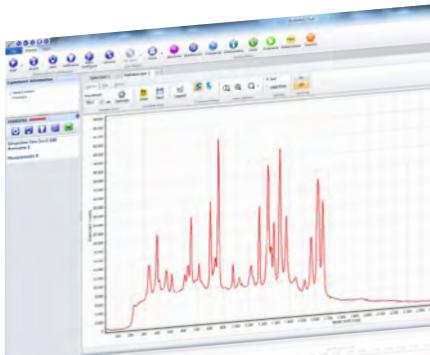# AvaSoft - Color

For online and offline reflective color measurements, AvaSoft-COL is the ideal companion. This application provides a precise way to perform color measurements using the basic principles and techniques defined by the International Commission on Illumination (CIE). The CIE 1976 L*a*b* color parameters are calculated, along with other parameters, like Hue, Chroma and X, Y, Z.

These parameters can be displayed in a CIELAB chart or in a graph versus time. Another possibility is saving the measured L*a*b* values to an online database and using one of the products from the database as a reference color. Color differences (ΔE_{Lab}, $\Delta L*$, $\Delta a*$, or $\Delta b*$) are made through comparing the measured L*a*b* values to the stored database values.

The color of an object can be expressed by the CIE 1976 (L*a*b*) color space. L* describes the brightness of the color. A positive value of a* describes the redness of the color, a negative a* the greenness. Similarly, yellowness is a positive b*, where blue is a negative b*. The L*a*b* values are derived from the CIE tristimulus values X, Y and Z of the sample (object) and the standard illuminant tristimulus values X_n, Y_n and Z_n.

The standard illuminant tristimulus values for X_n, Y_n, and Z_n are constant and depend only on the type of standard illuminant that has been chosen.

The CIE tristimulus values X, Y and Z of the color of an object are obtained by multiplying the relative power P of a standard illuminant, the reflectance R (or the transmittance) of the object, and the 1931 or 1964 CIE standard observer functions x_n, y_n and z_n (2 and 10 degree angles). The integral of these products over all the wavelengths in the visible spectrum (380 to 780 nm with a 5 nm interval) gives the tristimulus values.

Color chart

The color chart display features:
- Display in CIELAB chart, the actual sample color as well as the reference color with the corresponding ΔE_{Lab}, $\Delta L*$, $\Delta a*$, or $\Delta b*$ values are displayed and saved as well.
- The settings for the LAB chart display can be changed, such as no graphical display of reference and sample color in order to speed up the measurements.
- The standard observer angle is selectable for 2° or 10°.
- The reference color can be saved to and loaded from a color database. The database contains, apart from all color parameters, a product ID and a display of the actual color. The database can be sorted alphabetically or in either value column.

Time series

The time series display has following features:
- Display in time series can be selected for any number of channels.
- For each channel a color parameter (L*, a*, b*, hue, C, X, Y, Z, ΔE_{Lab}, $\Delta L*$, $\Delta a*$, or $\Delta b*$) can be selected. For each channel a different reference color can be selected, enabling color sorting.
- For each channel the time axis can be set to a different scale, allowing simultaneous display of long time and short term monitoring of the same parameter.
- For each channel the actual measured color, as well as the reference color (if in ΔE_{Lab}, $\Delta L*$, $\Delta a*$, or $\Delta b*$ mode) is displayed.
- The saved time series data can be displayed with extensive zooming and dragging options.

Ordering Information

AvaSoft-COL	• Color application add-on software, to be ordered with AvaSoft-Full
AvaSoft-All	• Full version AvaSpec software (includes AvaSoft-COL, -IRRAD, -Raman and, -ThinFilm)

AVANTES
MEMBER OF THE NYNOMIC GROUP