performance ABS	BSPP	¾-inch	6061 Aluminum
150555	PA4050-N1-4A-00	High performance ABS	NPT	½-inch	6061 Aluminum
186492	PA4050-N1-4E-0S	316L Stainless Steel	NPT	½-inch	316L Stainless Steel
161932	PA4050-N1-6B-00	High performance ABS	BSPP	¾-inch	6061 Aluminum
186493	PA4050-N1-6F-0S	316L Stainless Steel	BSPP	¾-inch	316L Stainless Steel
161933	PA4050-N1-7C-00	High performance ABS	SAE J1926	⅞-inch	6061 Aluminum
186494	PA4050-N1-7R-0S	316L Stainless Steel	SAE J1926	⅞-inch	316L Stainless Steel
412445	PA4050-N2-4A-00	High performance ABS	NPT	½-inch	6061 Aluminum
412446	PA4050-N2-6B-00	High performance ABS	BSPP	¾-inch	6061 Aluminum
412447	PA-4050-N2-7C-00	High performance ABS	SAE J1926	⅞-inch	6061 Aluminum
412449	PA4050-N2-4E-0S	316L Stainless Steel	NPT	½-inch	316L Stainless Steel
412450	PA4050-N2-6F-0S	316L Stainless Steel	BSPP	¾-inch	316L Stainless Steel
412451	PA-4050-N2-7R-0S	316L Stainless Steel	SAE J1926	⅞-inch	316L Stainless Steel
107137	PA4050-P3-4A-D0	High performance ABS	NPT	½-inch	6061 Aluminum
186495	PA4050-P3-4E-DS	316L Stainless Steel	NPT	½-inch	316L Stainless Steel
107016	PA4050-P3-6B-D0	High performance ABS	BSPP	¾-inch	6061 Aluminum
186496	PA4050-P3-6F-DS	316L Stainless Steel	BSPP	¾-inch	316L Stainless Steel
107017	PA4050-P3-7C-D0	High performance ABS	SAE J1926	⅞-inch	6061 Aluminum
186497	PA4050-P3-7R-DS	316L Stainless Steel	SAE J1926	⅞-inch	316L Stainless Steel
177108	PA6050-N1-8B-G2	6063 Aluminum	BSPP	1-inch	6061 Aluminum
177106	PA6050-N1-8C-G2	6063 Aluminum	SAE J1926	1-inch	6061 Aluminum
412455	PA6050-N2-8C-G2	6063 Aluminum	SAE J1926	1-inch	6061 Aluminum
412452	PA6050-N2-8B-G2	6063 Aluminum	BSPP	1-inch	6061 Aluminum
177109	PA6050-P3-8B-D2	6063 Aluminum	BSPP	1-inch	6061 Aluminum
177107	PA6050-P3-8C-D2	6063 Aluminum	SAE J1926	1-inch	6061 Aluminum
412438	PA3020-N2-3A-00	High performance ABS	NPT	⅜-inch	6061 Aluminum
412439	PA3020-N2-3B-00	High performance ABS	BSPP	⅜-inch	6061 Aluminum
412440	PA3030-N2-3A-00	High performance ABS	NPT	⅜-inch	6061 Aluminum
412441	PA3030-N2-3B-00	High performance ABS	BSPP	⅜-inch	6061 Aluminum

How membranes work

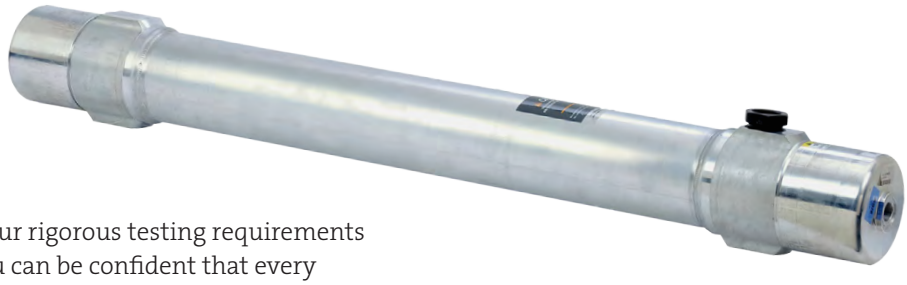


A typical membrane separator contains thousands of fibers that are bundled and encased at both ends in epoxy resin. The ends of the bundle are cut, which leaves the fiber bores open on both ends, allowing the gas to travel from one end to the other. The fiber bundle is enclosed in a suitable casing. The casing protects the fibers and routes the gas properly.

Air Products' PRISM membranes: experience, performance, and value.

The PRISM PA nitrogen membrane separator uses asymmetric hollow fiber membrane technology to separate and recover nitrogen from compressed air. Atmospheric air contains 78% nitrogen, 21% oxygen, and 1% other gases. The PRISM PA membrane uses the principle of selective permeation to produce high-purity nitrogen. Each gas has a characteristic permeation rate, which is a function of its ability to dissolve and diffuse through a membrane. Oxygen is a "fast" gas and is selectively diffused through the membrane wall, while nitrogen is allowed to travel along the inside of the fiber, thus creating a nitrogen-rich product stream. The oxygen-enriched gas, or permeate, is vented from the membrane separator at atmospheric pressure. The driving force for the separation is the difference between the partial pressure of the gas on the inside of the hollow fiber and that on the outside.

