

BOC Cryospeed and You



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If anyone knows cryogenic gases, it's us.

For more than thirty years, BOC Cryospeed has been designing and developing cryogenic gases, equipment and applications. We're experts in their safe supply and efficient usage. What we know, we share every day with customers across many different markets. Whatever the size of your business, whether your requirements have outgrown cylinder supply or you require liquid for it's cryogenic properties, BOC Cryospeed has a reliable, safe, total gas and equipment supply solution for you.



Delivery

We've built a delivery service that's truly national. We use dedicated, secure vehicles supported by a UK-wide network of Air Separation Units and storage depots. That means we can be flexible in supplying you with the products and services, where and when you need them.

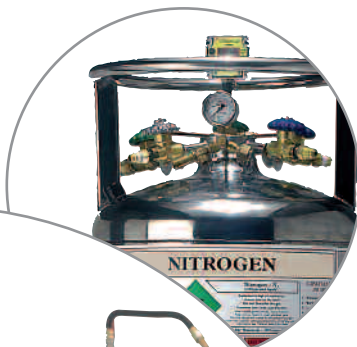
Choice

Gases available include:

- Liquid Nitrogen
- Liquid Oxygen
- Liquid Carbon Dioxide
- Liquid Argon (Liquid Industrial Argon is also available in certain areas)

For fabrication, BOC Cryospeed can provide you with on-site mix solutions. This means liquid products individually delivered to storage vessels on your site and then mixed precisely for your particular application.

BOC Cryospeed supplies a wide range of cryogenic dewars and pressurised vessels. Liquid product is delivered into the storage vessel directly on your site reducing the hassle of manual handling during cylinder change over. With it, comes our expertise and advice on the most suitable storage options for you – together with a choice of maintenance packages to ensure you meet current legislation.



Service

We've built our business on one principle: helping our customers achieve more – faster.

Just one example: the cost of pressurised vessel maintenance is included in the rental agreement. That means there isn't a 'hidden charge' to keep your business safe and compliant with the latest legal requirements.

People

Talk to our highly trained BOC Cryospeed Sales and Service Operators (CSSO), each has an average fifteen years industry experience. They'll do more than just deliver the product, they'll help manage your cryogenic gas, equipment and safety requirements every step of the way, by:

- Safely delivering your product when and where you need it
- Offering advice on product and equipment safe handling, usage and storage
- Performing detailed pre-delivery vessel inspections
- Carrying out planned preventative maintenance and repairs on vessels rented from BOC to give you peace of mind about operating safely
- Offering and fulfilling BOC Cryocare maintenance package for owners of cryogenic vessels (up to 500 litres)
- Offering BOC OnStream maintenance package for owners of cryogenic vessels (over 500litres) and pipework systems
- Offering advice on BOC Cryospeed's cryogenic equipment range, including suitable personal protective equipment
- Providing practical, workable and understandable answers to all your commercial, technical and safety questions.



Whether your needs are predictable or irregular, whether they're general or specialised, our operators will meet your needs. They'll work with you to develop a service and supply package that works for you. In an emergency we'll endeavour to reach you when and where you really need us.

Account Management

Behind the BOC Cryospeed Sales and Service Operators, you'll find the strong support of BOC's sizeable infrastructure. We have a large team of account managers who'll discuss all your process and application requirements - as well as answer a wide range of commercial, service and supply queries.



Applications



- Produced by air separation
- Colourless
- Odourless
- Heavier than air
- Non-toxic
- Almost totally inert
- Boiling point of -196°C
- Increased nitrogen levels can lead to oxygen deficiency and cause asphyxiation

	Nitrogen liquid as a cryogen	Nitrogen gas used for its inert properties
Cryosurgery	✓	
Shrink Fitting	✓	
Pipe Freezing	✓	
Scientific Sample Storage	✓	
Food Chilling and Freezing	✓	
Research and Development	✓	
Blanketing and Inerting		✓
Chemical Processes*		✓
Purging		✓
Sparging		✓
Food Packaging and Storage		✓
Heat Treatment		✓
Laser Cutting		✓

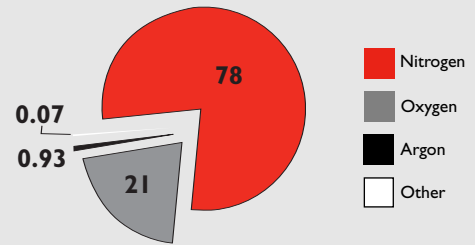
*Nitrogen meets European Pharmacopoeia standards



- Produced by air separation
- Colourless
- Odourless
- Tasteless
- Heavier than air
- Boiling point of -183°C
- Supports combustion
- Strong oxidiser
- Oxygen enrichment can increase flammability of materials
- Oxygen deficiency can cause asphyxiation

