

## VL ColorCalc Basic and Advanced Color Calculation Software

Automated calculation of color parameters



Automation features of the VL ColorCalc software make the calculation of color parameters fast and easy. VL ColorCalc software offers an extensive range of calculations serving a variety of color determination needs – from pharmaceutical to industrial.

VL ColorCalc is a MS Windows® software package designed to perform numerous color calculations. The software communicates with many Thermo Scientific UV-Visible spectrophotometers including the GENESYS™, Helios™ and the Evolution™ series instruments. VL ColorCalc is a powerful stand-alone software package allowing full instrument and accessory control. In the stand-alone configuration, VL ColorCalc records the required transmission or reflectance spectrum and automatically performs calculations using the recorded data. The software can also perform calculations using data acquired by VISION<sup>lite</sup>™ or VISION<sup>pro</sup>™ software.

### Thermo Scientific UV-Visible Spectrophotometers Controlled by VL ColorCalc Software

Evolution 600, 300, 100
Helios Alpha, Beta, Gamma, Delta
UV1
AquaMate (Vis or UV-Vis)
GENESYS 6
GENESYS 10
GENESYS 20

The calculations available in VL ColorCalc are derived from national and international standards like CIE, DIN, and ASTM. The table on the following page provides a comprehensive list of calculations available in the VL ColorCalc Basic and VL ColorCalc Advanced packages. Calculations can either be performed automatically after a spectrum is recorded or the analysis can be performed offline with stored spectra. The software can import data from VISION<sup>pro</sup>, VISION<sup>lite</sup>, or in a text (txt and csv) file format.

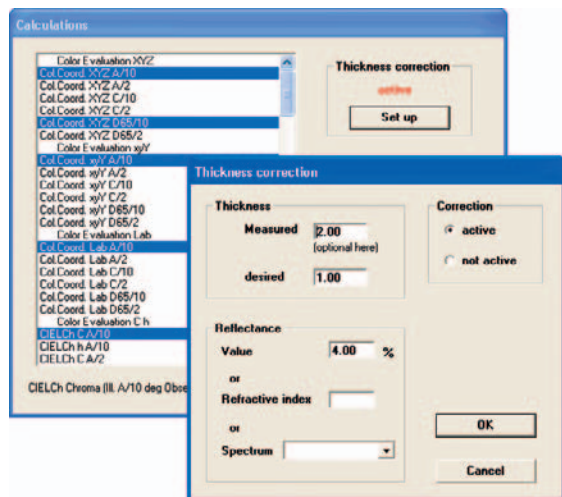


### Easy Setup and Operation

The VL ColorCalc program is easy to configure and operate. Simply set up the scan method, select the calculations you wish to perform, and run the method. The VL ColorCalc software controls the instrument and accessories and automatically performs the calculations on the data. The method can also be set to automatically print or save the results. All of the calculation parameters, such as sample thickness, are stored with the method ensuring sophisticated evaluation with a few mouse clicks.

### Sample Thickness Transformation

To characterize transparent materials it may be necessary to generate results for a standard sample thickness. The sample thickness recalculation of a spectrum can be based on a single reflectance value, on the material's refractive index, or on a full single-surface reflectance spectrum.



VL ColorCalc software provides sample thickness calculations for the characterization of transparent materials

## CIE, DIN, ASTM Color Measurement

VL ColorCalc records the required spectra in transmittance or reflectance and calculates standard color values like Tristimulus, Chromacity and CIE Lab for different illuminants and observers as well as the CIE Lab color difference and whiteness/yellowness indices. Measurements for the most common illuminants and observer angles are included in the VL ColorCalc Basic software package. See the table of calculations for more details.

## EP, Apha/Hazen, etc. Color Inspection

The VL ColorCalc Advanced software package automates the testing of the color of liquids required by EP (European Pharmacopoeia) and the norms defining the Apha/Hazen/Pt-Co, Gardner or Iodine color scales. Remarkably, some of this testing is still done by visual comparison of the sample to a reference solution. VL ColorCalc Advanced automates the calculations and makes them objective and reproducible by comparing data extracted from the sample to stored reference values. This analysis can be performed using either 5 or 10 cm pathlength cuvettes.

## Mathematical Calculations and Decisions

VL ColorCalc performs user-definable calculations and logical decisions with data from a single spectrum or multiple spectra. Automation allows the user to be queried for variable entry, giving even more flexibility to the method.

## Customizing VL ColorCalc

VL ColorCalc allows users to:

- Modify the list of available calculations
- Change the way calculations are performed based on the existing algorithms
- Change the naming of the pre-defined calculations
- Change the format or the output and the units

## Product Information

Product	Part Number
VL ColorCalc Advanced	869-124400
VL ColorCalc Basic	869-124300

CALCULATION	VL COLORCALC BASIC	VL COLORCALC ADVANCED
<b>Color Value over Standard Range (400 – 700 nm)</b>		
<b>All with A, C, D65 Illuminants and 2° &amp; 10° Observer Angles*</b>		
XYZ (Tristimulus) color values	✓	✓
xyY color values (Chromacity)	✓	✓
CIE Lab color values	✓	✓
C, h color values (D65/10° and C/2°)	✓	✓
<b>Color Value over Extended Range (380 – 780 nm)</b>		
<b>All with A, C, D65 Illuminants and 2° &amp; 10° Observer Angles*</b>		
XYZ (Tristimulus) color values	✓	✓
xyY color values (Chromacity)	✓	✓
CIE Lab color values	✓	✓
C, h color values (D65/10° and C/2°)	✓	✓
<b>CIE Color Difference</b>		
Color Difference to Lab data (DIN 6174)	✓	✓
Color Difference to reference spectrum (DIN 6174)	✓	✓
<b>Whiteness and Yellowness Indices</b>		
Whiteness Index (CIE 1982)	✓	✓
Whiteness Index (Ganz)	✓	✓
Yellowness Index (ASTM 1925)	✓	✓
<b>Color Evaluation According to European Pharmacopoeia 1 and 5 cm Pathlengths</b>		
Color comparison for reference solutions B5-B9		✓
Color comparison for reference solutions BG4-BG7		✓
Color comparison for reference solutions G4-G7		✓
Color comparison for reference solutions GG4-GG7		✓
Color comparison for reference solutions R4-R7		✓
<b>Simple, One-Dimensional Color Scales</b>		
Pt-Co/Apha/Hazen Color Figure (1, 5, 10 cm) (DIN 53409, ISO/DIS 6271)		✓
Pt-Co/Apha/Hazen Color Figure (1 cm) Comparison/Check		✓
Gardner Color Figure (1 cm) (ISO/DIS 4630-2)		✓
Gardner Color Figure Comparison/Check		✓
Iodine Color Figure (1 cm) (DIN 6162)		✓
<b>Wine Color</b>		
Tonality Sudraud (420/520 nm)		✓
Color Intensity Glories (420/520/620 nm)		✓
Color Intensity Red. (420/520 nm)		✓
Color Percentages red/blue/yellow		✓
<b>Miscellaneous</b>		
Neutrality of Class 2 Test (FQSE)		✓
Transmission – 365 nm		✓

\* The Standard Observer specifies the amount of the 3 imaginary primaries (X,Y,Z) required to match the spectral colors. Users can also specify the amount of the 3 imaginary primaries (X,Y,Z) required to match an object color under a specified light source.