In the PRISM PA membrane separator, compressed air flows down the inside of hollow fibers. Fast gases—oxygen, carbon dioxide, and water vapor—and a small amount of slow gases, pass through the membrane wall to the outside of the fibers. They are collected at atmospheric pressure as the permeate. Most of the slow gases and a very small amount of the fast gases continue to travel through the fiber until they reach the end of the membrane separator, where the product nitrogen gas is piped to the application.



PA 6050 features a 6063 aluminum shell and and 6061 aluminum caps. Available with SAE and BSPP connections.

Quality assured

Every membrane separator has to pass our rigorous testing requirements before it will be released into service. You can be confident that every separator will perform as advertised. Our AS9100 certification meets the exacting requirements of the global aerospace industry for quality management systems.

Industrial grade

PRISM membrane separators are designed to handle industrial production loads. Pressures up to 24 barg ensure that your nitrogen production requirements will be met. The solid construction is a perfect match for remote and severe duty installations like oil platforms and mining operations.

Passive technology

The selective permeation technology uses a passive system with no moving parts. This simple system allows you to engineer more reliable products that can be deployed in a wide range of environments, including mobile systems.

Simple start-up

PRISM membrane separators are easily commissioned. Simply apply clean compressed air, and production begins. No break-in period, expensive media, or complex equipment to manage and maintain.

Lightweight

PRISM PA membrane separators are constructed from high-performance ABS or 6061/6063 aluminum, which makes them very lightweight. Separators are easily handled by one person, making installation and field service simple.

All 1-inch through 4-inch diameter separators are constructed with high-perfomance ABS shells and 6061 aluminum caps. Available with NPT, SAE, and BSPP connections.

Performance – quick reference

Nitrogen flow capacity in normal cubic meters per hour @ 55°C, 9 barg

	99.5% Purity		99% Purity		98% Purity		97% Purity		96% Purity		95% Purity	
Model	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
PA3020 N1	4.7	0.8	5.1	1.1	5.7	1.7	6.2	2.2	6.8	2.7	7.4	3.2
PA3030 N1	8.0	1.4	8.6	1.9	9.6	2.8	10.6	3.6	11.5	4.5	12.4	5.4
PA4030 N1	14.2	2.4	15.3	3.4	17.1	5.0	18.7	6.4	20.3	7.9	22.0	9.5
PA4030 P3	6.4	1.8	7.1	2.3	8.1	3.2	9.0	4.0	10.0	4.9	11.0	5.8
PA4050 N1	23.3	4.0	25.1	5.5	28.0	8.1	30.7	10.5	33.4	12.9	36.2	15.5
PA4050 P3	10.6	2.9	11.7	3.8	13.4	5.3	14.9	6.6	16.5	8.0	18.1	9.5
PA6050 N1	58.8	9.9	63.3	13.9	70.6	20.3	77.4	26.3	84.1	32.4	91.2	39.0
PA6050 P3	23.4	6.4	25.8	8.4	29.6	11.6	33.0	14.7	36.4	17.7	40.0	21.0

Nitrogen flow capacity in normal cubic meters per hour @ 55°C, 15 barg

	99.5% Purity		99% Purity		98% Purity		97% Purity		96% Purity		95% Purity	
Model	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
PA3020 N1	8.1	1.5	8.8	2.1	9.9	3.1	11.0	4.0	12.1	5.0	13.2	6.0
PA3030 N1	13.8	2.6	14.9	3.6	16.8	5.3	18.5	6.8	20.3	8.4	22.1	10.1
PA4030 N1	24.4	4.6	26.4	6.4	29.8	9.3	32.8	12.1	35.9	14.9	39.0	17.8
PA4030 P3	11.2	3.4	12.5	4.4	14.5	6.1	16.2	7.7	18.0	9.3	39.5	11.0
PA4050 N1	40.1	7.5	43.4	10.4	48.9	15.2	53.9	19.7	58.9	24.2	64.2	29.1
PA4050 P3	18.6	5.5	20.6	7.3	23.9	10.1	26.8	12.7	29.8	15.3	32.8	18.1
PA6050 N1	101.0	18.8	109	26.2	123.1	38.2	136.2	49.4	148.2	60.8	162.1	72.9
PA6050 P3	41.0	12.2	45.6	16.1	52.8	22.3	59.3	28.0	65.8	33.8	72.5	39.9

Actual performance will vary depending on incoming pressure and temperatures. Contact our Technical Services department to obtain product technical data sheets and performance calculations for your specific application.

Nm3/H x 37.33 = SCFH

For more information regarding Air Products' PRISM membrane products, please contact our Customer Service department.

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The Air Products PRISM Membranes Business Unit's quality management system is certified to ISO9001 and AS9100C.

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