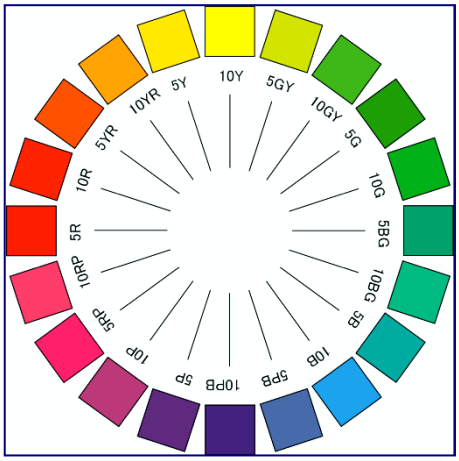
Munsell color system



In colorimetry, the **Munsell color system** is a color system that specifies colors based on three color dimensions, hue, lightness (called Value by Munsell), and Chroma (difference from gray at a given hue and lightness).

Professor Albert H. Munsell, an artist, wanted to create a "rational way to describe color" that would use decimal notation instead of color names (which he felt were "foolish" and "misleading"). He first started work on the system in 1898 and published it in full form in *Color Notation* in 1905. The newer *Munsell Book of Color* continues to be used today.

The system consists of an irregular cylinder with the **value** axis (light/dark) running up and down through it, as does the axis of the earth. Dark colors are at the bottom of the tree and light at the top, measured from 1 (dark) to 10 (light).

Each horizontal "slice" of the cylinder across the axis is a hue circle, which he divided into five principal hues: red, yellow, green, blue, and purple, five intermediates, yellow-red, green-yellow, blue-green, purple-blue, and red-purple. Munsell hue is specified by selecting one of these ten hues, and then referring to the angle inside them from 1 to 10.

"Chroma" was measured out from the center of the wheel, with lower chroma being less saturated (washed out, such as pastels). Note that there is no intrinsic upper limit to chroma. Different areas of the color space have different maximal chroma coordinates. For instance light yellow colors have considerably more potential chroma than light purples, due to the nature of the eye and the physics of color stimuli. This led to a wide range of possible chroma levels, and a chroma of 10 may or may not be maximal depending on the hue and value.

A color is fully specified by listing the three numbers. For instance a fairly saturated blue of medium lightness would be 5B 5/10 with 5B meaning the color in the middle of the blue hue band, 5/ meaning medium lightness, and a chroma of 10.

The original embodiment of the system (the 1905 Atlas) had some deficiencies as a physical representation of the theoretical system. These were improved significantly in the 1929 Munsell Book of Color and through an extensive series of experiments carried out by the Optical Society of America in the 1940's resulting in the notations (sample definitions) for the modern Munsell Book of Color. The system is still widely used in a variety of applications and represents one of the best available data sets on the perceptual scaling of lightness, chroma and hue. Several modern systems of color measurement are built upon the foundation of the Munsell system.

- Munsell Color Products
- Munsell Color Science Laboratory
- D G Colour Ltd