Gas cylinders — Colour coding

Bouteilles à gaz — Code couleur

[Revision of first edition (ISO 32:1977)]

ICS 01.070; 11.040.10

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Foreword

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Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 32 was prepared by Technical Committee ISO/TC 58, *Gas cylinders*, Subcommittee SC 4, *Operational requirements*.

This second edition cancels and replaces the first edition (ISO 32: 1977). The scope has been widened to include cylinders in other than medical applications in an effort for international harmonization to provide a means of risk identification.

This document belongs to a series of standards specifying gas cylinder identification requirements:

ISO 13769, *Gas cylinders – Stamp marking*

ISO 7225, *Gas cylinders – Precautionary labels*

ISO 32, Gas cylinders – *Colour coding*

Introduction

Cylinder labels are the primary method of indicating cylinder contents. However, cylinder colours are used in addition to cylinder labels and refer to the properties of the contents of cylinders. It is recognized that other systems are in use and may be used in conjunction with the requirements of this international standard.

The use of cylinder colours is a method of contents identification when it is not possible to read labels, particularly from a distance when it is not possible to approach close to a cylinder such as in a fire.

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Gas cylinders — Colour coding

1   Scope

This International Standard specifies a colour coding system for the identification of the contents of industrial and medical gas cylinders with particular reference to the property of the gas or gas mixture.

This standard does not apply to cylinders containing liquefied petroleum gases (LPG) or to fire extinguishers.

NOTE   LPG includes substances carried under the UN number 1965 "Hydrocarbon gas mixture, liquefied, N.O.S."

2   Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 10156:1996, *Gases and gas mixtures — Determination of fire potential and oxidizing ability for the selection of cylinder valve outlets*

ISO 10298:1995, *Determination of toxicity of a gas or gas mixture*

ISO 13338:1995, *Determination of tissue corrosiveness of a gas or gas mixture*

3   Principles

Colour coding is used primarily to identify the risk associated with the contents of a cylinder.

Identification colours shall be applied to cylinder shoulders. The cylinder body and valve protection device may be coloured for other purposes, however. The use of a colour for the cylinder body that allows misinterpretation of the hazard should be avoided.

Colours used shall be in accordance with Annex A.

4   Colour coding system

4.1 Gas properties

Unless specifically identified in 4.2, all gases and gas mixtures shall be identified by a colour classification indicating the property of the contents in accordance with the risk diamond on cylinder labels.

The property is classified in the order as follows:

a)   Toxic and/or corrosive (in accordance with ISO 10298 and ISO 13338)   YELLOW;

b)   Flammable (in accordance with ISO 10156)   RED;

c)   Oxidizing (in accordance with ISO 10156)   LIGHT BLUE;

d)   Inert (nontoxic, noncorrosive, nonflammable, nonoxidizing)   BRIGHT GREEN.

The colour BRIGHT GREEN shall not be used for air for inhalation (e.g. breathing apparatus), see 4.4.

When a gas or mixture has two risk properties, then the cylinder shoulder shall be coloured in accordance with the primary risk. When a gas is toxic and/or corrosive, the cylinder shall be coloured only yellow even if the gas or gas mixture is also flammable or oxidizing. See Annex B.

When two colours are applied to the cylinder shoulder, they shall be in one of the formats (bands or quadrants) identified in Annex B.

4.2 Specific gases

4.2.1   The following gases shall be identified by specific colours rather than the colour system defined in 4.1.

a)   Flammable gases:

Acetylene   MAROON

b)   Oxidizing gases:

Oxygen   WHITE

Nitrous oxide   BLUE

4.2.2   Inert gases for medical application shall be further differentiated by use of the following colours:

— Argon   DARK GREEN

— Nitrogen   BLACK

— Carbon dioxide   GREY

— Helium   BROWN

The colours may also be used for applications other than medical.

4.3 Mixtures of inert gases

As an alternative to the risk colour as indicated in 4.1, combinations of the optional colours (maximum two) of the specific component gases listed in 4.2.2 may be used to identify the cylinder contents (see Annex B).

4.4 Gas mixtures used for inhalation

The following medical gas mixtures containing oxygen shall be identified using the colour of the components listed in 4.2. These colours may also be used for applications other than medical.

a)   Air or synthetic air   WHITE plus BLACK

b)   Helium / oxygen   WHITE plus BROWN

c)   Oxygen / carbon dioxide   WHITE plus GREY

d)   Oxygen / nitrous oxide   WHITE plus BLUE

5 Implementation

Cylinders colour coded in accordance with this standard shall have the letter "N" marked twice on the shoulder of the cylinder. These markings shall be diametrically opposed in a colour distinct from the colours of the cylinder shoulder. The size and shape of the letter "N" shall be as indicated in Annex C.

In countries where the colour defined in this standard is the same as already in use, it will only be necessary to apply the letter "N" to those cylinders that will leave that country to be transported internationally where the colour specified in this standard is different from the colour currently used.

The marking of the letter "N" is not necessary if there is no risk for misinterpretation using the new colour code (e.g. a colour was not used in the past).

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