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Color Standard for Paint Film

漆膜颜色标准

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Color Standard for Paint Film

1 Scope

This Standard specifies the color standard of paint film and its use.

This Standard is applicable to the production and use departments of color paints and related products. It shall guide the preparation and selection of color. It shall be used together with standard sample card of paint film specified in GSB 05-1426.

2 Normative References

The provisions in following documents become the provisions of this Standard through reference in this Standard. For dated references, the subsequent amendments (excluding corrigendum) or revisions do not apply to this Standard, however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB/T 3979 Method of Measuring of the Color of Materials

GB/T 5698 Glossary of Color Terms

GB/T 6749 Method of Specifying Color for Paint Film

GB/T 9271 Paints and Varnishes Standard Panels for Testing (GB/T 9271-2008, ISO 1514:2004, MOD)

GB/T 9761 Paints and Varnishes - Visual Comparison of the Color of Paints (GB/T 9761-2008, ISO 3668:1998, IDT)

GB/T 13452.2 Paints and Varnishes - Determination of Film Thickness (GB/T 13452.2-2008, ISO 2808:2007, IDT)

GB/T 15608 The Chinese Color System

GSB 05-1426 Standard Sample Card of Paint Film Color

3 Terms

For the purposes of this Standard, the following terms and definitions given in GB/T 5698 apply.

3.1 Surface color

The surface color of an opaque object.

3.2 Achromatic color (neutral color)

The surface color of an object without spectral selectivity, a series of neutral grays from black to white.

3.3 Chromatic color

The color beyond the achromatic color.

3.4 White

Neutral color with object lightness greater than 8.5.

3.5 Black

Neutral color with object lightness less than 2.5.

3.6 Grey

Neutral color with object lightness between 2.5 and 8.5.

3.7 Absolute white

The ideal white with the object lightness of 10.

3.8 Absolute black

The ideal black with the object lightness of 0.

3.9 Complementary color

Two colors mixed in an appropriate ratio to generate the neutral color. For example, red and green, blue and yellow.

3.10 Gloss

The nature of the object surface of oriented selective reflection. It is the apparent perceptual nature of the object surface due to the spatial distribution of the reflected light; it is related to the size of the surface oriented reflective component and the

3.18 CIE standard illuminants

A specific relative spectral power distribution incident on an object as specified by CIE, including:

- a) Standard illuminator A: a complete radiator with an absolute temperature of 2856K as specified by the international practical temperature scale.
- b) Standard illuminator C: the average daylight with the correlated color temperature about 6774K.
- c) Standard illuminator D₆₅: average daylight with correlated color temperature about 6504K.

Standard illuminator D₅₅: daylight with correlated color temperature about 5503K.

Standard illuminator D₇₅: daylight with correlated color temperature about 7504K.

3.19 CIE standard sources

In order to realize the standard illuminators A, C, D₆₅, etc.; the artificial light source specified by CIE.

3.20 Color temperature

When the chromaticity of the light source is the same as that of the complete radiator at a certain temperature, the absolute temperature of such complete radiator is the color temperature of the light source. The symbol of color temperature is T_c , in K.

3.21 Colorimeter

Instrument for measuring the color tristimulus values or chromaticity coordinates.

3.22 Visual field

The solid angle range of the object being observed when the eye position is not moving.

3.23 Illuminating-viewing condition

The geometrical conditions among illumination source, object and observer. Such as 0/45 (vertical illumination/45° direction observation), d/8 (diffuse illumination/8° direction observation), 0/d (vertical illumination/diffuse observation), etc.

3.24 CIE 1931 standard colorimetric system

The colorimetric system represented by spectral tristimulus values of $\bar{x}(\lambda)$, $\bar{y}(\lambda)$, $\bar{z}(\lambda)$ specified by CIE 1931.

measured according to the provisions of GB/T 3979; the test conditions are D_{65} light source, 10° visual field, $d/0$ illumination observation condition.

4.4 If required otherwise, the supplier and the purchaser may agree on the colors other than those specified in this color standard; but they can't be numbered by the color numbering method of this Standard.

5 Color Difference

5.1 The allowable color difference range of each color in this color standard shall be agreed between the supplier and the purchaser.

5.2 After the color difference range is determined, it shall not be changed arbitrarily; if adjustment is required, it shall be agreed between the supplier and the purchaser.

6 Use Method

6.1 Test template

6.1.1 Unless otherwise specified, the test template shall be the tinplate, hard aluminum plate, steel plate or glass plate specified in GB/T 9271. The plate surface shall be flat; the size shall be no less than $120\text{mm} \times 50\text{mm}$.

6.1.2 Unless otherwise specified, each test template shall be handled according to the provisions of GB/T 9271; then coat the test product as per the specified or agreed method, dry (or bake and maintain) each painted test template to the specified time.

NOTE: The paint film shall completely cover the substrate. For the paint film that can't cover the substrate completely, its color is affected by the color of the substrate and thickness of paint film (determined as per a method specified in GB/T 13452.2).

6.2 Colorimetry

6.2.1 Colorimetric method

The color shall be compared as per the provisions of GB/T 9761. Generally, the conventional method is used to visually compare the test template with color standard under the natural daylight or artificial light source. The colorimeter can also be used, directly measure the color difference (ΔE) under the agreed light source (D_{65} light source or C light source), illumination observation conditions $[45/0, 0/45, d/8(0)]$ or $8(0)/d$ and visual field conditions (10° or 2°).

6.2.2 Light source

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