	Oxygen Gas to support life	Oxygen Gas to support combustion	Oxygen Gas as an oxidant
Medical	✓		
Water Treatment	✓		
Fish Farming	✓		
Fermentation	✓		
Oxy-Fuel Cutting		✓	
Blast Furnaces		✓	
Laser Cutting of Mild Steel			✓
Food Packaging			✓

Composition of air



- Produced by air separation
- Colourless
- Heavier than air
- Boiling point of -18°C
- Very low thermal conductivity
- Increased argon levels can lead to oxygen deficiency and cause asphyxiation
- Industrial argon contains 2% oxygen
- Odourless
- Totally inert

	Argon gas used for its total inertness	Argon gas used for its very low thermal conductivity
TIG Welding	✓	
Scientific Analysis Spectrometry	✓	
Semiconductor Wafer Manufacture	✓	
Laser Cutting	✓	
Laser Welding	✓	
Furnace Purging and Blanketing	✓	
Metal Manufacturing Processes	✓	
Double Glazing Unit Manufacture		✓

Argon is also used for MIG Welding mixed with varying percentages of Carbon Dioxide depending on the thickness of material.



Due to the range of properties of Carbon dioxide it has a wide range of applications.

- Obtained industrially by cracking hydrocarbon gases or as a by-product of ammonia production
- Colourless
- Virtually odourless gas but can cause the nose to sting
- Toxic at high concentrations
- Heavier than air
- Does not support life
- Increased carbon dioxide levels can lead to oxygen deficiency and cause asphyxiation

Common Applications for Carbon Dioxide

pH control of Swimming Pools
Carbonation of Drinks
Fire Extinguishers
Food Freezing and Chilling
Foamed Plastics
Chemical Solvents
Water Treatment
Horticultural
Mixed with Argon for MIG Welding Shielding Gas
Medical
Sample Incubation
Food Packaging

Safe Storage

BOC Cryospeed provides a wide range of cryogenic storage options. All are designed to meet BOC's high safety and quality standards – adhering to current legislation, e.g. Pressure System Safety Regulations 2000 and Pressure Equipment Regulations.

Non-pressurised dewars and pressurised stainless steel cryogenic vessels are available for rental – **the rental charge includes all the required maintenance activities.**

Open flasks, non-pressurised dewars, a wide range of suitable personal protective equipment, gas monitors and accessories are also available for purchase.

We offer a complete ongoing service tailored to your storage requirements including:

- Advice on the most suitable storage solution – factoring in capacity, flow rate and pressure requirements
- Supply, safe siting, installation and commissioning of the vessel – including emergency shutdown procedure and safety precautions. All this information is provided in the handover documentation
- Ongoing maintenance support either as part of the rental agreement or via BOC Cryocare or BOC OnStream maintenance packages.
- Advice on safe handling, correct selection and use of required Personal Protective Equipment

Storage type	Capacity	Typical users
Open Flasks	0.6 – 66 litres	Laboratory or industrial applications using liquid nitrogen – only short term storage required
Dewars	2 - 50 litres	Laboratory, clinic or industrial applications using liquid nitrogen – mid term storage required. Usually used with accessories for mobility or decanting product
Low Pressure Vessels (up to 3 bar max. working pressure)	30 – 2000 litres	Laboratory or industrial applications using liquid nitrogen – longer term storage and larger volumes are required
Medium pressure Vessels (16 bar max. working pressure)	200 – 2000 litres	All products requiring gas for the application
High Pressure Vessels (24 bar max. working pressure)	200 – 2000 litres	All products requiring gas for the application
Ultra High Pressure (35bar max. working pressure)	Up to 2000 litres	Laser applications requiring nitrogen at higher pressure to cut stainless steel



Safe Maintenance

Whether you rent or own your storage vessel, BOC Cryospeed provides maintenance packages that help you operate safely and within the law. **If you rent your storage vessels from BOC Cryospeed, all required maintenance is included in the rental (including any parts and labour), and is carried out by BOC trained experts.** If you own your vessel, BOC Cryospeed can maintain it for you – providing the peace of mind that comes with expert assistance.

For vessels up to and including 500 litres, BOC Cryospeed offers a maintenance package – **BOC Cryocare.**

This includes Planned Preventative Maintenance inspections in line with the appropriate Written Scheme of Examination as well as providing and fitting any necessary replacement parts to ensure conformance with the Pressure Systems Safety Regulations 2000.

