

THE VENEER COLOR ANALYZER ALLOWS A COMPLETE MEASURE OF COLORS AND CAN QUANTIFY THE VISUAL RESULTS

V.C.A. definition and target

V.C.A software is dedicated to measure heterogeneous colored surfaces. It takes into account irregularities in the color of a sample, and **studies its entire area**, contrary to any systems currently existing. Moreover, V.C.A. can focus on specific details or regions of the wood.

Main functions:

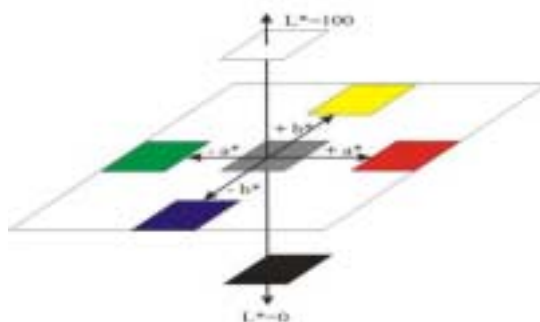
1. Comparison of the **average color (dE)** of 2 samples
2. Evaluation of the **color components** with location in a four-color graphical display
3. Detailed separated analysis : general color, **background color**, grain color
4. **Contrast** appreciation and veins study (separation, thickness and orientation)
5. Stained formulation: recording of series tested and graphical guideline for the colorist
6. Management of the **database** for samples and patterns

Function principle of V.C.A. = L, a, b, space

V.C.A. uses the SFE norm for evaluation of the light components reflected by the colored surface. Each value of color is summarized by the location of a point in a three-dimensional graphic: $E = f(L, a, b)$.

The processing scheme is based on calculating several data of wood color, as the amount of yellow-blue (a) and green-red (b), and the brightness (L). That computes a value for E. That is done for each part of a highly accurate photograph of the product being tested.

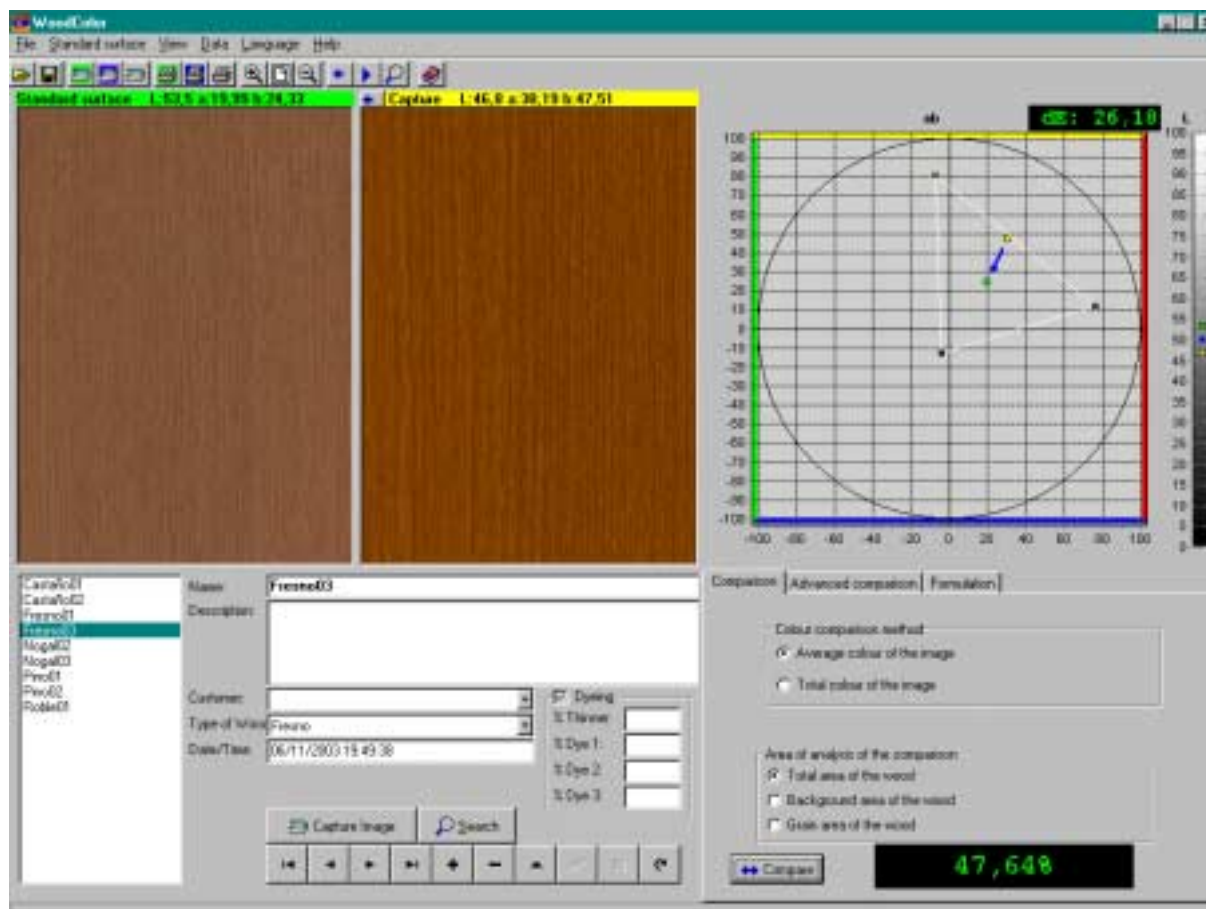
Differences between a pattern and a specimen are then calculated, as ΔL , Δa , Δb , which induct ΔE . Integrated for the whole surface, ΔE is the Euclidean distance between the 2 average colors of the samples. Finally, for a quick and best significant figure, the result is given with a percentage, as the “**degree of similarity %**”, where $\Delta E = 0$ means 100 % of similarity, and $\Delta E = 50$ means 0% of similarity



V.C.A. software is also able to work on pixel counting = from the pattern to the specimen, the numbers of exactly similar pixels are determined. This can be done separately for the background and the veins, with thin or large selected details.

Software interface: I.H-M and operation

Surfaces to test are selected in A4 format and digitized with a highly accurate scanner, and then recorded in a data base as bitmap images. Level analysis and parts of samples to compare are chosen, and measurement starts.



V.C.A. software only requires a few seconds to proceed to the operation of comparison. Results appear thanks to “dE”, as explained above, and through “similarity degree in %”. Graphical results show the relative position of the pattern and the specimen in the color space (zoom available), and a complete report can be automatically printed.

All these calculated data don't require any specific calibration as the software is equipped with auto-test procedures, to check if it is adjusted correctly to give the more accurate results possible.

This software is useful for several industries where it is used for products development, analysis, and control processing applications :

- wood panel industry -> veneer faces, dyed wood, edgebanding, veneered panels
- laminated industry -> papers, melamine, pvc, overlays

V.C.A. system components : V.C.A. software + high accurate office scanner + firmware + computer (Pentium IV dual core PC preferred, with OS Windows XP)

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