



Drinks

Dispense

Gas

Cylinders

**Purchasing Guide to help
ensure Quality and Safety**

INTRODUCTION

High pressure gas cylinders used to supply gases for beverage dispense (e.g. soft drinks, ales, lagers, cider and stouts) are designed and manufactured to ensure that they are safe if filled, used and handled correctly. However, the safety of these cylinders can be dramatically reduced if the supplier of the filled cylinder does not ensure that appropriate pre-fill inspections are implemented and that cylinders are filled correctly to ensure that they cannot be over-pressurised. The supplier of the gas must ensure that it meets prescribed quality standards for use in food and, as such, must prevent contamination of the gas which may present risks to health and safety for the end user or which may affect the quality of the dispensed beverage.

While most suppliers of filled cylinders for beverage dispense comply with these requirements, HSE has investigated several incidents involving unsafe cylinders. In some cases there have been successful prosecutions.

SCOPE

This booklet has been prepared by the British Compressed Gases Association (BCGA) in consultation with the British Beer and Pub Association (BBPA) to assist users of gases for beverage dispense to determine that the gases supplied meet the minimum quality and safety standards endorsed by BCGA to ensure personal safety and the safety of others who might come into contact with the gases or gases systems used for beverage dispense.

Any supplier of gases failing to meet these guidelines may pose a considerable risk to the user and it is the responsibility of the user to ensure that he procures his gases from a supplier who will meet essential safety and quality requirements such as those laid down in BCGA Code of Practice CP32 (formerly GN4).

TYPE AND SIZE OF CYLINDERS

Beverage dispense gas cylinders are supplied in a number of types and sizes:

Carbon Dioxide Cylinders

Carbon Dioxide (CO₂) is present in liquid form in the cylinders and is sold by weight. The pressure in the cylinder is not an indicator of the contents of the cylinder but will vary with

Mixed Gas Cylinders

These are cylinders containing a compressed gas mixture of Carbon Dioxide (CO₂) and Nitrogen (N₂). The pressure in the cylinder depends on the contents of the cylinder and the temperature. The cylinder pressures are very high – typically up to 200 bar g (2900 psig).

The cylinders are physically similar in size to Carbon Dioxide cylinders and have a volumetric capacity of 10 to 50 litres.

Nitrogen Cylinders

Nitrogen (N₂) is supplied as a compressed gas. The pressure in the cylinder depends on the contents of the cylinder and the temperature. Cylinder sizes and pressures are similar to the mixed gas products.

COMPLIANCE CHECKLIST

The following checklist will assist the user to establish that cylinders supplied for beverage dispense comply with essential quality and safety requirements. Guidance on answering the questions in this checklist is given later on in this document.

BCGA in conjunction with BBPA has prepared a comprehensive checklist, TIS 9 : 2002, covering checks to be made on beverage dispense cylinders. See www.bcgaco.uk.

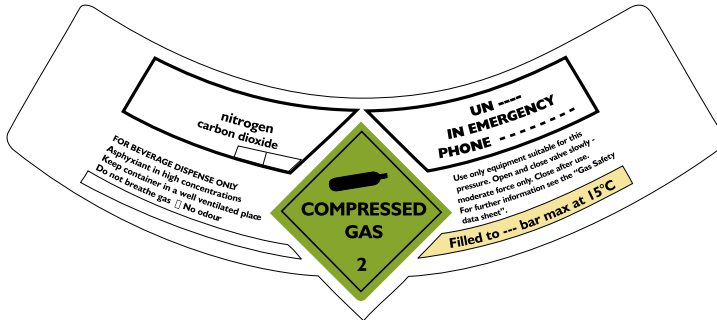
| Checkpoint | Yes |
|--|---|
| (i) Is the cylinder correctly identifiable i.e. CO ₂ or mixed gas (CO ₂ /N ₂)? | <input type="checkbox"/> <input type="checkbox"/> |
| (ii) Is there a correct product identification label? | <input type="checkbox"/> <input type="checkbox"/> |
| (iii) Is there a cylinder valve guard fitted? | <input type="checkbox"/> <input type="checkbox"/> |
| (iv) Is there a visible product traceability label? | <input type="checkbox"/> <input type="checkbox"/> |
| (v) Is there an undamaged and un-cut coloured plastic test date ring fitted under the cylinder valve? | <input type="checkbox"/> <input type="checkbox"/> |
| (vi) Have you been supplied with a current material safety data sheet? | <input type="checkbox"/> <input type="checkbox"/> |

Reject the cylinder if any of the above questions have been answered “No” or if there is evidence of tampering e.g. grinding marks on the cylinder shoulder or if there is any other obvious damage e.g. broken valve or valve guard.

CYLINDER IDENTIFICATION

All cylinders for beverage dispense must clearly display a label, or other printed information giving the product identity, emergency telephone number, risk and safety phrases, supplier's name and a hazard warning diamond. A specimen mixed gas label is shown below:

The cylinder will be further identified by the colour coding of the cylinders as detailed below:



Carbon Dioxide (CO₂)

CO₂ cylinders will be coloured:

Note:

Various colours are in use because of revisions to international standards.



The cylinders will be fitted with coloured valve guards which in conjunction with information printed on them denotes the supplier of the cylinder.

