

## **Sensegood Spectrophotometer for researchers, universities, laboratories and hobbyists**

Sensegood spectrophotometer is an analytical color measurement instrument that is widely accepted in the industry and research fraternity. If you are pursuing graduation or doing PhD research, even if you are a hobbyist and color science excites you, Sensegood spectrophotometer is the professional color measurement tool that you could ask for.

Sensegood spectrophotometer comprehensively evaluates the color attributes of various samples, including solids, liquids, powders and pastes. Using Sensegood spectrophotometer, one can set color tolerances and compare color between reference and sample. It gives result in percentage match. It also incorporates continuous auto measurement mode. It has provision for averaging option in normal mode as well as in auto repeat measurement mode. Sensegood spectrophotometer is the versatile device that is engineered to work as handheld/portable, benchtop/table-top or in-process/online color measurement instrument.

Sensegood spectrophotometer is equipped with various color indices such as – whiteness index, yellowness index, including many such others. It represents measured color data in terms of various color space attributes: XYZ, Yxy, CIE and Hunter  $L^*a^*b^*$ ,  $C^*$ ,  $h^0$ ,  $u^*$ ,  $v^*$ , spectral reflectance graph, peak wavelength and color temperature. Numerical representation allows one to convey and document the color.

Sensegood spectrophotometer provides computer interface software *SensegoodSmart* which lets you convey numeric color data to another Sensegood spectrophotometer located anywhere across the globe. SensegoodSmart utility enables user to store unlimited number of references to the computer. Any desired reference can be recalled and downloaded to Sensegood spectrophotometer whenever required. The utility provides all color related analytical information on single screen which further can be printed or can be saved as .jpg or .pdf.

Sensegood spectrophotometer shows spectral distribution from 400nm to 700nm. However, using SensegoodSmart utility, one can avail and export spectral distribution data from 380nm to 1100nm in comma separated values (.csv file). Researchers can use this file for further analysis by using the tools like Matlab. Even the measurements taken during research tenure can be exported as measurement data files (.sego) which can be imported to SensegoodSmart utility for studying, without physical need of the instrument. Further, the instrument has infrared blocking filter attached by default which can be removed if you intend to measure in infrared wavelengths as well. However device's infrared response may not find adequate gain in some infrared regions as the instrument's main purpose is to measure visible spectrum.

We are constantly channelizing our efforts for providing low cost and easy to use color measurement technology to everyone. We think that the technology should not be restricted to any particular segment; rather it should be made accessible to the students, young researchers and to anyone who is interested.

We have considered some of the research domains and related topics in which Sensegood spectrophotometer can assist. If you think a topic requires edit or you feel a potential research trend in your domain is not listed, let us know; we will consider updating the list.

Food processing:

- ✓ Development of USFDA and EFSA permitted stable enhanced food dyes
- ✓ Instrumental color measurement of milk products toward improving the safety and quality
- ✓ Establishing a relation in between Agtron number and coffee taste perception
- ✓ Improving process standards toward improved whiteness of Sago pearls

Agriculture:

- ✓ Effects of harvest date on ripening capacity and postharvest life in fruits and vegetables
- ✓ Relation between color, quality and nutrition in fruits, vegetables, grains, and pulses
- ✓ Study of color change of apple as a result of storage, shelf-life, and bruising
- ✓ Analysis of ripening index and tomato color index during tomato ripening stages
- ✓ Studying relation between color fading of spices and reduction in aromatic oils
- ✓ Measuring physical attributes like color in rice varieties and its relation with starch compositions
- ✓ Effect of harvesting time on the yield and color
- ✓ Effect of milling on color and nutritional properties of rice
- ✓ Effect of processing conditions on color change of grains
- ✓ Correlation of color and eating quality of grains
- ✓ Influence of drying on the color of plant products
- ✓ Color degradation of beans during storage – color relation with protein and other nutrition parameters
- ✓ Color in beans – Effects of accelerated storage on water absorption and cooking time
- ✓ Moisture dependent color characteristics of walnuts and other dry fruits
- ✓ The relationship between seed coat color and seed quality
- ✓ Studying how seed color affects light and temperature requirements during germination
- ✓ Studying seed coat color variation and their possible association with seed yield parameters
- ✓ A comparative analysis of color measurements of the seed coat and endosperm of wheat

Paper:

- ✓ Study of yellowness in paper due to fungal bio-deterioration
- ✓ The influence of pulp on the color of dyed papers
- ✓ Color psychology in packaging

Textile:

