Identification of Industrial Gas Cylinder Content

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Issue	Reason for Revision	Author	Checked/ Approved
01 : 04/09	1st issue in new format for standards. Replaces Construction Standard 20.20-1, issue 1, 21.04.76.	TJB	MC
02 : 04/11	Number changed in accordance with new company document numbering policy.	TJB	MC
03 : 01/12	Revision history table revised to include checked/approved initials.	TJB	MC
04 : 06/16	Table revised.	SRY	

Table 1 Revision History

1. Introduction

This standard is issued as a guide to the requirements of BS EN 1089-3 Transportable Gas Cylinders, Gas Cylinder Identification, Colour Coding; with particular reference to those gases commonly used in the refrigeration industry.

2. Standards

British Standard 349 was first introduced in 1932 and covered the colours used to identify industrial gas cylinder content in the United Kingdom. Over the years it became evident that there were insufficient colours to identify the increasing number of gases and gas mixtures being used by industry. BS 349 was therefore brought in line with the requirements of the international standard ISO/R448. In ISO/R448 the emphasis for identification of a cylinder's content was placed on marking the cylinder with the name and chemical formula or symbol of the gas rather than the ground colour of the cylinder. The traditional colours associated with particular gases were retained but their use was additional to the primary requirement of marking the cylinder with the name and chemical formula or symbol of the gas. The principle of using red or yellow colour bands to denote flammable or toxic gases, respectively, was also retained.

More recently, work has been carried out to harmonise technical standards for gas cylinders across Europe. As part of this process, and following the publication of BS EN 1089-3 Transportable Gas Cylinders, Cylinder Identification, Part 3, Colour Coding (the current edition of this standard is BS EN 1089-3) the colours of industrial gas cylinders are now the same in all countries in the European Union. Under the standard all gas cylinders are also required to carry a label to indicate the contents of the cylinder. This label is the primary method for identifying the contents of a gas cylinder with typical examples shown later in this document. The use of colour is retained but only as a guide to the cylinders contents or the contents properties.

Some aspects of BS EN 1089-3 are optional. The information provided within this standard follows the recommendations of the British Compressed Gases Association whose aim is to arrive at a fully harmonised colour coding system across Europe.

3. Scope

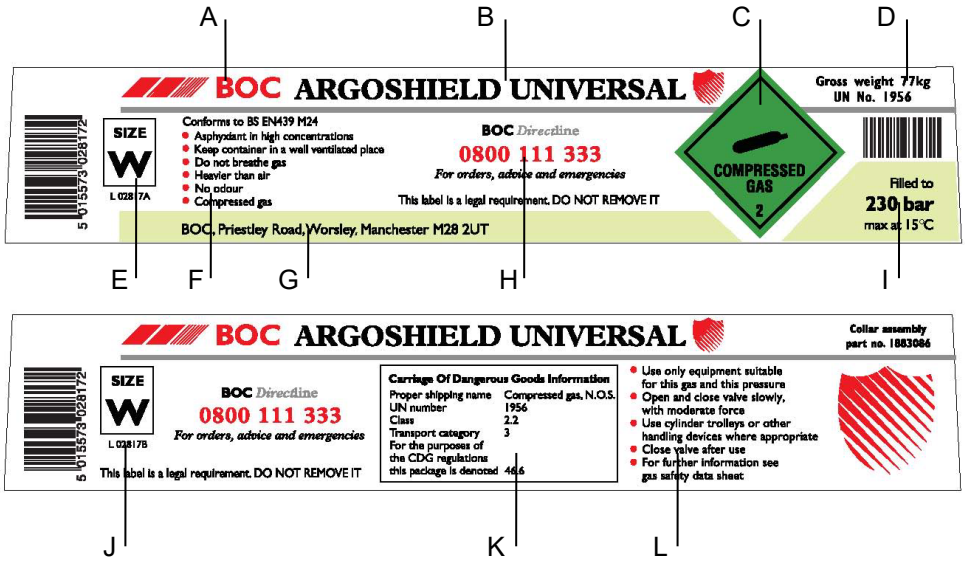
This standard specifies requirements for the identification of the contents of industrial gas cylinders. It excludes:

