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APPROVED NOVEMBER 21, 1984

EIA STANDARD

EIA STANDARD COLORS FOR COLOR
IDENTIFICATION AND CODING

EIA-359-A

(Revision of RS-359)



January, 1985



Engineering Department

ELECTRONIC INDUSTRIES ASSOCIATION

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APPLICATION NOTE FOR EIA-359-A

As noted in Section 4 of EIA-359-A compliance with this Standard may be accomplished through using Visual Reference Standards, or through the use of color measuring instruments (spectrophotometers, colorimeters). If the user of this Standard does not have, or does not wish to use color measuring instruments, Visual Reference Standards (designed to be used with EIA-359-A) are available from the Electronic Industries Association. These Visual Reference Standards consist of color tolerance charts for the ten standard colors. Each chart is made up using 9 to 13 color chips of slightly differing color with an indication of a Centroid color and a circle indicating the Component Limits of color deviations. This method of presentation allows visual matching of a test color with the Visual Reference Standard color chart and an accurate subjective judgment can be made concerning whether or not the test color falls within the color tolerances expressed in EIA-359-A. Additionally, the Visual Reference Standards include large color panels of the Centroid colors for the ten colors. A complete set of Visual Reference Standards is bound in a three-ring loose-leaf binder and is published by the Electronic Industries Association, Standard Sales Office.

Regarding the referencing of EIA-359 in Department of Defense Standards, ANSI/EIA RS-359 is called out in MIL-STD-1285, Marking of Electrical and Electronic Parts. Section 4.5.2 of this document indicates that color codes for part identification marking shall conform within the Component Limits (formerly "preferred limits") of the Centroid colors specified in ANSI/EIA RS-359. Also it should be noted that MIL-STD-104, Limits for Electrical Insulation Color, indicates (a) that Class I colors shall be colors defined by EIA Standard RS-359, and (b) that Class I colors are applicable to all insulation materials which will accept bright, highly saturated (high chroma) pigments, and (c) that, in general, plastic insulation intended for use where exposure to direct sunlight is infrequent can be furnished with Class I colors.

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EIA STANDARD COLORS FOR COLOR IDENTIFICATION AND CODING

(From EIA Standard RS-359 and Standards Proposal No. 1643-A, formulated under the cognizance of the EIA Committee on Colors and Numbers.)

BACKGROUND

This Standard supersedes EIA Standard RS-359, "EIA Standard Colors for Color Identification and Coding," with associated standard color swatches. EIA RS-359 replaced several earlier standards (e.g., GEN-101-A) used for electronic components and for wire and cable insulation. All colors in the prior issue of this standard are included within the color ranges mandated by this revision, now identified as EIA-359-A.

1.0 GENERAL

This is a color coding standard. It defines the color ranges used to identify electronic components, equipment, and wire and cable insulation, and establishes a standard color-number relationship. Materials to be color coded are separated into two categories, and nominal colors and tolerance ranges are established for each. Both categories have the same nominal colors, but the tolerance ranges are different, so that the tighter tolerances fall wholly within the more liberal tolerance ranges. Tests for conformance may be instrumental or visual. For instrumental testing, categories of test instruments are specified. For visual testing, specialized color charts are specified, and these are available as an adjunct to the standard.

2.0 SCOPE

The colors defined in this standard are intended to be applied to the marking of electronic components such as resistors, capacitors, and wires in a manner described in the EIA Standards for these components. In addition, the use of these colors is recommended for identification of terminals and circuit functions, and any other application where the relation of color to numbers or functions is felt necessary.

The object is to reduce errors or misunderstandings which may result from improper selection or interpretation of colors.

3.0 DEFINITIONS, SYMBOLS, AND ABBREVIATIONS

The color specifications for this standard are in terms of visual color attributes of Hue, Value, and Chroma of The Munsell System¹. The Munsell System provides a simple alternative to the more precise and more complex method of color specification based on spectrophotometry and the CIE System.² Chromaticity coordinates in the CIE system of Y, x and y are included in this standard for the specified colors for those who may wish to determine conformance to this standard by instrumental measurements.

3.1 Munsell System

The Munsell System and its notation is based upon the dimensions of a surface-color-perception solid. In this solid, the central vertical axis represents the grays, extending from black at the bottom to white at the top. The lightness of a color perceived as chromatic (nongray) determines the gray to which it is equivalent, and is represented in the color solid by distance above the base plane. (See Figure 1.)

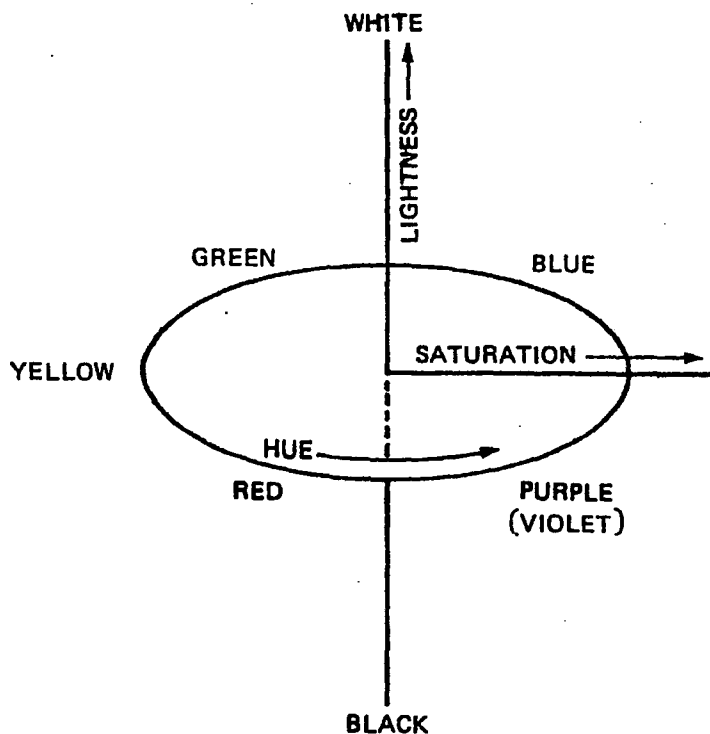


FIGURE 1

DIMENSIONS OF THE SURFACE-COLOR-PERCEPTION SOLID¹