

AIR LIQUIDE INDONESIA

PRODUCT CATALOG



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1. Introduction

1.1 Overview

Air Liquide Indonesia anticipates the challenges of its markets, invests locally and globally, and delivers high-quality solutions to its customers and patients. Entering Indonesia in 1993, Air Liquide Indonesia is a subsidiary of the Air Liquide Group, the world leader in gases, technologies, and services for Industry and Health.

1.2 Market

Air Liquide delivers innovative gas solutions and technologies to customers, driving performance and helping customers to reduce environmental footprints. Air Liquide assists a large number of industries on a daily basis from petrochemical, food and pharma, laboratories, metal fabrication to oil and gas. Our commitment remains unchanged for each customer: drive customer's performance, contribute to the quality of the products, and optimize profitability.



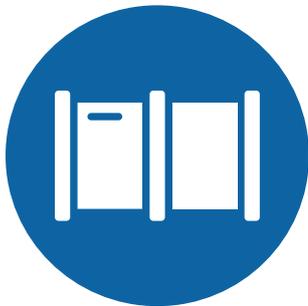
2. Supply Mode

From basic needs to full process support, Air Liquide knows that reliable gas supply is crucial to our customers operations. We work with our customers to determine the most appropriate and cost-effective supply mode based on their purity, flow and safety requirements as well as the volume of gases needed for manufacturing processes.

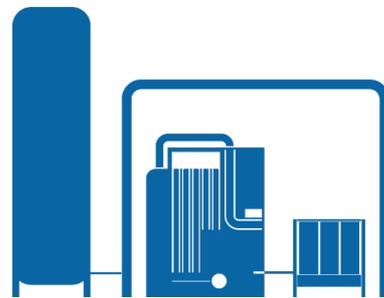
Air Liquide has the world class expertise and flexibility in gas supply needed by the various industries. Our supply chain is backed by standardized technologies, qualification processes and information systems that ensure reliability and safety while optimizing logistics.

We operate advanced high purity gas production plants with the largest interconnecting Pipeline network of Oxygen, Nitrogen, Argon, and Hydrogen in Indonesia.

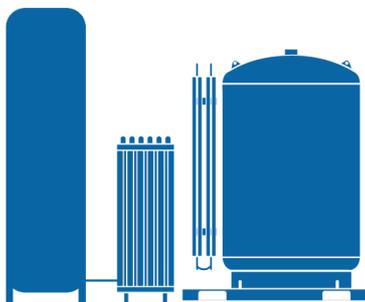
Leveraging our strong supply chain capability, we offer a range of gas supply modes, including Pipeline, On-Site production, Bulk (VIE and Microbulk) and Packaged Gas (Cylinder) delivery.



Pipeline



On-Site Production



Bulk



Packaged Gas

2. Supply Mode



2.1 Pipeline

Air Liquide pipelines are designed to be buried underground to carry gases at high pressures to our customers supplying Oxygen, Nitrogen and Hydrogen in large quantities. In addition, the pipelines are also used to supply industrial gases to companies from major industries such as Steel, Petrochemical, and other manufacturing industries that are located within range of our pipeline network.



**+100 km
Pipeline Network**

Anyer - Merak - Cilegon
Cibitung - Cikarang

*The Largest Pipeline Network in
Indonesia*

2. Supply Mode

2.1.1 Over the Fence (OTF)

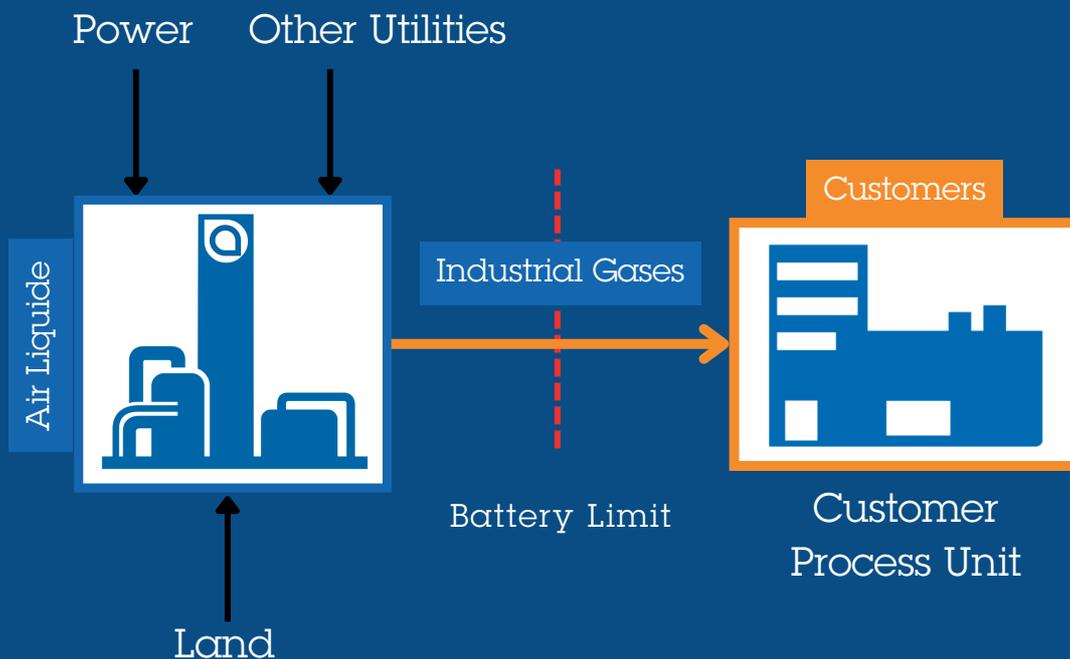
OTF (Over The Fence) is a business model in which Air Liquide invests, builds, owns, operates, and maintains assets as a producer and distributor. Through this business model, we enable our customers to drive their performance and profitability. This is our worry free solution for our customer's industrial gas needs.

