

Color Management Concepts

Glossary of Terms & Acronyms:

Terms from this document and from the Color Management Community:

ANSI: Acronym for the American National Standards Institute who has set standards across many industries including color communication

Blue: The hue of that portion of the visible spectrum lying between green and indigo, evoked in the human observer by radiant energy with wavelengths of approximately 420 to 490 nanometers.

Colorist: A person who uses color skillfully, a painter who emphasizes color relationships in works of art or a person who colors photographs.

Colorimetry: Colorimetry (American English) or Colourimetry (British English) is the science and technology used to quantify and describe the human color perception experience. It is similar to spectrophotometry, but is distinguished by its interest in reducing spectra to the physical correlates of color perception, most often the CIE 1931 XYZ color space values.

Color Space: All the colors that a color gamut model or device can reproduce in a repeatable process. All to colors in the spectrum that a software/hardware .

Color System: A color model based on research into a color space that is used in a manufacturing process. Can also be called a color manufacturing model.

Color Chain: The steps in a production workflow where color pigments are designed/applied/viewed across a production process usually crossing two or more departments. Links of color management from department to department. This can also be called a **Color Workflow**.

CMM: Color Management Module. A software application that translates between color gamut models.

CMYK: Refers to four-color process printing, using Cyan, Magenta, Yellow, and Black inks. When a client references

CMYK, they are referring to the “process color or 4-color” printing palette.

Color: The Human interpretation of light energy as perceived by the mind broken down into a series of Hues.

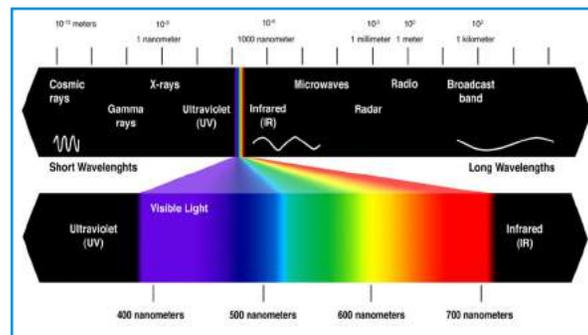
Delta E: The amount of change it takes a standard observer to perceive a difference in color.

Densitometer: A device for sensing the ink density on a substrate. Used primarily for printing process control.

Device Link: Two or more ICC profiles that have the rendering intent defined between them to lock down color transformation between different types of devices.

DIC Color System: A Japanese color system similar to Pantone. Stands for Dainippon Ink and Chemicals. Applications for the DIC Color Guide outside printing include the construction and apparel industries, where it is used as a source of inspiration and a tool for communication color expectations.

Fingerprinting: The act of bringing a device into color compliance and understanding its color reproduction characteristics.



Electromagnetic Spectrum: A particular force of the universe

that is radiation emission in the form of waves. It is often shortened to EM or EMS. Its energy descriptions range from cosmic rays to broadcast waves and it describes the energy of these phenomenon in frequency wavelengths. (See graphic)

Eye: An organ of sight used for sensing, to various degrees of sensitivity, parts of the electromagnetic spectrum between approximately 400 to 750 nanometers in wavelength.

Gamut: Color Gamut refers to the color space of a device, an image or a color system. The Gamut can best be represented in a 3-dimensional space. It is basically a mathematical representation (shape) of all the colors a device can reproduce.

Gracol: Acronym for General Requirements for Applications in Commercial Offset Lithography. A standards body for Printing. Creators of the G7 printing methodology.

Green: The hue of that portion of the visible spectrum lying between yellow and blue, evoked in the human observer by radiant energy with wavelengths of approximately 490 to 570 nanometers.

Gretag-Macbeth: An German color management hardware and software solutions company that was purchased by X-rite Corporation in 2006.

Hue: A particular family of color. The property of colors by which they are seen as ranging from red through orange, yellow, green, blue, indigo, and violet, as determined by the dominant wavelength of the light.

Hunter Lab: An international color management hardware/software supplier for many industries.

ICC: The International Color Consortium on Color. A standards body for the scientific research on Human perception of Color.

ICC Profile: A color description file that contains a mathemati-

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cal look up table for how color is communicated for a particular device.

