



BRITISH COMPRESSED GASES ASSOCIATION

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Technical Information Sheet 20

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Medical Gas Cylinders BCGA Policy Statement on Colour Coding

Background

In the past the UK gas industry painted medical gas cylinders in accordance with the requirements specified in the British standard, BS 1319C. In 1997, a new European standard was published on cylinder colour coding, BS EN 1089 Part 3. This led to BS 1319C being withdrawn. The major change with the new European Standard was that only the cylinder shoulder colours were specified, with the colour coding for the body of cylinders not defined.

The main purpose of the new standard was to enable the emergency services to be able to identify the type of risk associated with the contents of cylinders (should they be involved in an incident such as a fire). The shoulder colour coding was developed to identify the type of gas (such as oxidising, flammable, inert, etc.) and did not specify the actual product.

However, for cylinders containing medical gases the new standard continued to specify the colour for the common gases (including oxygen, nitrous oxide, carbon dioxide, helium and the various gas mixtures). But, in line with the colour coding for other cylinders, BS EN 1089 Part 3 did not specify the body colour for medical gas cylinders. Apart from some minor changes to shade, the new standard retained the same shoulder colours for medical gas cylinders as that defined in BS 1319C.

As BS EN 1089 Part 3 permits the use of any colour for the body of the cylinders, there is now a risk that medical and non-medical cylinders could be painted the same colour. Both medical and industrial oxygen cylinders have white shoulders (as defined in BS EN 1089 Part 3), and therefore some companies have now adopted the same colour for industrial and medical oxygen cylinders.

In discussions between the British Compressed Gases Association (BCGA) and the Medicines & Healthcare products Regulatory Agency (MHRA) a proposal for addressing this issue has been agreed.

Proposals for painting cylinders

In January 2001, the European Industrial Gas Association (EIGA) published a short position paper (PP-01) on colour coding of cylinders to assist their member companies to interpret the new standard requirements. A part of this position paper was the proposal that medical cylinders should be differentiated from non-medical cylinders by

painting the bodies of all medical cylinders white. This proposal has now been adopted in many EU Member States as the national colour coding requirements for medical gas cylinders. It is proposed that the UK should also formally adopt this requirement to provide the user with a clear distinction between medical and non-medical cylinders.

A summary of the requirements of the new proposal is as follows:

Product	Old colours		New colours	
	Shoulder BS 1319C	Body BS 1319C	Shoulder BS EN 1089-3	Body EIGA PP-01
Medical Oxygen	<i>White</i>	<i>Black</i>	White	White
Medical Nitrous Oxide	<i>Dark Blue</i>	<i>Dark Blue</i>	Dark Blue	White
Medical Air	<i>Black / White</i>	<i>French Grey</i>	Black / White ¹	White
Medical Carbon Dioxide	<i>French Grey</i>	<i>French Grey</i>	Grey	White
Medical Helium	<i>Brown</i>	<i>Brown</i>	Brown	White
Nitrous Oxide / Oxygen	<i>Dark Blue / White</i>	<i>Dark Blue</i>	Dark Blue / White ¹	White
Carbon Dioxide / Oxygen	<i>French Grey / White</i>	<i>Black</i>	Grey / White ¹	White
Helium / Oxygen	<i>Brown / White</i>	<i>Brown</i>	Brown / White ¹	White

All medical gas cylinders shall be identified by the colour coding of the shoulder and have the body of the cylinders painted white.

To assist with the identification of the cylinder product, it is proposed that the product name could be displayed down the length of the cylinder, using large lettering.

For cylinders up to 140 mm diameter, the lettering used to display the name should be at least 40 mm high and displayed along the axis of the cylinder. For cylinders up to 240 mm diameter, the lettering used to display the name should be at least 60 mm high and displayed either horizontally around circumference or along the axis of the cylinder.

It is permissible to display the company name on the cylinder but the body of the cylinder must not be used for promotional material.

NOTES:

1. Where two colours are indicated for the shoulder colour it is recommended that they are painted in quarters around the shoulder. Alternatively, banding may be used to colour code the shoulder, ensuring that the white band is uppermost and separated from the body colour with the contrasting band.
2. Where valve guards are fitted, if they are colour coded, they should be in accordance with the shoulder colour in the table. Alternatively they may be left unpainted or painted a different colour provided that it does not conflict with the colour code specified for the cylinder shoulder.

Proposed conversion programme

The medical gas industry, having identified the preferred colour coding arrangements for medical gas cylinders, will make arrangements to plan a smooth changeover to white bodies without generating any undue confusion for the customers.

There are a number of issues relating to the rate of conversion which are dependent on the construction of the cylinder. There are three basic types of cylinders in medical gas service. The rationale behind the conversion programme for each is:

(1) Conventional high pressure cylinders

To change the colour of conventional steel and aluminium alloy cylinders will require the shells to be stripped of their original paint using appropriate processes. This will normally require them to be taken out of service and devalved. As there are only a limited number of cylinders in service, the only practicable way of achieving this will be to change colours at the time of the next periodic inspection and test (normally ten years).

(2) Lightweight composite hoop-wrapped cylinders

A significant number of composite hoop-wrapped cylinders have been introduced into medical gas service, especially in the domiciliary sector. These cylinders have carbon or aramid fibre windings around the body of the cylinder and hence cannot be painted directly. The majority of these cylinders are fitted with external protective sleeves that are colour coded. Refitting of the sleeves is a specialised process and can only be carried out when the cylinder is withdrawn for its periodic inspection and test.

(3) Lightweight fully-wrapped cylinders

The fully-wrapped lightweight cylinder has carbon fibre windings around both ends of the cylinder as well as around the body. These cylinders are gel coated to protect the carbon fibre windings and, since the gel coat is appropriately coloured, this eliminates the need to paint the cylinders. These cylinders have a fifteen year service life (after which they will be scrapped), and it is therefore proposed that existing cylinders should be exempt from any colour coding proposals and allowed to remain with a black body until they are withdrawn from service. Currently they are only used for supplying oxygen in medical gas service and predominantly supplied to Homecare patients as part of an ambulatory package.

As a consequence the conversion will be programmed to run up to 2025, with cylinders being painted white when practicable without affecting customer supply. The rate of conversion will be dependent on the type of cylinder currently being used and the

programme adopted by individual suppliers. During this period of change customers may well receive cylinders coloured in the 'old' way as well as cylinders with white bodies in compliance with this policy.

After 2025, all supplies of medical gas cylinders will be in cylinders with white bodies.

Each supplier will be in contact with their customers to explain how they will carry out this programme of change.

It should be noted that cylinder labelling is the prime method of identifying the contents of all gas cylinders. Labelling will always distinguish clearly between medical and non-medical gases, and this important distinction should be emphasised to all those involved in the use of medical gases.

BCGA Technical Information Sheet 6 provides a guide to the colour coding system used to identify gas cylinders and an explanation of some of the content of a gas cylinder label.

References:

1. BS 1319C. Colours for the identification of the contents of medical gas cylinders
2. BS EN 1089 Part 3. Transportable gas container valves. Gas cylinder identification (excluding LPG) - Part 3: Colour coding.
3. BCGA TIS 6. Cylinder identification. Colour coding and labelling requirements.
4. EIGA PP-01. Gas cylinders. Colour coding.

For more information:

Medicines & Healthcare products Regulatory Agency (MHRA)

www.mhra.gov.uk

British Compressed Gases Association (BCGA)

www.bcgaco.uk

European Industrial Gases Association (EIGA)

www.eiga.eu

British Standards Institution (BSI)

www.bsigroup.co.uk