The Benefits of OTF

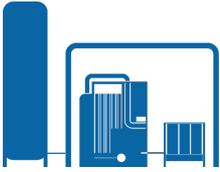


- ✓ Safety & risk management handled by Air Liquide.
- ✓ Capital & project management resources provided by Air Liquide.
- ✓ Operational experience & highest supply reliability.
- ✓ Proprietary technologies and expertise for lower total cost of ownership.
- ✓ Performance is guaranteed during contract period.
- ✓ Customer's focus on core business.

OTF SCHEME



2. Supply Mode



2.2 On-Site

Air Liquide can also supply very large quantities of gas directly from dedicated on-site plants which consist of gas production units installed directly on customer premises. Our expertise in reliable and energy efficient supply of industrial gases allow our customers to focus on their core business while we focus on ours.

Air Liquide supplies a range of customization on-site production solutions to meet the diverse needs of different industries with regard to the volume and purity of various gases (O₂, N₂ or H₂).



Air Liquide On-Site Key Numbers

1,100 On-Site units

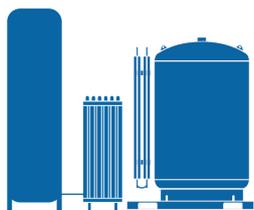
30% of On-Site units connected for predictive maintenance.

10 to 15 years contract duration (average)

On-Site Supply Mode for Larger Volumes

O ₂	Ranging from 10 to 3,800 Nm ³ /h
H ₂	Ranging from 50 to 4,000 Nm ³ /h
N ₂	Ranging from 10 to 3,000 Nm ³ /h

2. Supply Mode



2.3 Bulk

For users of relatively larger volume of gas (exceeding 100,000m³ per month), we offer safe and reliable industrial grade bulk products (Oxygen, Nitrogen, Argon, and Hydrogen) which are produced and liquefied in plants and delivered directly to customers cryogenic liquid storage vessel by insulated cryogenic trucks.



Our expertise extends to the installation, maintenance and monitoring of liquefied gas storage systems. We offer safe and reliable bulk systems in a range of sizes and flow capacities to meet the needs of many industries. Air Liquide has proven expertise in the liquid supply of gases for medium and large needs. Our technical expertise and robust supply chain enable us to deliver quality and accuracy to our customers.

2.3.1 Vacuum Insulated Evaporators (VIE)



Vacuum Insulated Evaporators (VIE) are cryogenic storage tanks, which are designed primarily for the storage and distribution of liquefied gasses, such as Liquid Argon, Liquid Nitrogen and Liquid Oxygen. It is a compact, self-contained automatic system which serves as a central supply of gas into a customer's piping system. Gases are stored at our production facilities in liquid phase and delivered directly to our customer in insulated cryogenic tanks. The product can either be withdrawn as a liquid or vaporized into the local distribution system in its gaseous form.

2. Supply Mode

2.3.2 Microbulk

The Microbulk supply platform is the right solution if your supply needs range from 500 m³ per month to 100,000 m³ per month. Microbulk storage system tank capacities range from 500 to 3,000 liters and are able to accommodate pressure requirements of up to 450psi.

Microbulk solutions are ideal for businesses with growing demands for industrial gases. Conversion from cylinder to Microbulk supply will simplify your operations as follows:

- Reduce gas handling requirements.
- Eliminate worries about lost or damaged cylinders.
- Eliminate the need for cylinder change outs.
- Minimize the risk of gas stock ruptures.
- Boost financial benefits due to reduced residual loss.

Skid Tank



Skid Tank is the AL storage equipment for bulk supply in small quantity. Our Skid Tank is the right fit for your gas consumption from 500 to 100,000 m³/month. From gas delivery to On-site storage Tanks, our Skid Tank help to ensure an uninterrupted supply. Our Tank capacities range from 500 to 3000 liters and are able to accommodate pressure requirements of up to 450psi.

Skid Tank Specifications	
Tank Capacity	500 L to 3000 L
Pressure	Up to 450psi
Operating Pressure	From 1 to 32 barg
Flow Rate	Up to 130m ³ /hour
Usage	Gaseous or cryogenic liquid

2. Supply Mode



2.4 Packaged Gas

For gas users who need mobility and/or with demand for small volumes, gas cylinders can represent an extremely practical method of supplying gas to meet the needs of various manufacturing processes. The gases can be supplied in either individual cylinders or pallets of various capacities for your application and delivered promptly by our transport fleet.

For users who require gas volume requirement of less than 5,000m³ per month. We offer many types of packaged gases and gas mixtures in various capacities for an extensive array of applications.

2.4.1 Cylinders

Air Liquide designs and produces the market's safest, most ergonomic, user-friendly cylinders, and valves for small, medium, and mobile gas needs. Our cylinders come with the safest and most ergonomic valves:

SMARTOP™



A smart residual pressure valve with an on/off lever and permanent content gauge, available with our ALPHAGAZ™ pure gases premium offers.

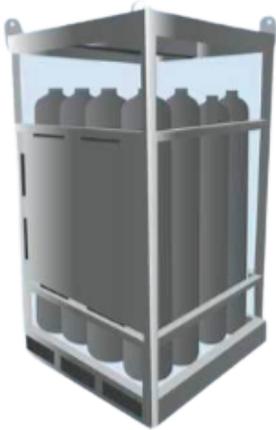
EXELTOP™



A cylinder valve with built-in pressure regulator, available with our premium gases ARCAL™ shielding gases.

2. Supply Mode

2.4.2 Cylinder Pallet



Cylinder pallet is used extensively in the shipyard and construction sectors and is the preferred choice for our customers who are seeking convenience and safety. Since the pallet normally come in 4 to 16 cylinders bundles, customers do not need to change cylinders as frequently as compared to individual cylinder.

Cylinders that are bundled in pallet are more robust. Their stability and mobility make them well-suited to the shipyard and construction industries.

