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Colored Cylinder Mark for Gases

气瓶颜色标志

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Colored Cylinder Mark for Gases

1 Scope

This Standard stipulates the requirements for the coating color, lettering, lettering color, colored ring, color ribbon and colored mark for requalification of cylinders on the outer surface of the gas cylinder. It is one of the main signs for identifying the gas filled in the gas cylinder and the period of periodic inspection.

This Standard applies to refillable gas cylinders that comply with the provisions of TSG R0006 and related gas cylinder standards.

This Standard does not apply to non-refillable gas cylinders, fire-extinguishing gas cylinders and cylinder-type pressure vessels attached to machinery and equipment.

NOTE: Relevant gas cylinder standards include national standards, local standards or enterprise standards for gas cylinder products.

2 Normative References

The following documents are essential to the application of this Document. For the dated documents, only the versions with the dates indicated are applicable to this Document; for the undated documents, only the latest version (including all the amendments) is applicable to this Document.

GB/T 3181 Color Standard for Paint Film

GB/T 13005 Terminology of gas cylinders

GB/T 16163 Classification of gases filled in cylinder

TSG R0006 Supervision regulation on safety technology for gas cylinder

3 Terms and Definitions

For the purposes of this Document, the terms and definitions given in GB/T 13005 and the following apply.

3.1 Colored cylinder mark for gases

For different filling media of gas cylinders, the combination of the coating color, lettering,

lettering color, colored ring and other content coated on the outer surface of the gas cylinder is specified in accordance with relevant standards, as a mark for identifying cylindered gases.

3.2 Colored ring

The identification mark for gas cylinders with different nominal working pressures are filled with the same gas but have different filling pressures or different filling coefficients.

3.3 Color chip

The standard sample card indicating certain color.

3.4 Colored mark for requalification of cylinders

In order to facilitate observation and understanding of the year of periodic inspection of the gas cylinder, a mark of corresponding color and shape is applied at the inspection stamp.

3.5 Test mark ring

It is a rotatable metal ring-shaped sheet that is installed between the cylinder valve and the valve seat, with the cylinder inspection information stamped on it.

3.6 Gas mixture

A gas that contains two or more effective components, or it belongs to a non-effective component, but whose content exceeds the specified limit.

3.7 Calibration gas

A gas with a certificate of metrological traceability for one or more accurate characteristic quantities, used to calibrate instruments, evaluate measurement methods or assign values to substances.

4 Coating Color Names and Identification of Gas Cylinders

4.1 The coating color of gas cylinders shall comply with the provisions of GB/T 3181 (except aluminum white, black and white).

4.2 The number, name and colored chip of the coating color of the gas cylinder are shown in Table 1.

4.3 For gas cylinders coated by methods other than paint film, the coating color shall comply with the provisions in Table 1.

4.4 Colors and color chip shall be identified according to the requirements of GB/T 3181.

5.1.4 The name of the filling gas of a vertical gas cylinder shall be listed horizontally at about 3/4 of the height of the cylinder according to the circumferential direction of the cylinder. The name of the filling unit shall be listed vertically below the center of the gas name or the cylinder surface rotated 180° according to the axial direction of the gas cylinder.

5.1.5 The filling gas names and filling unit names of horizontal gas cylinders shall be listed in rows in the middle of the cylinder in the axial direction of the gas cylinder from the cylinder valve end to the right (the cylinder valve is on the left). The filling unit names shall be located under the gas name, the line spacing shall be no less than 1/2 of the font height.

5.2 Colored ring

5.2.1 For gas cylinders filled with the same gas, the classification of nominal working pressure shall be in accordance with TSG R0006. The color markings of various gases are shown in Table 2.

5.2.2 If the nominal working pressure is one level higher than the specified starting level, it shall be painted with one colored ring (referred to as single ring); if it is two levels higher than the starting level, it shall be painted with two colored rings (referred to as double ring).

NOTE: According to the classification of nominal working pressure of commonly used gas cylinders specified in TSG R0006, the lowest nominal working pressure of the same cylindered gas is the starting level.

5.2.3 The colored ring shall be painted as a continuous circle of color bands with neat edges and equal width on the surface of the cylinder. It shall not be spiral, zigzag or wavy; the double rings shall be parallel.

