



# Nitrogen Generators

NITRO-GEN  
and  
NITRO-GEN+

PRODUCT BROCHURE

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# What is a laboratory nitrogen generator and when is one used?

A laboratory nitrogen generator is a machine that is able to separate nitrogen molecules from the air around it by using a compressed air source. By removing the vast majority of oxygen molecules and other impurities from an air source, these machines are able to produce high purity or ultra-high purity nitrogen gas needed to run a variety of different laboratory applications and instruments.

There are many applications that require a lab to use a nitrogen gas generator, with LC-MS, GC, ICP, ELSD, and sample preparation/blowdown evaporation being the most common. Each application will have specific nitrogen requirements (flow rate, purity level, etc.) which will determine the exact type of nitrogen generator needed by the lab.

Application	Flow Rate	Purity Level
<b>LC/MS</b>	High (30 to 40 L/min)	Moderate to high (~97-99%)
<b>GC</b>	Low (under 1 L/min)	Ultra-high (>99,999%)
<b>ICP</b>	Low to Moderate (<5 L/min)	Ultra-high (>99,999%)
<b>ELSD</b>	Low to Moderate (<5 L/min)	High (~98-99%)
<b>Sample Prep/Nitrogen Blowdown Evaporation</b>	Moderate to High (5 to 40 L/min)	Low to Moderate (<98%)

# Which nitrogen generator technology is right for me?

There are two common types of nitrogen generators, differentiated by the way they separate nitrogen molecules from the air. Browse our range of PSA and membrane nitrogen generators.

## Membrane-Based

The technology behind membrane-based nitrogen generators is...you guessed it...a membrane. This type of generator contains a series of narrow, semi-permeable fibers located in a porous membrane. As compressed air is passed through, some gas molecules such as oxygen, carbon dioxide and water vapor are able to permeate the fibers quite easily and are vented off, while nitrogen molecules pass through much slower. This results in a high purity nitrogen stream (95-99% purity) from the membrane outlet.

Organomation's NITRO-GEN is a popular membrane-based nitrogen generator for sample preparation that is used by analytical laboratories worldwide. Producing up to 20 L/min at up to 99% purity, this lightweight generator is suitable for those using blowdown evaporation for solvent concentration.

## PSA (Pressure Swing Adsorption) Technology

PSA generators work by using two columns of tightly packed material called Carbon Molecular Sieve (CMS). Compressed air will pass through one CMS column, which will adsorb all oxygen, water vapor and other molecules, while allowing nitrogen to pass through and be stored in an accumulation tank. Once one sieve becomes saturated, compressed air will be diverted to the second CMS column, allowing the first one to depressurize, releasing all adsorbed impurities through an outlet. This process repeats over and over, leaving behind nitrogen gas with a 98-99.999% purity.

As this technology tends to produce a slightly higher purity and flow rate than with membranes, PSA generators are a great choice for both sample preparation and LC-MS applications. The NITRO-GEN+ is an affordable PSA generation solution that is able to produce up to 35 L/min, meeting all your sample prep and analytical needs.

# NITRO-GEN Nitrogen Generator

The NITRO-GEN Nitrogen Generator (Catalog# NA1955) was developed with Organomation's nitrogen evaporators in mind, making it the most suitable generator for our instruments. This generator is a safe, reliable, and cost-effective alternative to traditional gas suppliers.

It is a lightweight, easy to set up unit that requires only a source of compressed air to run. This unit is an ideal choice for labs with an inhouse compressed air source. The NITRO-GEN produces up to 20 LPM of nitrogen gas and is recommended for evaporation of up to 48 samples.

The NITRO-GEN uses a hollow-fiber membrane to convert compressed air to a stream of 95-99% pure nitrogen gas. The hollow-fiber membrane consists of a series of narrow, semipermeable tubes in a porous membrane. As compressed air travels through the fibers, oxygen and water vapor permeate the membrane and are vented off, leaving a stream of high purity nitrogen gas. At up to 99% purity, the resulting nitrogen gas stream can be used in a variety of sample preparation applications.



## Advantages:

- **Quick Start-Up Time:** Nitrogen is produced instantly, no heat up time
- **Saves Energy:** No electrical power needed
- **Engineered Design:** Life expectancy is more than 10 years
- **Low Maintenance:** Serviceable clean air filter
- **Compact and Lightweight:** Small footprint conserves valuable bench space
- **Reduced CO<sub>2</sub> Emissions:** No heaters, less energy required

## Standard Features:

- Adjustable outlet pressure regulator, (0-100 psi)
- Replaceable internal air filter
- Requires an oil-less compressed air source

# SPECIFICATIONS

The following Product Specifications table contains detailed technical information for NITRO-GEN Nitrogen Generator.