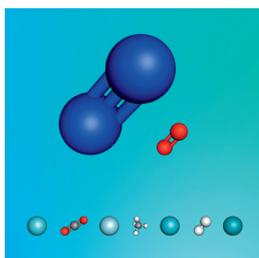
2.4.3 Liquid Gas Cylinder



A Liquid Gas Cylinder (LGC) is a portable super-insulated vacuum vessel holding liquid Argon, Carbon Dioxide, Nitrogen, and Oxygen. LGC is normally supplied as an intermediate gas system between bulk storage tank or vacuum insulated evaporator (VIE) which can be used individually or in conjunction with a manifold system.

3. Available Gases

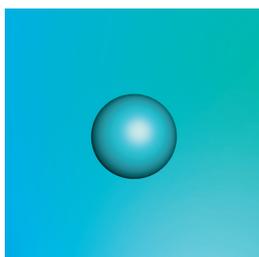
3.1 Air



Air as a source of Oxygen, Air is essential for combustion, respiration, decay and various industrial processes including oxidation.

Product Specifications			
Grade	Purity	Impurities	Packaging Available
High Purity	-	Moisture < 2 ppm Oxygen 21% ± 1% Hydrocarbons < 1 ppm	Cylinder

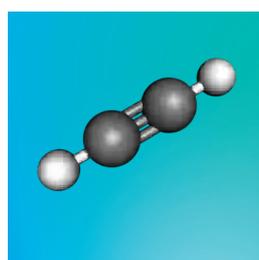
3.2 Argon (Ar)



Argon is used as a protective atmosphere for a large number of industrial processes, including steel manufacturing, welding and metal fabrication, electronics, food preservation and wine making. It is also used in fluorescent lighting applications and serves as a non-reactive thermal blanket in double glazed windows.

Product Specifications			
Grade	Purity	Impurities	Packaging Available
Industrial	99.995%	Moisture < 3 ppm Oxygen < 3 ppm	<ul style="list-style-type: none">• Cylinder• Liquid Gas Cylinder (LGC)• Bulk - VIE• Micro Bulk - Skid Tank
Purified	99.9995%	Moisture < 2 ppm Oxygen < 2 ppm Hydrocarbons < 0.5 ppm	

3.3 Acetylene (C₂H₂)

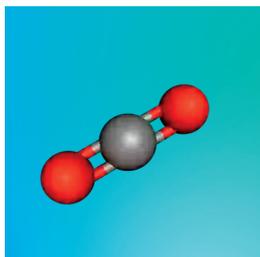


Acetylene (C₂H₂) is a fuel gas that is used together with Oxygen for welding metals and cutting steel, and also for allied Oxy-acetylene processes for heating, forming and treating metals. It is also used in a spectroanalytical procedure for the quantitative determination of chemical elements using the absorption of optical radiation in laboratory process.

Product Specifications			
Grade	Purity	Impurities	Packaging Available
Purified	99.8%	Moisture < 700 ppm	Cylinder

3. Available Gases

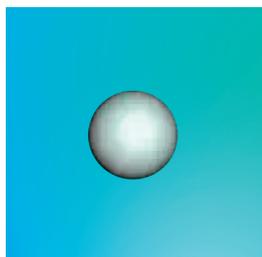
3.4 Carbon Dioxide (CO₂)



Carbon Dioxide is used as a cryogenic fluid for process such as tissue conservation deep-freezing and fire extinction due to it's non-combustible nature. Food-grade carbon dioxide is used in carbonated beverages and for food processing applications such as chilling and freezing, modified atmosphere packaging and cold transportation.

Product Specifications			
Grade	Purity	Impurities	Packaging Available
Industrial	99.5%	-	<ul style="list-style-type: none">• Cylinder• Liquid Gas Cylinder (LGC)• Bulk - VIE• Microbulk - Skid Tank
Purified	99.8%	Moisture < 10 ppm	

3.5 Helium (He)



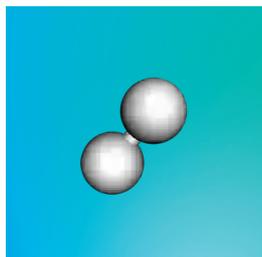
With the lowest boiling point, Helium is used in various applications and industries. It serves as a cryogenic agent to cool superconductive magnetic coils in Magnetic Resonance Imaging (MRI) and Nuclear Magnetic Resonance (NMR) Medical equipment.

Aside from that, Helium is chemically inert and can be used to create an inert atmosphere for Tungsten Inert Gas (TIG) or Metal Inert Gas (MIG) welding. It is also used for purging, annealing, sputtering, leak checking and etching applications in the Electronic Industry.

Product Specifications			
Grade	Purity	Impurities	Packaging Available
Industrial	99.99%	-	<ul style="list-style-type: none">• Cylinder• Cylinder Pallet• Liquid Gas Cylinder (LGC)
Purified	99.996%	Moisture < 2 ppm Oxygen < 2 ppm Hydrocarbons < 0.5 ppm	

3. Available Gases

3.6 Hydrogen (H₂)

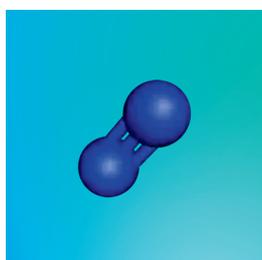


Hydrogen is essential in aerospace as a fuel for rocket engines, supplies energy to computers and life support system in space. It is used to improve plasma welding and cutting operations. In addition, it is usually mixed with Argon to weld stainless steel and can be used as a propellant for any type vehicle.

Hydrogen is also offered as a pure specialty gas under the brand ALPHAGAZ™, which is suitable for critical laboratory and analytic applications.

