

Glossary of Color Measuring Terms

A

Achromatic color. A neutral color (white, gray, or black) that has no hue.

Attribute. Distinguishing characteristic of a sensation, perception, or mode of appearance.

C

Chromatic. Perceived as having a hue (not white, gray, or black).

Chromatic attributes. Attributes associated with the spectral distribution of light: hue and saturation.

Chromaticity. The part of color specification that does not involve illuminance. Chromaticity is two-dimensional and is specified by pairs of numbers for dominant wavelength and purity.

CIE (Commission Internationale de l'Éclairage). Translated from French to English as the International Commission on Illumination, CIE is the main international organization concerned with color and color measurement.

CIE chromaticity coordinates. The ratios of each of the tristimulus values of a color to the sum of the tristimulus values. In the CIE systems, they are designated by x , y , and z .

CIE luminosity function (y). A plot of the relative magnitude of the visual response as a function of wavelength from about 380 nanometers to 780 nanometers, adopted by CIE in 1924.

CIE 1976 $L^*a^*b^*$ color space. A uniform color space that uses an Adams-Nickerson cube root formula, adopted

by the CIE in 1976 for measuring small color differences.

CIE 1976 $L^*u^*v^*$ color space. A uniform color space adopted in 1976. Used in additive mixing of light (e.g. color TV) and when an associated chromaticity is desired.

CIE standard observer. A hypothetical observer having the tristimulus color-mixture data recommended in 1931 by the CIE for a 2° field of vision. A supplementary observer for a larger 10° field was adopted in 1964.

CIE tristimulus values. The amounts of the three reference or matching stimuli required to give a match with the color stimulus considered in a given trichromatic system.

Color attribute. A three-dimensional characteristic of the appearance of an object. One dimension usually defines the lightness; the other two together define the chromaticity.

Color difference. The magnitude and character of the difference between two object colors under specified conditions.

Colorimeter. An instrument designed for the direct measurement of color (see also *Tristimulus colorimeter*).

Color measurement scale. A system of specifying numerically the perceived attributes of color.

Color specification. Tristimulus values, chromaticity coordinates, and luminance value, or other color-scale values, used to designate a color numerically in a specified color system.

D

Delta (Δ). A symbol that indicates deviation or difference.

Density. The ability of a material to absorb light; the darker it is, the higher the density.

H

Hue. The attribute of color perception that allows an object to be judged red, blue, green, purple, and so on.

I

Illuminant. Incident luminous energy specified by its spectral distribution.

L

Light. Electromagnetic radiation in the spectral range detectable by the human eye (approximately 380 nanometers to 780 nanometers).

Lightness. Perception by which white objects are distinguished from gray objects and light-colored objects are distinguished from dark-colored objects.

Light source. The element in an instrument or in the visual observing situation that furnishes light.

M

Munsell Color System. The Munsell color identification of a specimen by its Munsell hue, value, and chroma as visually estimated by comparison with the Munsell Book of Color.

N

Nanometer (nm). Unit of length equal to 10^{-9} meter.

S

Saturation. The attribute of color perception that expresses the degree of departure from the gray of the same lightness.

Spectrophotometer. An instrument that measures light at many points on the visual spectrum, resulting in a curve.

Spectrum. Spatial arrangement of electromagnetic energy in order of wavelength.

Standard. A reference for comparing measurements.

T

Tristimulus. Of or relating to values that give the amounts of the three colored lights, or receptors: red, green, and blue.

Tristimulus colorimeter. An instrument that measures tristimulus values and converts them to chromaticity components of color.

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