

## **Sensegood spectrophotometer for color measurement and quality control in pulp, paper and packaging industry**

Paper Industries are widely using color dyes from last so many decades. Seeing the growth in the paper industry it can be safely assumed that dyes for paper industry has a very promising future. Optical brightening agents like violet and blue dyes or red-yellow absorbing pigments are often used to achieve required brightness.

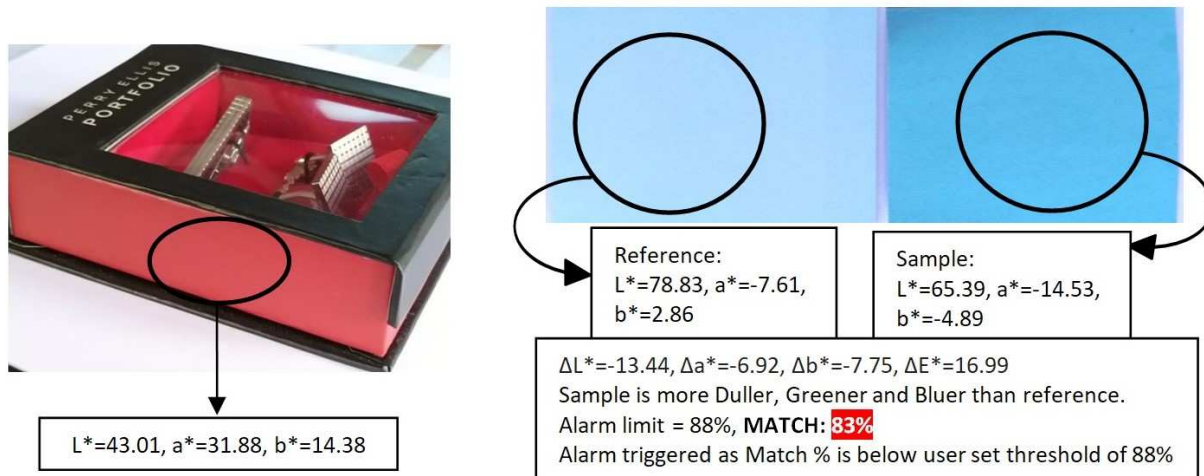


Photo: Color measurement and quality control in paper and packaging

### **Comprehensive list of the various grades of papers which are open to dyeing:**

- Writing and printing paper
- Tissue - facial, toilet, towel, napkin
- Copier papers
- Boards/cover papers
- Decorative laminated paper
- Corrugated boxes, paper bags, packaging materials
- Envelope grades
- Specialty papers like, label, laundry tag, posters
- Visiting cards and invitation cards

The appearance of paper is determined by the application in which it is to be used. Process parameters and additives need to be controlled in order to achieve desired brilliant colors and light fastness. The permanence and durability directly depend on process quality of pulp and dyes. Environmental effects like temperature and humidity degrade light fastness.



#### **Sensegood Spectrophotometer for color management and quality control in pulp, paper and packaging products**

Photo: Customers recognize brands by their color. It is important for a brand to maintain consistency in its product's packaging color. Inconsistent color and appearance damages brand image. Left: color space values measured in Sensegood spectrophotometer. Right: Amount of color match measured in two closely colored papers. Sensegood spectrophotometer provides information that the sample is dull, so use optical brightening agent to compensate.

#### **Packaging:**


Color can make your product stand out from the shelf or fade into a sea of packages. Packaging is arguably the most visible component of marketing, and certainly one of the most important. The human eye is perceptive to even the slightest differences in color, and studies have shown that such slight differences and inconsistencies in packaging can have a significant impact on consumers' perception of the product inside. According to one study [1] cited by Billerudkorsnas – Swedish pulp and paper manufacturer [2], people make up their mind within 90 seconds of their initial interactions with products, and as much as 90% of the assessment is based on color alone.

Brand owners stake their careers on maintaining consistency and integrity in the market, yet they will often rush a product to market without considering the impact of poor color management in the packaging supply chain. Of course, poor color management is symptomatic of a much larger problem global brands face with regards to packaging.