Product Specifications			
Grade	Purity	Impurities	Packaging Available
Industrial	99.9999%	Moisture < 5 ppm Oxygen < 3 ppm Hydrocarbons < 1 ppm	<ul style="list-style-type: none"> • Cylinder • Compressed Gas Tube Trailer
Purified	99.995%	Moisture < 2 ppm Oxygen < 2 ppm Hydrocarbons < 0.5 ppm	

3.7 Nitrogen (N₂)



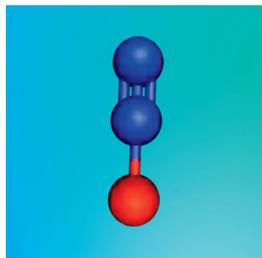
Constituting 78% of the atmospheric air, Nitrogen is used in pressurization, purging and inserting in the petrochemical industry. The food and beverage industry also requires significant quantities of liquid and gaseous nitrogen for its food processing applications. In its liquid form, Nitrogen is used in rapid cooling and storage of biological material, cryosurgery and cryogenic ally grind plastics

and rubbers. Nitrogen is also offered as a pure specialty gas under the brand ALPHAGAZ™, which is suitable for critical laboratory and analytic applications. Nitrogen in cryogenic liquid form is also available under ALPHAGAZ™ 1000.

Product Specifications			
Grade	Purity	Impurities	Packaging Available
Industrial	99.99%	-	<ul style="list-style-type: none"> • Cylinder • Liquid Gas Cylinder (LGC) • Bulk - VIE • Microbulk - Skid Tank
Purified	99.9995%	Moisture < 2 ppm Oxygen < 2 ppm Hydrocarbons < 0.5 ppm	

3. Available Gases

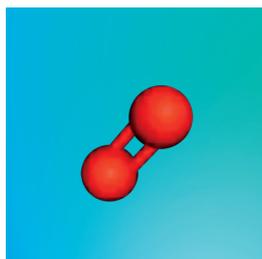
3.8 Nitrous Oxide (N₂O)



Nitrous Oxide is used in calibration gas mixtures for petrochemical industry, environmental emission monitoring, industrial hygiene monitors and trash impurity analyzers. Nitrous oxide also serves as gas propellant for aerosols packaging. Medical Nitrous Oxide is used in adults and children for general anesthesia and pain relief.

Product Specifications			
Grade	Purity	Impurities	Packaging Available
Purified	99%	Moisture < 10 ppm	Cylinder

3.9 Oxygen (O₂)

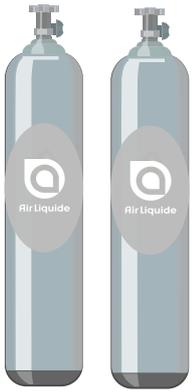


Huge volumes of industrial grade oxygen is used to increase efficiency in a number of processes by reducing the amount of fuel used and decreasing Carbon Dioxide emission in the chemical, oil and gas industries. It is also used in metal fabrication applications such as smelting, cutting and welding.

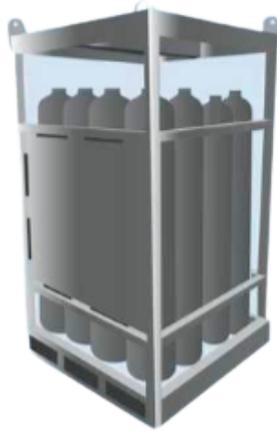
Medical oxygen is important in hospital and clinical care for resuscitation and surgery and for various therapies.

Product Specifications			
Grade	Purity	Impurities	Packaging Available
Industrial	99.5%	-	<ul style="list-style-type: none">• Cylinder• Liquid Gas Cylinder (LGC)• Bulk - VIE• Microbulk - Skid Tank
Purified	99.8%	Moisture < 2 ppm	

4. Packaging Information



Cylinder



Pallet



Liquid Gas Cylinder (LGC)

*The color codes are a guide only, please refer to cylinder shoulder label for the full chemical name.

Packaging Information			
Packaging	Size	Approx. Empty Weight (kg)	Valve Connection
Cylinder	10	10	See valve guideline in appendix
	20	53	
	47	53	
	50	65	
Cylinder Pallet	50 x 16 Cylinder	1350	

4. Packaging Information



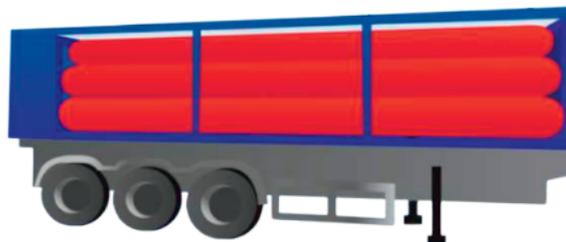
Skid Tank



Vacuum Insulated Evaporators (VIE)

*The color codes are a guide only, please refer to cylinder shoulder label for the full chemical name.

Liquid Supply Information		
Packaging	Water Capacity (Liters)	Maximum Allowable Working Pressure (MAWP)
Microbulk - Skid Tank	1,000L	32 Bang (Ar, N2, O2) 35 bang (CO2)
	3,000L	
Bulk - VIE	6,000L	17.2 bang (Ar, N2, O2) 22 bang (CO2)
	10,000L	
	20,000L	
	30,000L	
	50,000L	
	60,000L	



Compressed Gas Tube Trailer

*The color codes are a guide only, please refer to cylinder shoulder label for the full chemical name.

Tube Trailer Information		
Compressed Gas	1200 to 4000 Nm ³	200 barg

5. Premium Products

5.1 ARCAL™

Simply High Performance



ARCAL™ New Generation offer arc welding is easier, safer with improved quality. With ARCAL™ we put the simple back into arc welding, without taking away any of our performance, quality and safety. We offer an innovative premium range of 4 ready-to-weld products (Ar & ArMix) dedicated to arc welding which cover practically any and all welding situation.

These 4 products include our best innovative supply solution available anywhere and anytime (standardized filling for packages with innovative TOPs- SMARTOP™ and/or EXELTOP™ /ALTOP™, on-site mixing for liquid supply).

1. ARCAL™ 1 (ARCAL™ Prime)



The pure gas solution. It's the primary product for TIG and plasma welding of all materials and MIG welding of aluminium or copper alloys.