- ✓ Creative textile design inspired by interactions of color
- ✓ Color fading of textile fabric by plasma treatment
- ✓ Study on the color levelness of fabric dyed with vegetable dyes
- ✓ Electronics color management solution for textile and apparel industry
- ✓ Color psychology and textile aesthetic

Chemical:

- ✓ Color evaluation using electronic measurement techniques to ensure chemical formulation reproducibility
- ✓ Chemistry of dyes, pigments and inks
- ✓ Color – indication of process and ingredient variations

Pharmaceutical:

- ✓ Color evaluation using electronic measurement techniques to ensure drug formulation reproducibility
- ✓ Color consultation for healthcare and pharmaceutical products
- ✓ Pharmaceutical color and drug expectancy
- ✓ Effect of drugs' color: systematic review of perceived effect
- ✓ Stability of packaged solid dosage forms: shelf life prediction of packaged tablets
- ✓ Colors in pharmaceutical products – color management for formulators
- ✓ Application of instrumental color measurement in development and quality control of drugs and pharmaceutical excipients
- ✓ Medicine color – emotion associations

Plastic:

- ✓ Study and development of enhanced plastic pigments
- ✓ Dispersing additives for pigments and fillers – plastic additives
- ✓ Analysis of single pigment dispersions (SPD)
- ✓ Influence of the processing parameters on the dispersion and coloration
- ✓ Study of environmental effects and aging on colors in plastics

Ceramics:

- ✓ The thermo-chromic properties of the ceramic color standards
- ✓ Effect of surface finishing on the color stability and translucency of ceramics
- ✓ Synthesis of ceramics in different colors
- ✓ Creating color: unearthing the chemistry of ceramic glazes
- ✓ Effects of repeated firings on color of ceramics
- ✓ Effects of accelerated artificial aging on the translucency and color stability of monolithic ceramics with different surface treatments

Archaeology:

- ✓ Classification of archaeological ceramic fragments using texture and color descriptors
- ✓ Statistical analysis of replicable color measurements in historical ceramics
- ✓ Color study for temporal, cultural, trade (routes) and functional aspects in ceramics of ancient times
- ✓ The discoloration of ancient structures due to particulate carbon and dust deposition

Paint & coating:

- ✓ Chemistry of dyes, pigments and inks
- ✓ Study the effect of stabilizers on fading of a paint – light and temperature stabilizers
- ✓ Developing new paint formulations which are weather durable in retaining their characteristics

Wood:

- ✓ Understanding wood discoloration and maximizing wood profits
- ✓ Evaluation of color differences on wood surfaces
- ✓ Causes of color changes in wood during drying
- ✓ Color change of selected wood species affected by thermal treatment and sanding

Concrete and construction:

- ✓ Spectrophotometric color measurement for early detection and monitoring of greening on granite buildings
- ✓ Measurement of time- dependent color variations in a range of concrete specimens
- ✓ Thermo-chromic material development in building
- ✓ To study the effects of temperature, humidity, pollution and other environmental parameters on change in building's appearance over time
- ✓ The discoloration of ancient structures due to particulate carbon and dust deposition

Beauty & cosmetics:

- ✓ Colors in cosmetics – dispersion studies
- ✓ Developing new color formulations
- ✓ Classification on dyes and pigments
- ✓ Developing color analytical methods in analysis of cosmetic products
- ✓ Social media and body image concerns: current research and future directions
- ✓ Analysis of dyes in cosmetics: challenges and recent developments
- ✓ Studying the methods of color control for cosmetic powders, soaps, perfumery & cosmetics
- ✓ Studying the importance of color in beauty packaging

Architecture and psychology:

- ✓ The role of color in architecture: visual effects and psychological stimuli
- ✓ Color in architecture – color and culture
- ✓ Color – emotion associations
- ✓ The effects of color on the moods of college students
- ✓ Color and perceived space
- ✓ Color and human response
- ✓ Color and healing
- ✓ The application of color in healthcare settings
- ✓ Effects of office interior color on workers' mood and productivity
- ✓ Effects of color on health
- ✓ Color for architecture today
- ✓ Fundamental study on measuring color of landscape by photoelectric color instrument
- ✓ Experimental study on the texture effect of building materials for architectural planning and design
- ✓ Survey on the actual color of architectural concrete and the experiment of the color control
- ✓ Forming spaces with color: trends in architectural practice
- ✓ Using color as the conceptual basis for architectural and urban design
- ✓ Principal of harmony and contrast of colors
- ✓ Color perception in old age and design ergonomics for old age people

Automobile:

- ✓ Color evaluation by instrumental methods and creating temperature- light stable formulations
- ✓ Study on color determination process and criteria of leading automobile companies
- ✓ Technology adoption in the automobile paint and coatings industry



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