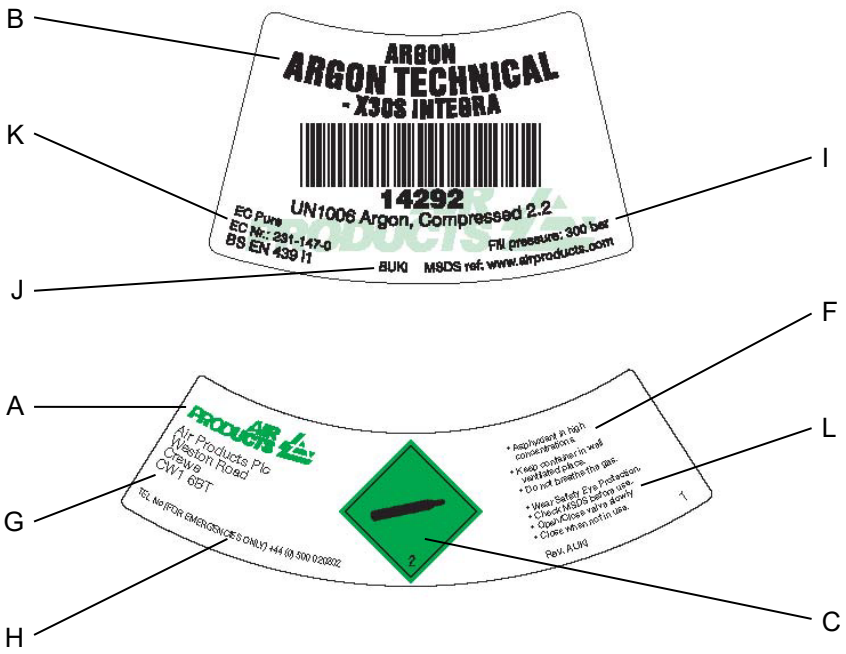
- Medical gas containers, the identification of which is covered by ISO 32;
- Statutory or other regulation marking not associated with the identification of the contents.

4. Labelling

All gas cylinders are required to be labelled to indicate their contents. It must always be remembered that the label is the primary means of identifying the contents of the cylinder. The colour of the cylinder is only a guide to the identification of the contents or the contents properties.

Fig 1 shows a typical example of a cylinder label with an explanation of the information displayed. The label may either be stuck direct to the cylinder or attached in the form of a tag or collar.





A	Gas Supplier's / Manufacturer's Name	G	Gas Supplier's / Manufacturer's Address
B	Product Name	H	Emergency Contact Telephone Number
C	Hazard Symbol	I	Filled Pressure
D	Gross Weight	J	Label Identification Number
E	Cylinder Size	K	Carriage of Dangerous Goods Information
F	Risk and Safety Phrases	L	Advice

Fig 1 Gas Cylinder Label Examples

5. Colour Coding

Colour coding applies solely to the shoulder, or curved part, at the top of the cylinder and is used to identify the properties of the gas in the cylinder. A number of gases have been assigned a specific colour or, where a gas does not have a specific colour, the properties of the gas are indicated. Where a gas has more than one property, two colours are used either painted in concentric bands or in quarters around the shoulder of the cylinder. Colour coding is for guidance only – always refer to the label.

Important points:

- Colour coding applies to both industrial and medical gas cylinders;
- The use of the stencilled letter 'N', specified in BS EN 1089-3, is not necessary in the UK;
- Colour coding applies only to the cylinder shoulder;
- Gas suppliers are free to colour code the body of the cylinder, but this must not conflict with the colour(s) on the shoulder;
- Colour coding of cylinders in bundles / packs is not a requirement of BS EN 1089-3, but can be used as an additional aid to identification for safety or operational reasons;
- Statutory cylinder colours shall be in accordance with the RAL Reichsausschuß für Lieferbedingungen und Gütesicherung (German Imperial Commission for Delivery Terms and Quality Assurance) colour matching system (RAL number).

5.1. Colour Classification by Hazard Property

Table 2 shows the colours used to identify the properties of a gas in a cylinder.

Gas Property	Colour	RAL Number	Example
Inert (e.g. Air, Krypton)	Yellow Green	RAL 6018	
Oxidising (e.g. Nitrous Oxide)	Light Blue	RAL 5012	
Flammable (e.g. Hydrogen, Methane)	Flame Red	RAL 3000	
Toxic and/or Corrosive (e.g. Ammonia, Chlorine)	Zinc Yellow	RAL 1018	

Colours are representative only – refer to a RAL colour chart for exact colour match.

Table 2 Hazard Property Colour Classification

5.2. Colour Classification for Multiple Hazard Properties

Where a gas has more than one property, two colours may be used as shown in the examples in Table 3.

	
Flammable and Toxic (e.g. Hydrogen Sulphide)	Toxic and Oxidising (e.g. Nitrogen Dioxide)
Colours are representative only – refer to a RAL colour chart for exact colour match.	

Table 3 Multiple Hazard Property Colour Classification

5.3. Colour Classification for Common Gases

Table 4 shows the common gases which have a specific colour assigned to them under the standard.