ARCAL™ Prime

Gas Content	Ar
Purity	99.995%
Volume	10,5 m ³
Pressure	200 Bar
Cylinder Capacity	50L

2. ARCAL™ 5 (ARCAL™ Force)



The powerful gas solution for MAG welding of heavy carbon steel structures. It's designed to weld thick plates and to be highly tolerant to fit-up and to surface preparations.

ARCAL™ Force

Gas Content	Ar/CO ₂
Purity	99.995%
Volume	11 m ³
Pressure	200 Bar
Cylinder Capacity	50L

5. Premium Products

3. ARCAL™ 21 (ARCAL™ Speed)



The efficient gas solution for high travel speed MAG welding of carbon steels. It's the perfect product for automatic and robotic applications.

ARCAL™ Speed

Gas Content	Ar/CO2
Purity	99.995%
Volume	10,6 m ³
Pressure	200 Bar
Cylinder Capacity	50L

4. ARCAL™ 12 (ARCAL™ Chrome)



The simplest gas solution for all stainless steel MAG welding. It's the brilliant choice to provide a clean weld aspect with excellent welding results.

ARCAL™ Chrome

Gas Content	Ar/CO2
Purity	99.995%
Volume	10,3 m ³
Pressure	200 Bar
Cylinder Capacity	50L

ARCAL™ Reference

Material	Process	Welding Requirement	ARCAL™ Reference
Carbon steel non and alloyed steel	MAG	<ul style="list-style-type: none"> Heavy gauge, multi run solid and/or flux cored wire welding. Low spattering and fumes, excellent aspect productivity and good pulsing capacities. 	ARCAL™ 5 (ARCAL™ Force)
Stainless high alloyed steel		Quality finishing Low spattering solid wires	ARCAL™ 21 (ARCAL™ Speed)
Aluminium & copper alloys	MIG	High quality welding, easy to use	ARCAL™ 12 (ARCAL™ Chrome)
All materials	TIG	Safe and easy to use	ARCAL™ 1 (ARCAL™ Prime)

* There's a technical line (23 additional ready to weld products) for welding situations requiring a solution for high end specifications, supported by our global network of technical experts.

5. Premium Products

5.2 LASAL™



The LASAL™ product line was designed for material processing machines (welding, cutting, etc.) using high power industrial lasers. LASAL™ is a family of gases specially designed to guarantee precision, quality and productivity of laser equipment. We supply a complete series of laser gases with higher purity indexes for all types of laser resonators. If applications require nitrogen, carbon dioxide or helium, our gases and mixtures of multiple LASAL™ elements help reduce operating costs, substantially increasing speed, quality and prolonging the life of the laser.

- LASAL™ 2001

A quality-controlled nitrogen, dedicated for cutting of stainless steels under high pressure. Like for all other LASAL™ gases, LASAL™ 2001 quality is controlled during production, filling and delivery.

LASAL™ 2001	
Gas Content	N2
Purity	99.995%
Volume	9,5 m ³
Pressure	200 Bar
Cylinder Capacity	50L

- LASAL™ 2003

A quality-controlled oxygen, dedicated for laser cutting of carbon steels. LASAL™ 2003 enables to gain 10-40% in cutting speed while ensuring good quality of cut edges.

LASAL™ 2003	
Gas Content	O2
Purity	99.95%
Volume	10,4 m ³
Pressure	200 Bar
Cylinder Capacity	50L

5. Premium Products

5.3 ALIGAL™

The highest quality and safety in food-grade gases



ALIGAL™ is Air Liquide's premium range of food-grade gases, specifically developed in order to preserve the quality of food and beverage products. ALIGAL™ guarantees that our range of gas products complies with the food industry standards and enforceable legislation in each country and at a minimum with European purity specifications. The ALIGAL™ brand ensures that a food safety management system based upon HACCP principles is applied throughout all stages of the production process and supply chain, and also includes a highly effective traceability system in order to provide peace-of-mind to both the processor and final consumer.



5. Premium Products

ALIGAL™ 1	
Gas Content	N2
Purity	99.995%
Volume	9,5 m³
Pressure	200 Bar
Cylinder Capacity	50L

ALIGAL™ 2	
Gas Content	CO2
Purity	99.99%
Volume	30 Kg
Cylinder Capacity	50L

ALIGAL™ 13	
Gas Content	N2/CO2 (70/30)
Purity	99.99%
Volume	9,3 m³
Pressure	170 Bar
Cylinder Capacity	50L

ALIGAL™ 27	
Gas Content	O2/CO2 (70/30)
Purity	99.99%
Volume	10,3 m³
Pressure	161,4 Bar
Cylinder Capacity	50L

ALIGAL™ Reference

Product	Application				
	Modified Atmosphere Packaging	Food Cryogenics	Other Food Processing Applications	Beverage Processing	Wine Making
ALIGAL™ 1	✓	✓	✓	✓	✓
ALIGAL™ 2	✓	✓	✓	✓	✓
ALIGAL™ 13	✓				✓
ALIGAL™ 27	✓				

5. Premium Products

5.4 ALPHAGAZ™

Precisely Simple



ALPHAGAZ™ is the Air Liquide's premium brand of pure gases (and few instrumentation mixtures) for laboratories and testing.

It has been well appreciated by customers worldwide for its simpler choices of products with only two levels of purity, reliable analysis thanks to an optimized range of pure gases and its easy to use handling thanks to the SMARTOP™ RPV valve.



