

## Determining Spectrophotometer UV Filter Position in Datacolor Tools 1.x

The measured reflectance of materials that contain optical brighteners or fluorescent colorants is directly affected by the amount of ultraviolet (UV) energy present in the light source when the material is measured. In order to accurately measure these types of materials, the amount of UV energy emitted by the light source of the spectrophotometer must be controlled. This is accomplished by calibrating the UV filter on the spectrophotometer using a “Fluorescent Reference Standard” and the “UV Calibration” program in Datacolor Tools 1.x. The “Fluorescent Reference Standard” is a white ceramic tile with a red label and is included in the spectrophotometer calibration kit. This capability is only available on spectrophotometer equipped with a UV filter.

The target whiteness values and whiteness parameters for the “Fluorescent Reference Standard” supplied with the spectrophotometer are listed on the “Instrument Ultraviolet Calibration” document provided with the reference standard and located in the instrument manual. These values and parameters are required in order to successfully calibrate the UV content of the spectrophotometer.

Prior to calibrating the UV filter, all tiles and the black trap should be examined for cleanliness. The tiles and black trap may be cleaned with a nonionic detergent solution or isopropyl alcohol and a soft, lint-free cloth. Lens wipes and commercial glass cleaners should not be used as they will degrade and discolor the surfaces of the tiles. The inside of the sphere should also be checked for contamination and cleaned as necessary with a suction device. Forced air should not be used to remove debris from the sphere, nor should any device be inserted into the sphere to remove debris.

### *UV Calibration Procedure*

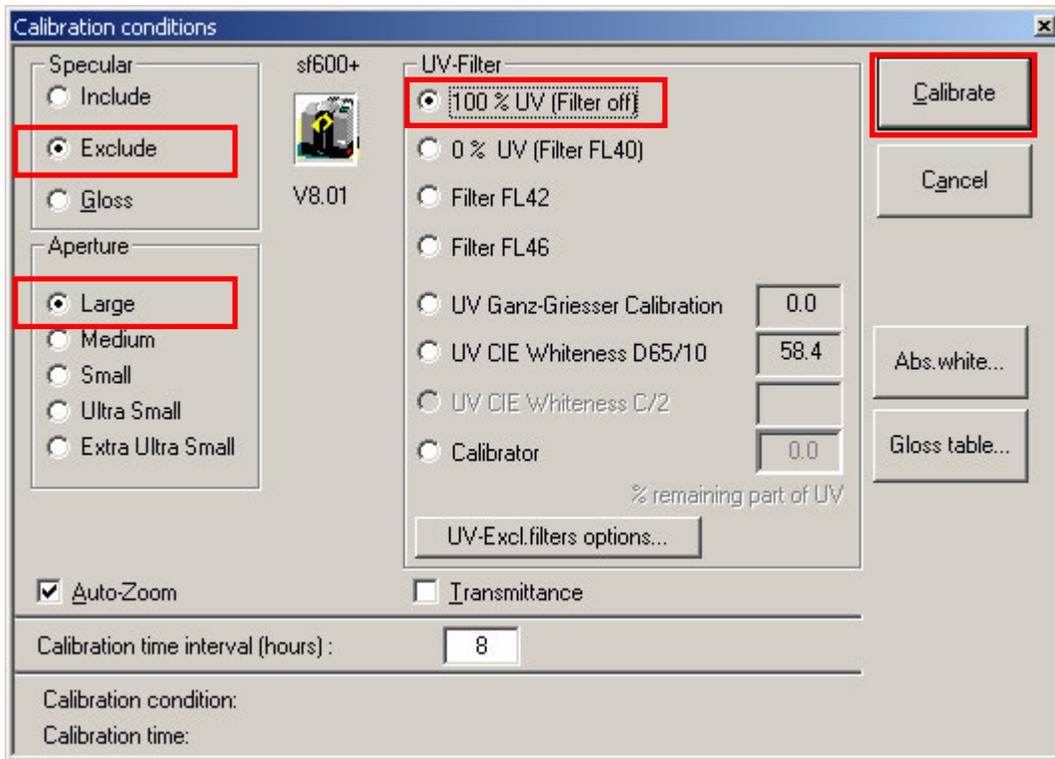
The following steps should be used weekly to properly calibrate the UV filter position on the spectrophotometer:

1 – Select “Calibrate” from the “Instrument” drop-down menu in Datacolor Tools 1.x.



