

Things Required

To See Color



Light Source



Object



Observer

To Measure Color



Light Source



Sample



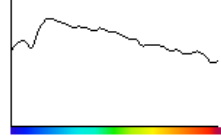
Spectrophotometer

Color Measurement

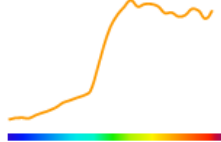
- ✦ The **CIE X, Y, Z tristimulus color values** are obtained by multiplying the illuminant, the reflectance or transmittance of the object, and the standard observer functions.
- ✦ The product is then summed for all wavelengths in the visible spectrum to give the resulting **X, Y, Z tristimulus values**.



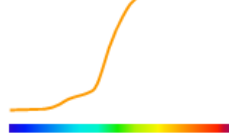
CIE Illuminant D65



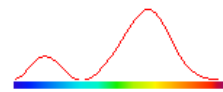
Visual Stimulus



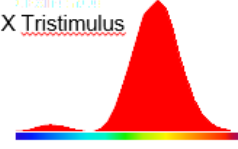
Reflectance



CIE \bar{x} Observer

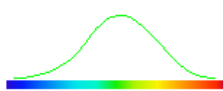


CIE X Tristimulus

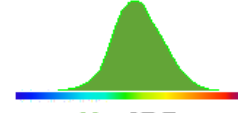


X = 41.9

CIE \bar{y} Observer

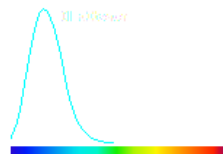


CIE Y Tristimulus



Y = 37.7

CIE \bar{z} Observer



CIE Z Tristimulus



Z = 8.6

X = 41.9 Y = 37.7 Z = 8.6

Measuring Color



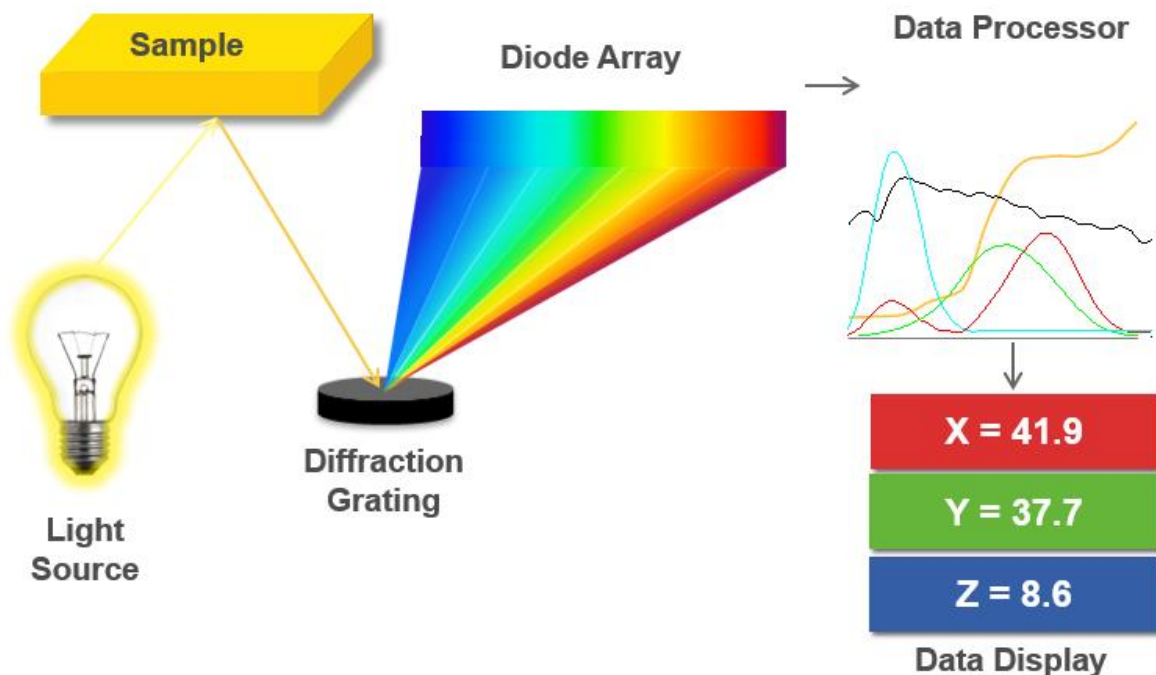
A **Colorimetric Spectrophotometer** uses a light source to illuminate the sample being measured.

The light reflected by the object passes to a grating which breaks it into its spectral components.

This sample signal falls onto a diode array, measuring the amount of light at each wavelength.

The spectral data is sent to the processor where it is multiplied with user-selected illuminant and observer tables to obtain CIE X, Y, Z color values.

Measuring Color



HunterLab Spectrophotometer Systems



MiniScan® EZ



ColorFlex® EZ

Agera®



UltraScan® VIS



Vista®



UltraScan® PRO



Aeros®