Gas	Cylinder Size (Liter)	Pressure (bar)	Volume (m ³)	Connection (BS)
Air	50L and 20L	200	9.7 / 3.8	3
Ar		200	10.5 / 4.1	3
H ₂		200	9 / 3.5	4
He		200	9.1 / 3.6	3
N ₂		200	9.5 / 3.7	3

OUR ALPHAGAZ™

	ALPHAGAZ™ 1 For the accuracy of analysis of ranging from % to ppm	ALPHAGAZ™ NEW For the accuracy of analysis of ranging from ppm to ppb
Ar - Air - He - H ₂ - N ₂	H ₂ O < 2 ppm O ₂ < 2 ppm* CnHm < 0.5 ppm CO < 0.5 ppm CO ₂ < 0.5 ppm	H ₂ O < 0.5 ppm O ₂ < 0.1 ppm* CnHm < 0.1 ppm CO < 0.1 ppm CO ₂ < 0.1 ppm H ₂ < 0.1 ppm
CO ₂ - N ₂ O - C ₂ H ₂	Contact Us	
Shelf life	60 Months	

*Except for Air

5. Premium Products

5.5 MIXTURE GAS



Air Liquide gas mixture have long been acknowledged worldwide as being definitive standard for calibration accuracy. Our ISO-certified laboratories follow strict procedures for preparation and analysis of calibration gas mixtures - ensuring product of the highest quality that are fully traceable to recognized metrology standard.

Our calibration mixtures are analyzed against benchmark such as National Institute of Standard and Technology (NIST).

Benefits and Features

- ✓ Certificate of analysis included in each delivery for calibration mixtures.
- ✓ Traceability guarantee with a batch number per cylinder.
- ✓ Accreditation in option, in compliance with the most stringent local regulations.
- ✓ Special treatment for cylinder preparation.
- ✓ Reliable and short lead time.

Gas	Cylinder Size (Liter)	Connection (BS)	Pressure (Bar)	Volume	Accuracy	Blend Tolerance
Corrosive	108 / 50 / 20 / 10	14 / 15	Subject to your custom request			
Flammable		4				
Inert		3				
Oxidized		3				
Oxyfuel		3 / 4				
Reactive		14 / 15				
Toxic		14 / 15				

5. Premium Products

5.6 CALGAZ™



CALGAZ™ is the recognized global leader in calibration gas mixtures and calibration gas equipment for a variety of applications, including gas detection and safety, laboratory and analysis, environmental monitoring, process systems monitoring, gas quality monitoring and breath test analysis.

Calgaz™ is the “one-stop shop” for all your calibration gas needs

- Complete range of calibration gases, equipment and accessories
- Servicing the Industrial Safety, Marine, Mudlogging, Breath Testing and Laboratory markets
- ISO 9001-2015 certification and ISO 17025:2005 accreditation.

Cylinder Type	Material	Gas Volume	Application	
			Reactive	Non-Reactive
1AL	Aluminium	11 litres		
2AL	Aluminium	34 litres	✓	✓
5ERL	Aluminium	625 litres		✓
6D	Steel	103 litres		✓
6DM	Steel	58 litres		✓
7HP	Steel	34 litres		✓
8AL	Aluminium	58 litres	✓	✓
10ALE	Aluminium	112 litres	✓	✓
10ALU	Aluminium	116 litres	✓	✓
65ALR	Aluminium	850 litres	✓	✓

5. Premium Products

CALGAZ™ 700 Series Regulators

Fixed Flow Regulators

The most popular regulators supplied by Calgaz is the 700 series, which almost certainly has a regulator that is right for your application. These fixed flow regulators are preset and fully flow checked at the factory ensuring they reach you perfectly calibrated for your needs.

All regulators carry a 24 month warranty and we recommend replacing them after 5 years of service. Contact us to find out more information.



CYLINDERS COMPATIBILITY

	2AL	6D	6DM	7HP	8AL	10AL	5ELR	65ALR
702				✓				
705	✓	✓	✓		✓	✓		
713				✓				
715	✓	✓	✓		✓	✓		
718							✓	✓
725	✓	✓	✓		✓	✓		
735	✓	✓	✓		✓	✓		

5. Premium Products

5.7 ECO ORIGIN™

Our offer to promote your climate goal

ECO ORIGIN™ bulk gases are produced with 100% renewable energy by Air Liquide in Indonesia.

ECO ORIGIN™ is available for liquid Nitrogen, Oxygen, and Argon. Our ECO ORIGIN™ will reduce your Scope 3* emissions demonstrated by an annual statement of the avoided CO emission for your own reporting purposes.

**Scope 3 includes all other indirect emissions that occur in a company's value chain*



WHY ECO ORIGIN™?



- Reduce the carbon footprint of your own products using ECO ORIGIN™ produced from 100% renewable energy
- Verified by an independent auditor in accordance with ISO 14067:2018

- Certificate of the avoided CO emissions in accordance with ISO 14021:2016
- One simple choice to tackle climate change and ACT for a sustainable future.



5. Premium Products

5.8 NEXELIA™

Committed to Performance

NEXELIA™ is Air Liquide's new and unique umbrella brand supporting all-in-one solutions, combining gas, process expertise and application technologies, with a commitment to improved efficiency and product quality.

Also under NEXELIA™, we offer BOOSTAL™ as an innovative combustion solution for a more efficient melting process. The offer includes oxygen supply, a full range of advanced technologies and burners designed for steel, non-ferrous metals and foundries.

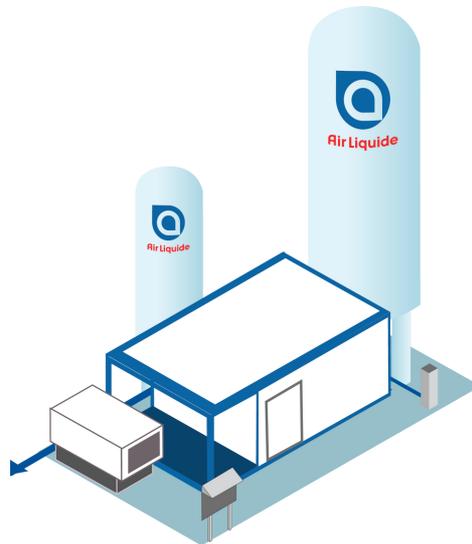


NEXELIA™ Market	
Automotive & Metal Fabrication	NEXELIA™ for Laser welding
	NEXELIA™ for Cryorganic treatment
	NEXELIA™ for Thermochemical treatment
Electronics Manufacturing	NEXELIA™ for Cooling system
	NEXELIA™ for Reflow soldering
	NEXELIA™ for Xafe soldering
Food Processing	NEXELIA™ Freezing and chilling
	NEXELIA™ for Temperatur control
Glass	NEXELIA™ for Melting - Heat
Water Treatment	NEXELIA™ for Biological treatment
	NEXELIA™ for Tertiary treatment
	NEXELIA™ fo pH control
	NEXELIA™ for Groundwater
	NEXELIA™ for Water purification
	NEXELIA™ for Remineralization
	NEXELIA™ for Cooling water: CO2 for anti-scaling
For further queries, please contact us	