For larger customer owned vessels (500 litres and over) and pipeline distribution systems, BOC offers a maintenance package - **BOC Onstream.**

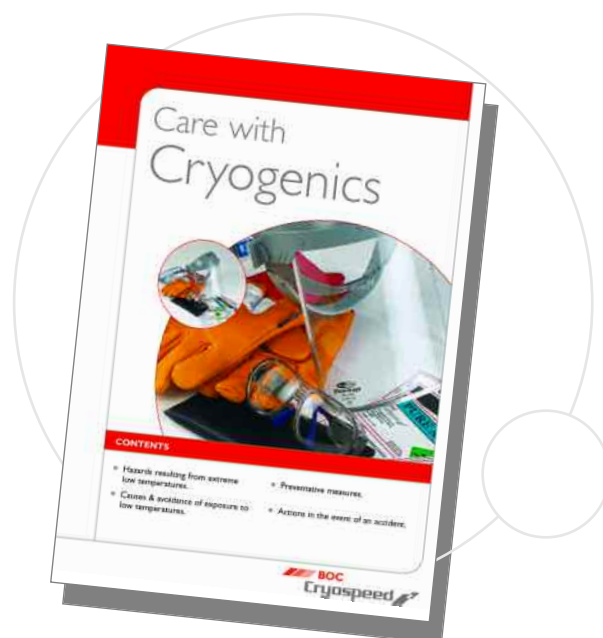
This provides maintenance services tailored to your individual requirements including Planned Preventative Maintenance schemes, the management of any remedial work, preparing or updating the Written Scheme of Examination as well as advice and technical support to ensure legislative compliance.



Safety and Risks

BOC Cryospeed has a range of literature to help users safely handle, store and move cryogenic gases.

Reference code	Title	Description
SFT/002246	Care with Cryogenics	Guidelines for the safe use and handling of low-temperature liquid gases
CRY/004521	Siting of liquid cylinders or vessels in buildings	Information for users of liquid cylinders or vessels containing nitrogen, argon or oxygen
CRY/004545	Transport of liquid nitrogen by vehicle	Precautions and emergency actions for carriage of cryogenic dewars in vehicles
CRY/007614	Movement of cryogenic vessels in lifts	Guidance for the movement in lifts of cryogenic vessels of 200 litres or less, containing nitrogen, argon, carbon dioxide or oxygen as vapour or liquid
SFT/007731	Controlling the risks of inert gases	Information on the risks of oxygen depletion due to high concentrations of inert gases
SFT/007732	Controlling the risks of oxygen	Information on the risks of oxygen enrichment
SFT/004968	Treatment of Cryogenic Burns and Frostbite	Information on the safe treatment of cold burns and frostbite
SFT/007304	Liquid argon safety data sheet	
SFT/007305	Liquid carbon dioxide safety data sheet	
SFT/007338	Liquid nitrogen safety data sheet	
SFT/007339	Liquid oxygen safety data sheet	



Please call BOC's Customer Service Centre on freephone 0800 111 333 or visit www.boccryospeed.co.uk for further information.



NITROGEN

BOC Cryospeed

BOC
The Priestley Centre
Surrey Research Park
Guildford Surrey
GU1 1XT
Tel: 0800 111 333



UN No. 1977

Nitrogen - N₂
(refrigerated liquid)

Asphyxiant in high concentrations.
Heavier than air. No odour.
Do not breathe the gas.
Extremely cold - may cause frost bite.
Wear suitable gloves and eye/face protection.
Keep and use vessel in a well ventilated place.
Use only equipment suitable for this pressure and gas.
Follow the suppliers operating instructions. For further safety information see "Material Safety Data Sheet".

CRYOTANK LP

Nominal Capacity

Litres

IMPORTANT INFORMATION

WARNING
* Refrigerant is a "liquefied gas" at -196°C
* Compressed gas is capable of tearing 504 times its own weight.
* Do not touch liquid or "boil" and a reduction in temperature may cause frostbite.
* Do not use pressure liquid inside the vessel and do not use pressure liquid for cleaning.

DO

- keep the vessel upright and clear from obstructions
- site in a safe area to prevent damage
- ensure adequate ventilation at all times for leaks
- use only the suppliers recommended methods to move vessels
- wear Personal Protective Equipment (PPE) if not in use
- seek immediate medical assistance in the event of direct contact with cold liquid
- use only on installations protected by appropriate pressure safety relief devices

DO NOT

- tamper with pressure safety relief devices
- attempt to alter the present vessel pressure
- carry out any repairs or modifications to any part of the vessel
- allow oil or grease to come into contact with the vessel or fittings
- permit direct flame or heating devices near the vessel
- transfer liquid into vessels/equipment other than those constructed for the purpose
- enter vapour clouds
- take risks

The use of this vessel and the critical parts of its operation and maintenance should be fully understood by the user.

Refer to the supplier schematic for pressure relief valve and safety device information.

MAINTENANCE -

Telephone this number to arrange emergency maintenance. Charges will be made for items which are not the responsibility of BOC.

Telephone this number to arrange additional deliveries with BOC Cryospeed outside your pre-arranged schedule supply.



For product and safety enquiries please phone

0800 111 333

For further information on cryogenic gases visit

www.boccryospeed.co.uk

or email us at: custserv@boc.com

BOC, Customer Service Centre, Priestley Road, Worsley
Manchester M28 2UT Fax: 0800 111 555

www.boccryospeed.co.uk

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