Gas Name	Colour	RAL Number	Example
Acetylene (C_2H_2)	Oxide Red	RAL 3009 *	
Oxygen (O_2)	Pure White	RAL 9010	
Nitrous Oxide (N_2O)	Gentian Blue	RAL 5010	
Argon (Ar)	Emerald Green	RAL 6001	
Nitrogen (N_2)	Jet Black	RAL 9005	
Carbon Dioxide (CO_2)	Dusty Grey	RAL 7037	
Helium (He)	Olive Brown	RAL 8008	

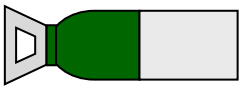
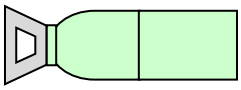
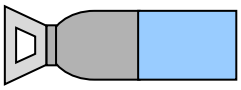
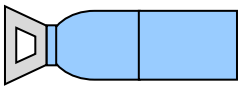
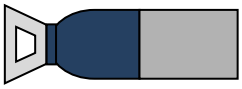
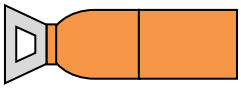
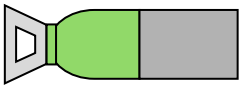
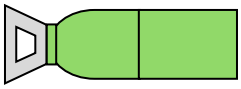
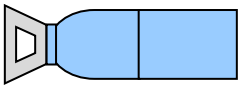
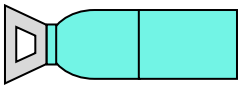
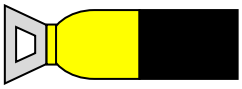
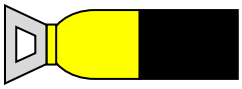
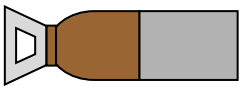
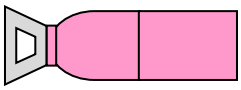
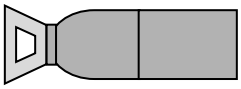
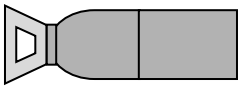
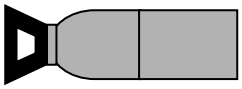
* In the UK it is a legal requirement to paint acetylene cylinders maroon, however, the colour given in BS EN 1089-3 is RAL 3009 which is oxide red. It is recommended that UK acetylene cylinders continue to be painted maroon as specified in BS 381c, colour number 541. Attention is drawn to the fact that cylinders originating from other European countries may be encountered, which are painted to RAL 3009.

Note: Colours are representative only – refer to a RAL colour chart for exact colour match.

Table 4 Common Gas Colour Classification

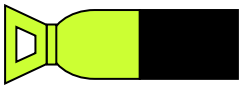
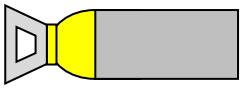
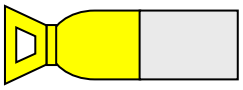
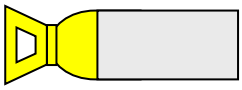
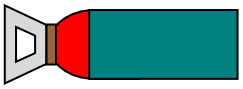
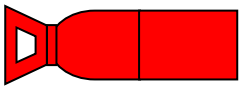
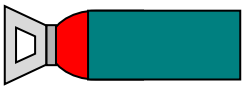
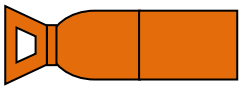
5.4. Colour Classification for Common Refrigeration Gases

Table 5 shows the colours commonly applied to cylinders containing refrigeration gases. The colours shown are those used by BOC and alternatives as used by other suppliers. It must be noted that the standard does not specify a cylinder colour for these gases so the information presented is for information only.

Refrigerant	BOC Colour	Other Suppliers Colour
R22		
R134a		
R404A		
R407C		
R507A		
R717		
R410A		
R23		
R744		

Colours are representative only.

Table 5 Common Refrigerant Cylinder Colours

Refrigerant	BOC Colour	Other Suppliers Colour
Decant Cylinder		
Recovery Cylinder		
R290 Care 40		
R1270 Care 45		

Colours are representative only.

Table 5 (continued) Common Refrigerant Cylinder Colours

6. References for Further Information

Organisation and Publication	Web Address
British Standards Institution (BSI) BS EN1089-3 Transportable Gas Cylinders. Gas Cylinder Identification (Excluding LPG). Colour Coding. BS 381C Specification for Colours for Identification, Coding and Special Purposes.	www.bsigroup.com
British Compressed Gases Association Technical Information Sheet TIS NO 6 Cylinder Identification Colour Coding and Labelling Requirements	www.bcga.co.uk
BOC Gases	**www.boconline.co.uk**
Reichsausschuß für Lieferbedingungen und Gütesicherung (German Imperial Commission for Delivery Terms and Quality Assurance)	**www.ral-guetezeichen.de**

Revision numbers and/or issue dates correct at date of issue. The latest revision of a document or its applicable replacement where it has been superseded shall apply.

Table 6 References for Further Information