5. Premium Products

5.9 FLOXAL™

On-site generators solutions



We offer high quality on site generate under FLOXAL™, available for: Nitrogen, Oxygen and Hydrogen. For each molecule, various generation technologies are used to ensure customers' satisfaction at a competitive price. Our services include: installation, operation and maintenance, telemonitored performance tracking, full back-up.

FLOXAL™ is fitting the needs of customers of various market segments such as Materials and Energy, Food and Pharma, Automotive and Fabrication, Technology and Research, and applications, with below profile:

- Needs O₂, N₂, H₂ in gas phase, purity can be produced by generators.
- Relatively high level of demand (to have lower cost than bulk), best to supplied by dedicated generator.
- Continuous operation, stable flow rate, allowing generator to run continuously with most utilization.
- Needs uninterrupted supply of gas with full back-up, even during utility failure.
- Needs dedicated local production to minimize transportation risks.
- Minimized cost by optimized investment, efficient energy consumption and reduced carbon footprint.

6. User Information

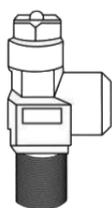
6.1 Gas Conversion Table

Gas Type	Volume (m ³)	Weight (kg)
Air	1	1.176
Acetylene	1	1.097
Argon	1	1.623
Carbon Dioxide	1	1.796

Gas Type	Volume (m ³)	Weight (kg)
Helium	1	0.166
Hydrogen	1	0.082
Nitrogen	1	1.138
Oxygen	1	1.300

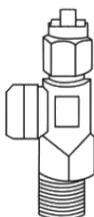
6.2 Cylinder Valve Guide

Industrial Gases



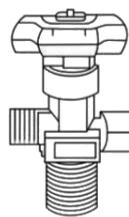
F/RH 5/8" BSPT
Side Outlet, BS 3
Spindle Key Type

Oxygen/Air/Helium
He Balloon Gas and
Argon (Handwheel Type)



F/LH 5/8" BSPT
Side Outlet, BS 4

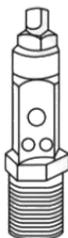
Dissolved
Acetylene/Hydrogen



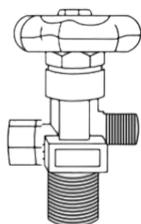
0.860" 14 TPI
M/RH
Side Outlet, BS 8

Nitrogen - Spindle Key
Type
Carbon Dioxide -
Handwheel Type

Medical Gases

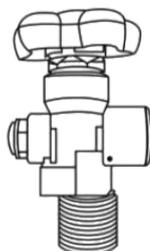


Pin Index -
Chromed
Pin/Hole
position differ
from each gas
type



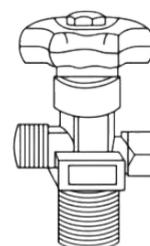
Handwheel -
Chromed
11/16" 20 TPI
M/RH
Side Outlet, BS
13

Nitrous Oxide



Handwheel -
Chromed
5/8" BSPT
F/RH
Side Outlet, BS
3

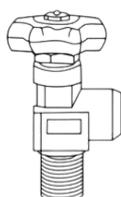
Oxygen / Air



Handwheel -
Chromed
0.86" 14 TPI
M/RH
Side Outlet, BS
8

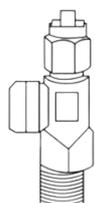
Nitrogen

Purified Gases



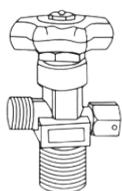
F/RH 5/8" BSPT
Side Outlet, BS 3

Argon/Air/Helium
/Oxygen
(Handwheel Type)



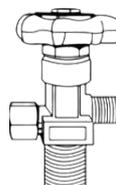
F/LH 5/8" BSPT
Side Outlet, BS 4

Dissolved/Acetylene
/Hydrogen

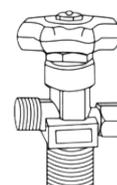


0.860" 14 TPI
M/RH
Side Outlet, BS 8

Carbon Dioxide
/Nitrogen
(Handwheel
Type)



11/16" TPI RH
Side Outlet -
Chromed, BS13
Nitrous Oxide
(Handwheel Type)



[A] 3/8" RH External
Side Outlet, BS 14
Flat Seal with Washer

[B] 3/8" LH External
Side Outlet, BS 15
Flat Seal with Washer

6. User Information

6.3 Gas Cylinder Handling and Transportation

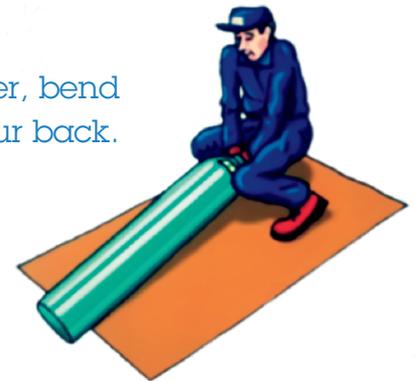
Safe Handling Cylinders

Air Liquide offers the option of either having the cylinders delivered to your doorstep or collecting the cylinders on your own. Our trucks and vans are retrofitted to carry the cylinders safely. Customers who choose the option of self-collection must ensure the cylinders are handled, transported and stored properly, to prevent any possible accidents.



Handle gas cylinders with care, never drop or strike them against each other or other surfaces.

Never drag or roll a horizontal gas cylinder, bend your knees and straighten your back.