Indigo: The hue of that portion of the visible spectrum lying between blue and violet, evoked in the human observer by radiant energy with wavelengths of approximately 420 to 450 nanometers; a dark blue to grayish purple blue.

Infrared: Infrared (IR) is invisible radiant energy, electromagnetic radiation with longer wavelengths than those of visible light, extending from the nominal red edge of the visible spectrum at 700 nanometers to 1 mm (300 GHz) (although some people can see infrared up to at least 1050 nm in experiments).

ISO: Acronym for the International Standards Organization who has set standards across many industries including color communication.

Kelvin Temperature Scale: Similar to Fahrenheit and Celsius, but based on Absolute Zero which is no atomic movement.

Light: The Electromagnetic Spectrum between the frequencies of approximately 400 to 700 nanometers. Also called the Visual Spectrum.

Orange: The hue of that portion of the visible spectrum lying between red and yellow, evoked in the human observer by radiant energy with wavelengths of approximately 590 to 630 nanometers; any of a group of colors between red and yellow in hue.

Pantone: PANTONE® is the standard language for color identification and communication and the worldwide expert on color. They offer many spot and process color swatch color books for communication color standards.

Photometry (optics): The science of the measurement of light, in terms of its perceived brightness to the human eye.

Photon: A particle representing a quantum packet of light or other electromagnetic radiation. A photon carries energy proportional to the radiation frequency with no mass.

PMS: PMS stands for PANTONE MATCHING SYSTEM®.

RAL: color matching system used in Europe that is created and administrated by the German RAL gGmbH (RAL non-profit LLC), which is a subsidiary of the German RAL Institute. RAL mainly refers to the RAL Classic system, mainly used for varnish and powder coating but nowadays there are reference panels for plastics as well.

Red: The hue of the long-wave end of the visible spectrum, evoked in the human observer by radiant energy with wavelengths of approximately 630 to 750 nanometers.

ROYGBIV: An abbreviation for Red, Orange, Yellow, Green, Blue, Indigo and Violet on order of the colors of the rainbow.

Spectrophotometer: A device used to quantify color emission data and record the data with a calibrated standard.

Spectrophotometry: In chemistry, spectrophotometry is the quantitative measurement of the reflection or transmission properties of a material as a function of wavelength. It is more specific than the general term electromagnetic spectroscopy in that spectrophotometry deals with visible light, near-ultraviolet, and near-infrared, but does not cover time-resolved spectroscopic techniques.

SWOP: An acronym for Specifications Web Offset Publications. These specifications usually refer to web offset four-color printing (Process colors).

Tolerance: The variation within a process. No device is perfect and no manufacturing process is always exactly the same. Tolerance describes this and has to be accounted and managed.

TOYO: A Japanese color system similar to Pantone.

Ultraviolet: Ultraviolet light (UV) is a type of electromagnetic radiation, as are radio waves, infrared radiation, X-rays and gamma-rays. Ultraviolet light gets its name because the spectrum consists of electromagnetic waves with frequencies higher than those that humans identify as the color violet. Solar UV radiation is commonly subdivided into three regions: UV-A (320–400 nm), UV-B (290–320 nm), and UV-C (220–290 nm), ranked from long to shorter wavelengths (from smaller to larger energies).

Violet: The hue of the short-wave end of the visible spectrum, evoked in the human observer by radiant energy with wavelengths of approximately 380 to 420 nanometers; any of a group of colors, reddish-blue in hue, that may vary in lightness and saturation.

The Visible or Visual Spectrum: The portion of the electromagnetic spectrum that is visible to the human eye. Electromagnetic radiation in this range of wavelengths is called visible light or simply light. A typical human eye will respond to wavelengths from about 390 to 700 nm. This is a very small slice of the entire Electromagnetic Spectrum. See Electromagnetic Spectrum definition on previous page.

What is the different between Spot and Process color? Solid or "Spot" colors are printed with a single color, using a specific solid color ink. Process color is print Cyan, Magenta, Yellow and Black (CMYK) inks used to print images on paper.

X-rite: X-Rite, Inc. is a manufacturer of color measurement and management solutions, located in Grand Rapids, Michigan, United States. Owner of Pantone and Gretag-Macbeth.

Yellow: The hue of that portion of the visible spectrum lying between orange and green, evoked in the human observer by radiant energy with wavelengths of approximately 570 to 590 nanometers.