5.2.4 For a gas cylinder with a nominal volume of 40L, the width of the single ring is 40mm, and the width of each ring of the double ring is 30mm. For gas cylinders of other specifications, the width of the colored ring can be adjusted appropriately.

5.2.5 The ring spacing of double rings is equal to the width of the colored ring.

5.2.6 The colored ring of a vertical gas cylinder is located approximately 2/3 of the height of the cylinder; between the name of the filling gas and the name of the filling unit.

5.2.7 The colored ring of a horizontal gas cylinder is located approximately 1/4 of the length of the cylinder from the valve end of the cylinder.

5.3 Other requirements

The lettering and colored rings of the gas cylinder shall avoid overlapping with each other, and shall avoid the position of the anti-shock ring.

Appendix A

(Normative)

Color Mark for Gas Cylinder Containing Gas Mixture

The gas mixture includes the calibration gas; while the color mark of the gas cylinder containing calibration gas shall be consistent with that of the gas cylinder containing gas mixture.

A.1 Color of cylinder containing gas mixture

A.1.1 Classification of hazardous characteristics of gas mixture

Gas mixture is divided into four categories according to their main hazardous characteristics: flammability, toxicity (including corrosiveness, the same below), oxidation and non-flammability (general). The specific distinction of main hazardous characteristics is in accordance with GB/T 16163.

NOTE: The general means non-combustion, non-combustion-supporting, non-oxidation, non-toxicity and inert.

A.1.2 Color representation of the main hazardous characteristics of gas mixture

Flammability is represented by red (R03 bright red, the same below); toxicity is represented by yellow (Y06 light yellow, the same below); oxidation is represented by blue [PB06 light (phthalein) blue, the same below]; non-flammability is represented by green (G05 dark green, the same below).

A.1.3 Color of cylinder containing gas mixture

A.1.3.1 Color composition of cylinder containing gas mixture

The color of cylinder containing gas mixture is divided into two parts: head color and body color.

A.1.3.2 Head color of cylinder containing gas mixture

The head of cylinder containing gas mixture refers to the combination of the cylinder neck and the cylinder shoulder. For a welded gas cylinder with a circumferential weld, it refers to the transition area from the cylinder mouth (or valve seat, the same below) to the cylinder shoulder or a downward extension of 20mm (the downward extension can be adjusted appropriately according to the volume and length-to-diameter ratio). For welded gas cylinders with two circumferential welds, it refers to the distance from the cylinder mouth to the lower edge of the upper circumferential weld. For seamless gas cylinder, it refers to the transition area from the cylinder mouth to the cylinder shoulder or 20 mm downward (the downward extension can be

The valve of cylinder containing gas mixture is no longer painted, that is, it maintains the original metal color or the original coating color of the product.

A.1.5 Color of other parts of cylinder containing gas mixture

The shields, cylinder lugs, cylinder caps, bases, etc. of cylinder containing gas mixture shall all be painted silver grey.

A.2 Lettering of cylinder containing gas mixture

A.2.1 General requirements

A.2.1.1 The lettering on cylinder containing gas mixture shall be in accordance with the relevant provisions of 5.1.

A.2.1.2 The name of the gas shall be the common name or commodity name of the main industry.

A.2.1.3 Cylinder containing gas mixture is marked with “(gas mixture)” or “(calibration gas)” below the gas name. For small-volume gas cylinders, spray "gas mixture" or "calibration gas" directly without spraying the gas name.

A.2.2 Lettering color

The lettering color of the gas mixture (calibration gas) and gas name is specified in Table A.1.

A.3 Colored ring of cylinder containing gas mixture

A.3.1 If the nominal working pressure is less than or equal to 15MPa, no colored ring shall be painted.

A.3.2 If the nominal working pressure is greater than 15MPa and less than 30MPa, a colored ring (referred to as a single ring) shall be applied.

A.3.3 If the nominal working pressure is equal to 30MPa, two color rings (referred to as double rings) shall be applied.

A.3.4 The color of the colored ring shall be consistent with the head color. When the head color is divided into upper and lower colors, it shall be consistent with the color of the upper part.