Never lift or hoist a cylinder by the valve protective cap.

Cylinder Cap



Ensure that the protective valve cap is the place before moving the gas cylinder.



Never try to catch a "falling" cylinder.



Always wear gloves when handling cylinder and ensure that the gloves are free from the oil.

6. User Information

Safe Transport

Delivery on a Non-Dedicated Vehicle

1. Keep the vehicle well-ventilated.



2. Window is to be winded down to allow maximum air circulation.



3. Aircon is to be switched onto max.



When transporting oxidizing or flammable gases, smoking and the use of mobile phones are prohibited.



Transport of toxic or corrosive products or liquid oxygen for non-medical purpose is prohibited.



Do not overload your vehicle as gas cylinders are heavy.

Delivery on a Dedicated Vehicle

1. Ensure that the gas cylinders are secured properly in an immobile - preferably upright with a chain or appropriate belt above the midpoint, but below the shoulder.



Ensure that the valve are shut off and not leaking.



2. Ensure that there is appropriate separation between flammable materials and cylinders.



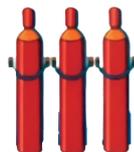
If placed in a car, ensure that the cylinder is placed in the "well" in the back seat, or secured by a stopper. A cylinder can be dangerous projectile if there is a collision.

3. The vehicle must have a spark arrester installed on its exhaust pipe.

Safe Usage



Never store cylinders with flammable materials.

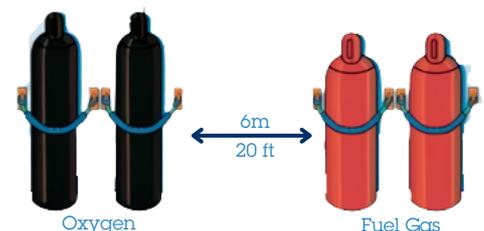


Store the cylinder in an upright position.



Do not lubricate cylinder valves with oil.

Properly secure gas cylinders in a well-ventilated and protected area that is away from the heat, flames and sun.



Separate oxygen from fuel gases, such as acetylene, at least 6m (20 ft) away from each other.

6. User Information

6.4 Safe Handling of Liquid Gas Cylinder (LGC)

Our LGCs are designed to withstand normal handling and vibration in transit. Nevertheless, there are various precautions that need to be adhered to for safe handling of our LGCs.

Usage and Store

- Store and use in ventilated area.
- Close all valves when LGC is not in use.
- Apply no oil or grease on any fittings on the vessel or its connecting pipework or hoses.

Transport

- Keep the vessel upright for use and transportation.
- Do not maneuver the trolley on uneven surfaces as it may topple and injure the user.
- Never remove the vessel from its trolley frame.
- Avoid rough handling, dropping or striking. As there is a vacuum between the outer and inner vessel, a blow on the outer vessel can render the LGC unserviceable.

Handling Cryogenic Liquids

- Care must be taken to avoid contact with liquid or any uninsulated parts of the vessel as it can cause severe cold burns.
- Protective clothing (leather gloves, faces-shield, aprons, etc) should be worn.

Maintenance

- Do not attempt to carry out maintenance to the LGC on your own.
- Contact Air Liquide Indonesia in case of any suspected defect or malfunction.
- Do not change indentation lettering or labeling on the LGC or fittings.

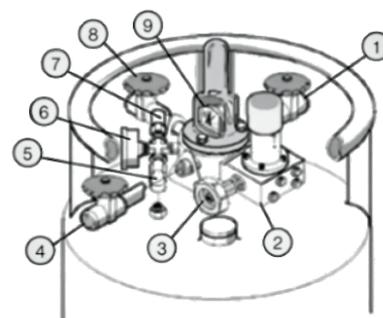
6. User information

6.5 Operating Instructure of Liquid Gas Cylinder (LGC)

Gas or liquid can automatically be disbanded at pre-set pressure by means of an inbuilt vaporizer and pressure regulator.

Nomenclature

- | | |
|--------------------------------|---------------------------|
| 1. Liquid Use Valve | 6. Pressure Gauge |
| 2. Pressure Building Regulator | 7. Pressure Relief Valve |
| 3. Pressure Building Valve | 8. Gas Use Valve |
| 4. Vent Valve | 9. Liquid Level Indicator |
| 5. Bursting Disc | |



For Gas Withdrawal

1. Connect adapter and regulator on to the Gas Use Valve (8) outlet.
2. Open Pressure Building Valve (3) and also the Gas Use Valve (8). The pressure will reach the preset operating pressure and maintain it.
3. Do not attempt to adjust The Pressure Building Regulator (2) as it has been factory-set to achieve correct operation.
4. When gas is no longer required, first shut the Pressure Building Valve (3) and then shut the Gas Use Valve (8).
5. If the LGC is kept unused over an extended period or if the Pressure Building (3) is left open after use there is possibility that the Pressure Relief Valve (7) will release the excessive pressure. This is a normal phenomenon. The pressure can also be reduce by slightly the opening the Vent Valve (4) in a well-ventilated area.
6. Formation of ice on the other shell is expected in case where the draw-off rate of gas is excessive under prolonged usage.

For Liquid Withdrawal

1. Connect one end of the stainless steel liquid transfer hose to the Liquid Use Valve (1) outlet on the LGC and the other end of the hose to the user's equipment.
2. Liquid withdrawal from a liquid cylinder is normally performed at low pressure to minimize flash vaporization losses. Therefore the Pressure Valve Building (3) is normally kept close during liquid transfer. If pressure exceeds the user's recruitment, the excessive pressure can be relies to the Vent Valve (4).
3. Higher service pressure can be obtained by opening the Pressure Valve Building (3) up to the desired pressure and then shutting it.
4. Keep the transfer hose as short as possible to minimize gas loss.
5. Lines between the two valves must be equipped with a safety release valve.
6. When filling an open neck Dewar, fit a phase separator on the end of the transfer hose to minimize flash-off and spillage.



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