Instrument Catalog Number	NA1955
Flow Rate	Up to 20 L/min
Technology	Hollow-Fiber Membrane
Output Pressure	Adjustable 0-100 psi
Electrical Requirements	None
Total Wattage	N/A
Noise Level	Negligible (< 40 dBA when connected to an instrument)
Overall Dimensions (w x d x h)	20,3 x 24,1 x 49,5 cm
Weight	6 kg
Inlet Air Conditions	
Maximum Inlet Pressure	150 psi 10,3 bar
Particulates	≤ 0,01 µm
Maximum Oil Vapor Content	< 0,01 mg/m <sup>3</sup> < 0,01 ppm (w)
Relative Humidity	< 100% (non-condensing)
Heating Device Specs	
Temperature	2-50°C
Ambient Pressure	Atmospheric
Air Quality	Clean air without contaminants

## Flow Rate (LPM) and Purity (%) Based on Inlet Pressure

Inlet Pressure	Nitrogen Purity				
	99%	98%	97%	96%	95%
4 bar	2,5	5,5	6,5	8,3	10,3
5 bar	3,2	5,7	8,0	10,3	13,0
6 bar	4,2	7,5	10,3	13,3	16,3
7 bar	4,8	8,7	12,2	15,5	19,0
8 bar	5,5	10,9	13,8	17,7	21,8
9 bar	6,5	11,7	15,8	20,5	25,3
10 bar	6,8	12,5	17,3	22,2	27,3

Based on conditions at 1,01 bar and 20°C

# NITRO-GEN+ Nitrogen Generator

The NITRO-GEN+ Nitrogen Generator (Catalog# NA1935) is compatible with all Organomation nitrogen evaporators up to 100 sample positions, and is designed to fulfill the needs of sample preparation and LC-MS analysis.

It is a self-contained generator that is able to produce up to 35 LPM of nitrogen gas with a purity up to 98%. This generator produces nitrogen by combining the utilization of compressors and Carbon Molecular Sieve (CMS) technology. Its dual compressor technology utilizes both a high and low pressure compressor, both of which are included with the unit. This allows the unit to remain quiet while producing a constant, uninterrupted nitrogen gas supply. This 2-stage pressure design also reduces the stress on the compressors, extending their life and reducing maintenance costs.

This generator is able to produce nitrogen at both a low pressure and ambient temperature, eliminating the need for hazardous high pressure cylinders and liquid Dewars. The NITRO-GEN+ promotes a safe laboratory environment while being a reliable source of nitrogen gas for a variety of applications.



## Advantages:

- **Convenient:** Integrated air compressors eliminate the stress of sourcing your own to run your generator
- **Safe Operation:** Nitrogen produced at low pressure and ambient temperature removes hazards associated with high pressure cylinders
- **Quiet:** Running noise level is 55 dBA at 1 meter
- **Efficient:** Constant, uninterrupted gas supply eliminates delays in analysis when changing out nitrogen cylinders

## Standard Features:

- Integrated low noise, oil-free compressors
- Proprietary Carbon Molecular Sieve Technology
- Complete “plug and play” LC-MS solution

# SPECIFICATIONS

The following Product Specifications table contains detailed technical information for NITRO-GEN+ Nitrogen Generator.

Instrument Catalog Number	NA1955
Flow Rate	Up to 35 L/min
Nitrogen Purity	Up to 98% purity
Dewpoint	50°C
Technology	Carbon molecular sieve (CMS)
Warm Up Time	20 minutes
Output Pressure	0 - 116 psi, 0 - 8 bar
Electrical Requirements	110-120 V, 60 Hz / 220-240 V, 50 Hz
Total Wattage	1800 W
Index of Protection	IP20
Mechanical Impact Rating	IK08
Noise Level	55 dBA at 1 meter
Overall Dimensions (w x d x h)	48 x 83,8 x 63,5 cm
Weight	90 kg
Outlet Connection	6 mm OD compression
Certification	CE, FCC, MET (UL and CSA compliant)
Environmental Operating Conditions	
Operating Temperature	15-35°C
Relative Humidity	0-80% rF with no condenser 0-99% rF with condense drain
Altitude	<2,000 m (from 800 to 1.150 hPa)

# Nitrogen Generators



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