Note:

Never connect a CO₂ cylinder with a vertical stripe down its side to conventional beverage dispense systems. Such cylinders discharge liquid CO₂ and their use will cause damage to the beverage dispense equipment and pose a very high safety risk to personnel using the equipment.

Mixed Gas Cylinders (CO₂/N₂)

Mixed gas cylinders will be coloured:

Grey body with green shoulder

OR

Grey body with black shoulder

OR

Lilac all over



Note:

Various colours are in use because of revisions to international standards.

The valve guard will be coloured in the same way as for Carbon Dioxide cylinders but will have different printed safety information.

Nitrogen (N₂)

The main body of the cylinder is grey with the shoulder painted black. The valve guard will be coloured to the supplier's agreed standard.

MIXED GAS PRODUCT IDENTIFICATION

In order to avoid confusion for the user, when connecting to a particular beverage product, the different mixtures are generally identified, in addition to their colour coding, as described below:

Generally there are three mix variants used within the UK beverage market:

1 = 30/70 (CO₂/N₂) for low carbonated beers and stouts

2 = 50/50 (CO₂/N₂) specified by brewers for some smooth beers and ciders

3 = 60/40 (CO₂/N₂) for high carbonated lagers.

Each product group is identified by a label, tag, or stencil clearly stating the mixture composition. The supplier may also use the following colour coding:

30/70 = Green 50/50 = Purple 60/40 = White

The colour coding, if used, will be found either on the seal at the valve outlet, on the valve handle, the product identification label or on a separate tag affixed to the cylinder.

Note:

Compositions are conventionally specified by the Carbon Dioxide concentration (in percent) first, followed by the Nitrogen concentration.

VALVE GUARDS

All cylinders used for beverage dispense gas products should have a guard to protect the valve from damage. These guards may identify the gas supplier by both the colour of the guard and the supplier's name printed on the side of the guard. The guard may also often have printed on it important safety information.

If a cylinder is supplied without a guard then the supplier should be asked to confirm that the valve meets design criteria for impact resistance.

TRACEABILITY

It is a legal requirement for all cylinders supplied for beverage dispense to have some sort of product traceability label on the cylinder/valve or valve guard. Typically this will be a small additional label with a series of numbers and or letter printed on it. This will give the supplier a full traceability code which, in the event of any quality failure, would enable the supplier to be able to trace the cylinder and its contents in order to ensure speedy rectification.

These labels are changed every time the cylinder is refilled with gas.

In some cases these labels will be replaced with a bar coding label.

Cylinders for beverage dispense should not be accepted if there is no traceability label.

CYLINDER SERIAL NUMBERS

Every gas cylinder carries its own individual serial number which is stamped on the shoulder of the cylinder. The serial number has been issued to the owner of the cylinder and is another way of checking that the cylinder does in fact belong to the supplier. It is a common practice for the owner's name to be stamped on to the cylinder.

Cylinders should never be accepted if the serial number has been removed by grinding out or filling in.

CYLINDER VALVES

Residual pressure valves preserve the quality of the gas within the cylinder and protect the cylinder from internal corrosion, not obvious by external inspection, which could cause catastrophic failure of the cylinder. They operate by closing at a slight positive pressure and incorporate a non-return function. Gas suppliers are introducing such valves.

Users of beverage dispense gases should check with their supplier their policy on fitment of residual pressure valves. The risk of catastrophic failure by corrosion is greater for mixed gas cylinders than for carbon dioxide cylinders and consequently the majority of gas suppliers have fitted all of their mixed gas cylinders with residual pressure valves.

CYLINDER TEST DATE RINGS

All cylinders for beverage dispense are required by law to have regular inspection and test procedures carried out to ensure total safety of the cylinder. Cylinders are generally inspected and tested every five or ten years, dependent upon service. Stamps on the cylinder shoulder identify the test date and the approved test authority.

As an aid to identification there will be a coloured plastic ring fitted under the cylinder valve which will indicate by colour and shape the next due date for periodic inspection and re-test. These cylinders can be used, but not refilled, if the due date for inspection and re-test has been passed.

Users should not accept cylinders which are delivered with:

- out of test date rings **or**
- no test date ring fitted **or**
- a test date ring that has been defaced.

It is an offence for any supplier to fill a gas cylinder that has passed its inspection and re-test date. A current colour coding chart is shown overleaf.






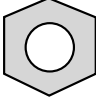


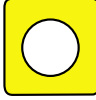


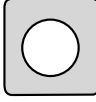





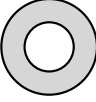
FURTHER ADVICE

If you are not sure about any aspect of the guidance given in this leaflet or about the beverage dispense gas products with which you have been supplied you should first contact your supplier and ask for clarification or contact BCGA for further information.

Bibliography

For the definitive Code of Practice on beverage compressed gases a copy of CP32:2002 should be obtained from BCGA.

YEAR TEST RINGS

| | | | | | |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
| 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|  |  |  |  |  |  |
| 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|  |  |  |  |  |  |
| 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |

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This booklet has been prepared by BCGA in consultation with the BBPA, which welcomes the advice contained in it in helping to promote the health and safety of workers/customers and the quality of products dispensed. The onus of responsibility for its application is that of the end user of the dispense gas products. Neither Association, their officers, members or their employees can accept any legal liability or responsibility whatsoever, howsoever arising, for the consequences of the use or misuse or reliance on the information and the advice presented in this booklet.