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Gas cylinders — Colour coding

Bouteilles à gaz — Code couleur

Please see the administrative notes on page iii

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In accordance with the provisions of Council Resolution 15/1993, this document is **circulated in the English language only**.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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 for gas cylinders*.

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

Introduction

Cylinder labels are the primary method of indicating cylinder contents. However, colour coding is used to identify the contents of gas cylinders from a distance. It is recognized that other systems are in use and may be used in conjunction with the requirements of this International Standard.

This document, along with ISO 13769 and ISO 7225, belongs to a series of International Standards specifying gas cylinder identification requirements.

Gas cylinders — Colour coding

1 Scope

This International Standard specifies a colour coding system for the secondary method of identification of the contents of industrial and medical gas cylinders with particular reference to the property of the gas or gas mixture. Cylinder labels are the primary method of indicating cylinder contents.

This International 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 (all parts), *Gas cylinders — Gases and gas mixtures*

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 to identify the contents of gas cylinders from a distance. Colour coding also may be used for sorting purposes.

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 RAL register 840HR given in Annex A or equivalent.

4 Colour coding system

4.1 General

Gas cylinders are assigned colours using three methods. Colours are chosen based on the property of the contents in accordance with the hazard of the gas filled in the cylinder (4.2). Some specific gases and gas mixtures are assigned colours specific to that gas as noted in 4.3. In addition to the hazard colour, colours may be assigned based on the components of a gas mixture (4.4 and 4.5).

Annex B provides additional and systematic guidance to explain the selection of the appropriate colour.

4.2 Gas properties

Unless specifically identified in 4.3, all gases and gas mixtures shall be identified by a colour classification indicating the property of the contents in accordance with the hazard diamond on cylinder labels.

The property shall be classified in the following descending order of hazard 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 (non-toxic, non-corrosive, non-flammable, non-oxidizing) — Bright green.

The colour BRIGHT GREEN shall not be used for air for inhalation, e.g. breathing apparatus (see 4.5).

When a gas or mixture has two hazard properties, then the cylinder shoulder shall be coloured in accordance with the primary hazard. The colour of the secondary hazard can also be applied to the cylinder shoulder:

a) Toxic (and/or corrosive) and flammable — Yellow plus red;

b) Toxic (and/or corrosive) and oxidizing — Yellow plus light blue.

4.3 Specific gases

4.3.1 The following gases shall be identified by specific colours rather than the colour system defined in 4.2.

a) Flammable gases:

Acetylene — Maroon.

b) Oxidizing gases:

Oxygen — White;

Nitrous oxide — Blue.

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

a) Argon — Dark green;

b) Nitrogen — Black;

c) Carbon dioxide — Grey;

d) Helium — Brown.

These colours may also be used for applications other than medical instead of the bright green colour (inert) as indicated in 4.2.

4.4 Mixtures of inert gases

In addition to the hazard colour as indicated in 4.2, combinations of the colours (maximum two) of the specific component gases listed in 4.3.2 may be used to identify the cylinder contents (see Annex C).

4.5 Gas mixtures used for inhalation

The following medical gas mixtures containing oxygen shall be identified using the colour of the components listed in 4.3. These colours may also be used for applications other than medical.

a) Air or synthetic air — White plus black;

b) Oxygen/helium — 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 International Standard shall have the letter “N” marked twice on the shoulder of the cylinder. These markings shall be positioned diametrically opposed and displayed 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 D.

In countries where the colour defined in this International 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 International 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).