

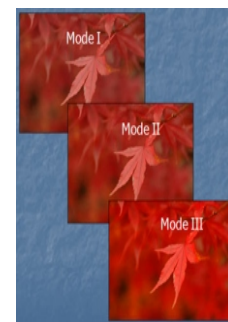
# Color Comparison Analysis

Spectro provides Instrument color comparison analysis services. Colour comparison play a important role in various industries. Instrumental colour comparison allows you to capture colour data anywhere and from samples of any shape or size in any industry. Color comparison is an important aspect of quality and consumer satisfaction in a variety of sectors. Examples are **Textile, Paper, and Polymer, Building material and Printing industry automotive, textiles and packaging, to mention just the most prominent in the plastics and rubber industry.** Colour comparison instrument is truly userfriendly portable instrument providing you the flexibility and freedom to evaluate colour wherever and whenever you need it. Coloured sample analyzed with spectrometers to give **color coordinates and/or other color characteristics** of the sample.

The technique has certain advantages such as it can provide reproducible data regarding the closeness of a color match, it provides information on how the colour is perceived

## Implementations

- Colour comparison Testing is a colour comparison that measures the colour of a target colour.
- Colour comparison allows the user to sample any number of comparison colours to determine a colour match.
- The Testing provides solutions to check the accuracy of the colour.
- Colour comparison technique that can be used within different applications and industries.
- The software programme has the capability to have the results saved for record keeping and the ability to export results to a file.
- Data Colour comparison instrument provide useful datas in Textile, Polymer etc industries.



## CIE Colour space

Study of the perception of color, one of the first mathematically defined color spaces was the CIE 1931 XYZ color space created by the International Commission on Illumination (CIE).

In the CIEXYZ color space, the tristimulus values are not the S, M, and L responses of the human eye, but rather a set of tristimulus values called X, Y, and Z, which are roughly red, green and blue, respectively.

Due to the nature of the distribution of cones in the eye, the tristimulus values depend on the observer's field of view.. Originally this was taken to be the chromatic response of the average human viewing through a 2° angle, due to the belief that the color-sensitive cones resided within a 2° arc of the fovea.

## CIE Colour space coordinate chart

Colour Difference formula

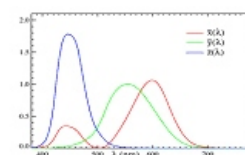
$$E_{ab} = [(L^*)^2 + (a^*)^2 + (b^*)^2]^{1/2}$$

$$L = L_{\text{sample}} - L_{\text{standard}} \quad (\text{Lightness difference})$$

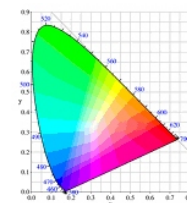
$$a = a_{\text{sample}} - a_{\text{standard}} \quad (\text{red/green difference})$$

$$b = b_{\text{sample}} - b_{\text{standard}} \quad (\text{Yellow/blue difference})$$

## Color-matching Function



CIE standard observer color-matching Function

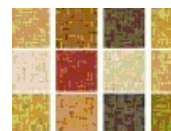


The CIE 1931 colour space chromaticity diagram

## Applications:

### Building Product Industry:

Spectro Lab systems measure reflected and transmitted color of various building industry products such as **concrete, adhesives, grout, tiles, siding, Tiles, rock, roofing and glass.**



### Paint and Coating Industry:

Spectro Labs provides proven, cost-effective color measurement systems to the paint and coating industry. Use them to measure a wide range of samples including **coated products, pigments, Paint chips, bases, drawdowns, and finished product.**



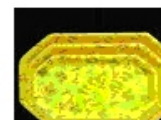
### Paper Industry:

Spectro Lab systems measure how your paper product appears to you customer. They give numerical values that correlate to what you see and measure the color, brightness and opacity of paper, pulp, board, Coated/Uncoated and additives. Use them for quality control and continuous process control applications.



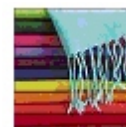
### Polymer Industry

Spectro Lab systems measure the reflected and transmitted color, whiteness, Yellowness and haze of plastic products. Samples measured include color concentrates, bottles, pellets, plaques, films, sheet, molded, extruded etc.



### Textile Industry

Spectro Lab systems measure reflected and transmitted color and is used in the textile industry for quality control, process control and shade sorting. You can measure a wide range of products including dyes, staple, fiber, yarn, Thread, rope and fabric.



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