A.3.5 The width, spacing, position and requirements of the colored ring shall comply with the provisions of 5.2.

A.3.6 The ring color is specified in Table A.1.

A.4 Other provisions

A.4.1 If it is actually a gas mixture (such as air, liquefied petroleum gas, coal gas, natural gas,

Appendix B

(Normative)

Color Marks for Large-Capacity Steel Seamless Gas Cylinders (Cylinders for Long-Tube Trailers and Clustered Cylinder Containers)

B.1 Scope of application

This appendix applies to large-capacity steel seamless gas cylinders (hereinafter referred to as large-capacity gas cylinders) assembled on long-tube trailers and clustered cylinder containers. The color marks of large-capacity gas cylinders that are stored, transported and used separately shall still comply with the relevant provisions of this Standard.

B.2 Requirements for orientation of gas cylinder

The long tube trailer or clustered cylinder container is oriented according to the position of the tube box: one end of the tube box is the tail of the gas cylinder, and the other end is the head of the gas cylinder.

B.3 Body color of large-capacity gas cylinder

B.3.1 The body color of large-capacity gas cylinder is painted white or milky white.

B.3.2 For large-capacity gas cylinders assembled on the left and right outer sides of long-tube trailers or clustered cylinder containers, the visible parts shall be painted with colored ribbons and lettering in accordance with the provisions of this appendix. The remaining cylinders are only painted with body color, without painting colored ribbons and lettering.

B.4 Colored ribbon for large-capacity gas cylinder

B.4.1 Color division of colored ribbons

According to the main hazardous characteristics of the gas filled in large-capacity gas cylinders, different colors of colored ribbons are sprayed to distinguish them:

Flammable gases are red (R03 bright red); toxic gases are yellow (Y06 light yellow); oxidizing gases are blue (PB06 light/phthalein blue); non-flammable (general) gases are green (G05 dark green).

B.4.2 Width of colored ribbon

The width of the colored ribbon is 80mm~150mm. Appropriate adjustments can be made according to the different nominal diameters of large-capacity gas cylinders.

B.4.3 Coating of colored ribbon

The colored ribbon for large-capacity gas cylinders is applied axially along the middle busbar on the outer surface of the cylinder according to the visible position after the gas cylinder is assembled and fixed on a long-tube trailer or tube-type container. The shrinking parts of the head and tail of the cylinder (cylinder shoulder, neck, mouth, bottom) are not painted with color ribbons. The colored ribbon can be disconnected as needed.

B.5 Lettering of large-capacity gas cylinder

B.5.1 Lettering content

The lettering (content, font, word size, etc.) of large-capacity gas cylinders may include: name of the manufacturing unit, gas name, warning label, periodic inspection date, name of the ownership unit, etc. The details shall be determined by the gas cylinder manufacturing unit or the gas cylinder ownership unit.

B.5.2 Name of the gas

The name of the gas shall be as specified in Table 2 of 6.1.

The name of the gas is in Chinese. The height of the font shall be greater than the width of the colored ribbon, and the specific size of the font is determined by the manufacturing unit or ownership unit.

B.5.3 Arrangement of lettering

According to the number of layers of large-capacity gas cylinders placed on long-tube trailers or clustered cylinder containers, the lettering to be sprayed shall be reasonably arranged on the visible parts of the outer cylinders on each layer. The lettering content and arrangement can be as follows:

On the outer side of the left outer cylinder, write along the axis of the middle busbar on the outer surface of the cylinder, from head to tail: the name of the manufacturing unit (head of the cylinder), gas name, warning label (two rows up and down in the middle of the cylinder, with name above, and label below), periodic inspection date, name of the ownership unit (at the tail of the gas cylinder, when the user needs it). Separate them with colored ribbons.

On the outer side of the right outer cylinder, write along the axis of the middle busbar on the outer surface of the cylinder, from the tail to the head: the name of the ownership unit (at the tail of the cylinder, if the user needs it), the periodic inspection date, the name of the gas, and the warning label (two rows up and down in the middle of the gas cylinder, with the name above and the label below) and the name of the manufacturing unit (gas cylinder head). Separate them with colored ribbons.

B.5.4 Other requirements

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