#### **Sensegood spectrophotometer for color quality management in paper and packaging industry:**

Many paper manufacturers rely on color measurement quality delivered by Sensegood spectrophotometer. It assists to achieve consistency in appearance from sheet to sheet across all production batches. Large viewing area (sensor's field of view) and rotating sample platform averages out sample and produces accurate repeatable color attributes. Sensegood spectrophotometer is the versatile device that is engineered to work as handheld/portable, benchtop/table-top or in-process/online color measurement instrument. It can work for solids, powders, liquids and pulp pastes. It can work as contact measurement or distance/non-contact measurement instrument. It removes subjectivity from color identification. It has its own independent full spectrum LED light source which enables true object color measurement. Online color measurements in paper pulp using Sensegood spectrophotometer in auto measurement and compare mode quickly assists for process corrections. It also has provision for averaging option in normal mode as well as in auto repeat measurement mode.

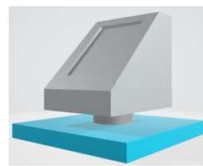
**SENSEGOOD SPECTROPHOTOMETER - UNIVERSAL (REFLECTANCE)**




(a)



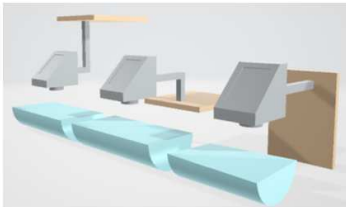
(b)



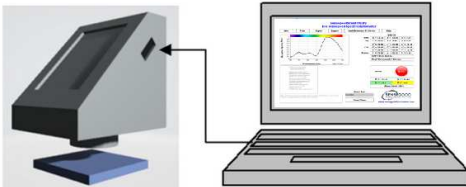
(c)



(d)



(e)



(f)

- ✓ Benchtop/ Tabletop: (a) (b)  
(Rotating sample platform)
- ✓ Handheld/ Portable: (c) (d)
- ✓ Online/ In-process: (e)
  
- ✓ Solid: (a) (c) (d) (e)
- ✓ Liquid: (b) (e)
- ✓ Paste: (b) (e)
- ✓ Powder: (a) (b) (e)
  
- ✓ Contact measurement: (c) (d)
- ✓ Non-contact measurement: (a) (b) (e)  
(Adjustable height)
  
- Works with:
- ✓ 5V adapter (cell phone charger)
- ✓ Power bank
- ✓ Computer/ Laptop (f)
  
- ✓ Averaging
- ✓ Auto repeat measurement mode
- ✓ Color match percentage
- ✓ Color indices (whiteness, yellowness, ...)
  
- ✓ *SensegoodSmart*  
– computer interface software utility

Achieving the desired product color with an efficient and streamlined process is the goal of every color quality process. Color samples that deviate from the standard compromise customer satisfaction. These non-uniform samples also increase the customer rejection rate. Ensure consistency and accuracy throughout your quality process by establishing color tolerances. A color tolerance is the acceptable difference in color between a sample and the standard. For color to be acceptable, your color tolerance values should always correlate to the human eye. Sensegood spectrophotometer compares color of sample with saved standard reference giving match value in percentage. If matching is poor; below set threshold, it provides audible alarm and display indication on LCD to alert operator. Hence operator can quickly react and take appropriate action. The information assists for the prompt corrective action which ultimately minimizes off-quality product, increases throughput and maximizes equipment usage. This surely results into low operational cost with improved product quality, consistency and market acceptability.

#### **Do more with Sensegood spectrophotometer:**

Sensegood spectrophotometer provides wide varieties of indices like whiteness index and yellowness index. Measured CIE L\*a\*b\* values indicate strength of color parameters like: bright or dull, red – green and yellow – blue respectively. Measured color is also represented as reflectance graph, peak wavelength and color temperature on color touch LCD. Sensegood spectrophotometer is non-messy non-contact type instrument which has benefit of measuring sample's color from a distance. Because of this, sensor's optical assembly remains scratch proof enabling long life in retaining calibration.

