

# STANDARDIZING COLOR

Professionals in industry, art and science, worldwide rely on Munsell color standards. At the beginning of the 20th century, Professor Albert H. Munsell brought clarity to color communication by establishing an orderly system for accurately identifying every color that exists. Today, a variety of Munsell products are available to make your color communications easier and more reliable.



The Munsell Color system is based on the principle of “perceived equidistance.” Munsell attempts to account for each color attribute in ordered visual steps. He introduces 100 steps for color “hue”, starting with five main colors and five additional colors, and adopts an ordering system with 10 units of color “value” and an open scale called “chroma” (similar to saturation). The resultant three-dimensional system can best be portrayed as a “color-tree”.

Munsell offers a variety of color standards designed to meet government and industry specifications. This includes books for Soils, Plant Tissues and Color Coding, as well as individual color standards for USDA, ANSI Gray and Safety Colors, Electric Power Industry Standards and NEMA colors.

Here are a few examples of the use of the Munsell Color System in industrial professions:

- **Munsell Plant Tissue Charts:**

A botanist’s color guide consisting of 17 color charts are used to determine and record the color of plant tissues. This information is important to scientists working with growth rates, nutrient deficiencies, plant diseases, and other plant processes.

- **Munsell Color Coding Charts**

Used for color coding of wire and cable insulation and by Electronic Industries Association (EIA RS359-A) for use with electronics components. It includes ten 8 1/2" x 11" color charts in a binder: red, orange, brown, yellow, green, blue, violet (purple), white, gray (slate) and black. Each chart defines the centroid (ideal) color and the permissible visual tolerances.

- **USDA Standards**

Munsell offers a variety of color standards designed to meet a variety of food industry specifications. Standards are available for frozen French fried potatoes, canned ripe olives, grade A and C tomatoes, frozen red tart cherries and pumpkin/squash.

- **Munsell Washable Soil Color Charts**

Developed jointly by Munsell and the USDA Soil Conservation Service, 9 charts are used to classify soil colors and judge rocks, hydric soils, archeological samples, and other natural products. Agronomists, biologists, archeologists, geologists, zoologists, and other scientists use these charts to document specimen colors. The charts include color name diagrams, soil structure diagrams, and masks. Charts are for semi-tropical soils, Australia, and Southeast Asia and glauconile soils.



- **American National Standards Institute (ANSI) Standards**

ANSI specifications are adapted from Munsell’s color system to create a variety of color standards such as ANSI Grays and ANSI Safety Colors.

- **National Electrical Manufacturers Association (NEMA) Standards**

Munsell has been adapted to a variety of color standards designed to meet NEMA specifications. Standard sheets are available for NEMA Black, Brown, Gray, Ivory, Orange, Red, White and Yellow.