### SensegoodSmart utility:

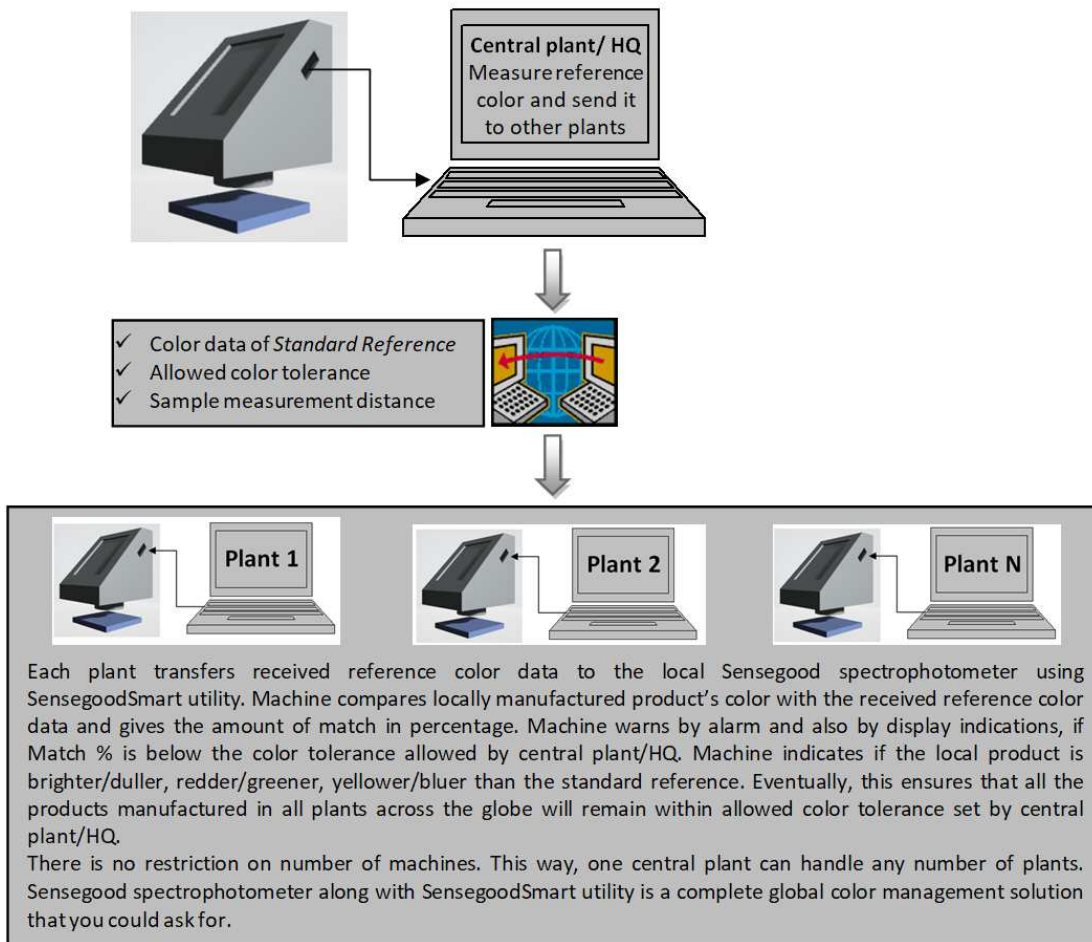


Photo: SensegoodSmart utility for color management across multiple production plants. Apart from this, SensegoodSmart utility enables user to store unlimited number of references to the computer. Any desired reference can be recalled and downloaded to Sensegood spectrophotometer whenever required. The utility provides all color related analytical information on single screen. This feature is even more desirable when using Sensegood spectrophotometer for in-process/online applications.

Sensegood spectrophotometer provides computer interface software *SensegoodSmart* which lets you to convey numeric color data across all production plants that may be located at multiple places across the globe. Each production plant uses Sensegood spectrophotometer to compare color attributes of the product manufactured in their plant with the numerical color information received from central plant or management. This enables them to reproduce each product consistently across all the plants. The facility is desirable for maintaining color quality in packaging supply chain across globe.

### References:

[1] Singh, S. (2006), "Impact of color on marketing", Management Decision, Vol. 44 No. 6, pp. 783-789.

Available at: <https://doi.org/10.1108/00251740610673332>

[2] The Importance of Color Management in Packaging – Color Consistency, Predictability and Repeatability Demand Good Color Management, Billerudkorsnas – Swedish pulp and paper manufacturer.

<https://www.billerudkorsnas.com/>





[www.sensegoodinstruments.com](http://www.sensegoodinstruments.com)

Phone, WhatsApp, Signal, Telegram: +91 79 8484 8002  
info@sensegoodinstruments.com



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