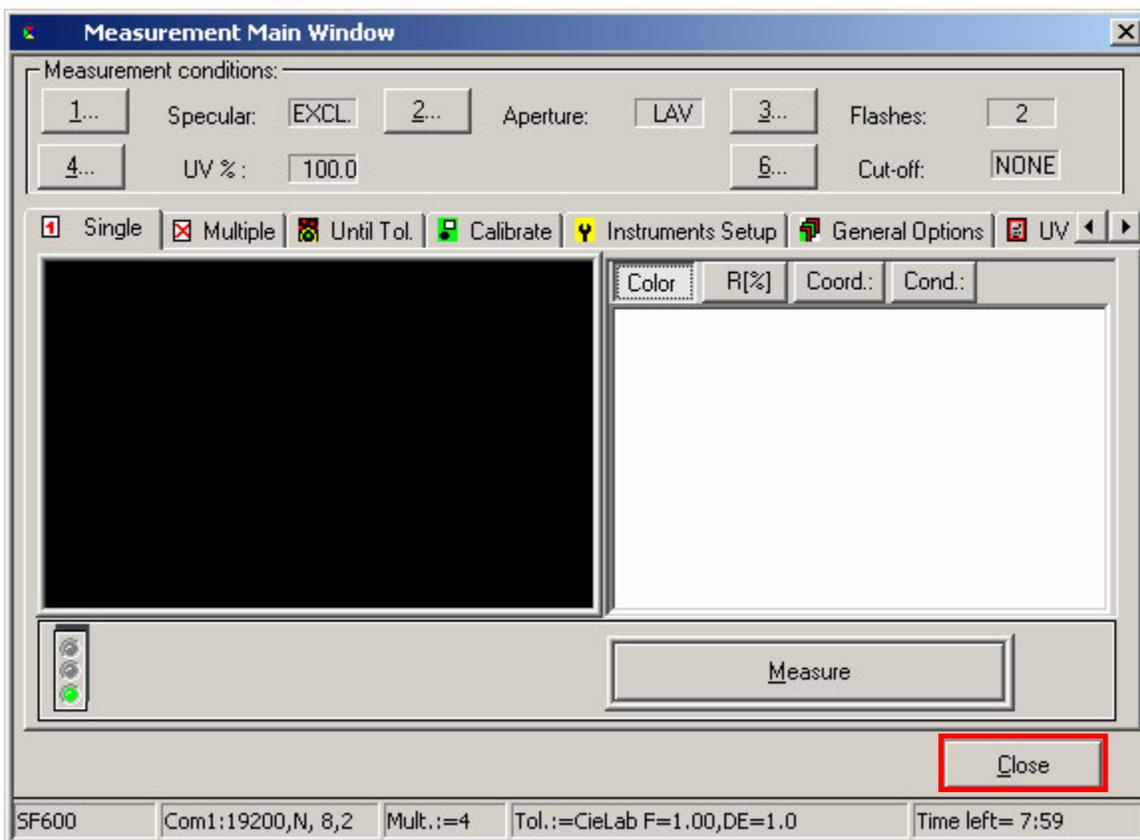
2 – Select the following conditions on the “Calibration conditions” window:

- **Specular:** Exclude
- **Aperture:** Large (LAV – 30mm)
- **UV Filter:** 100% UV (Filter off)

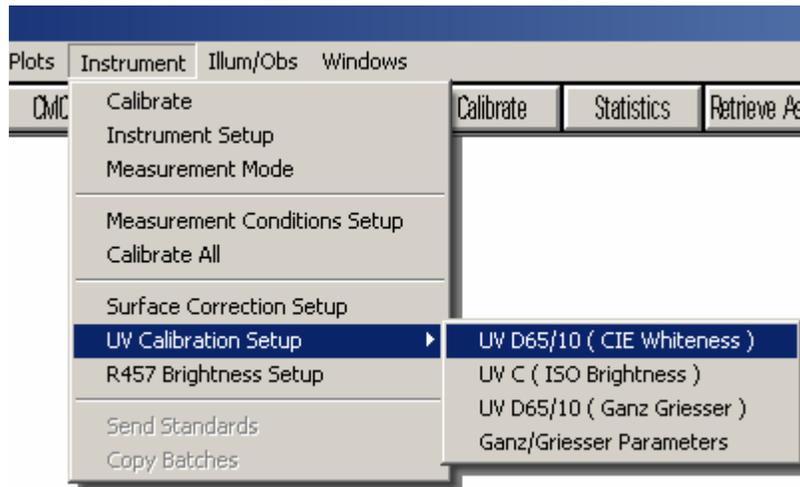


3 – Calibrate the spectrophotometer with the conditions specified in step 2.

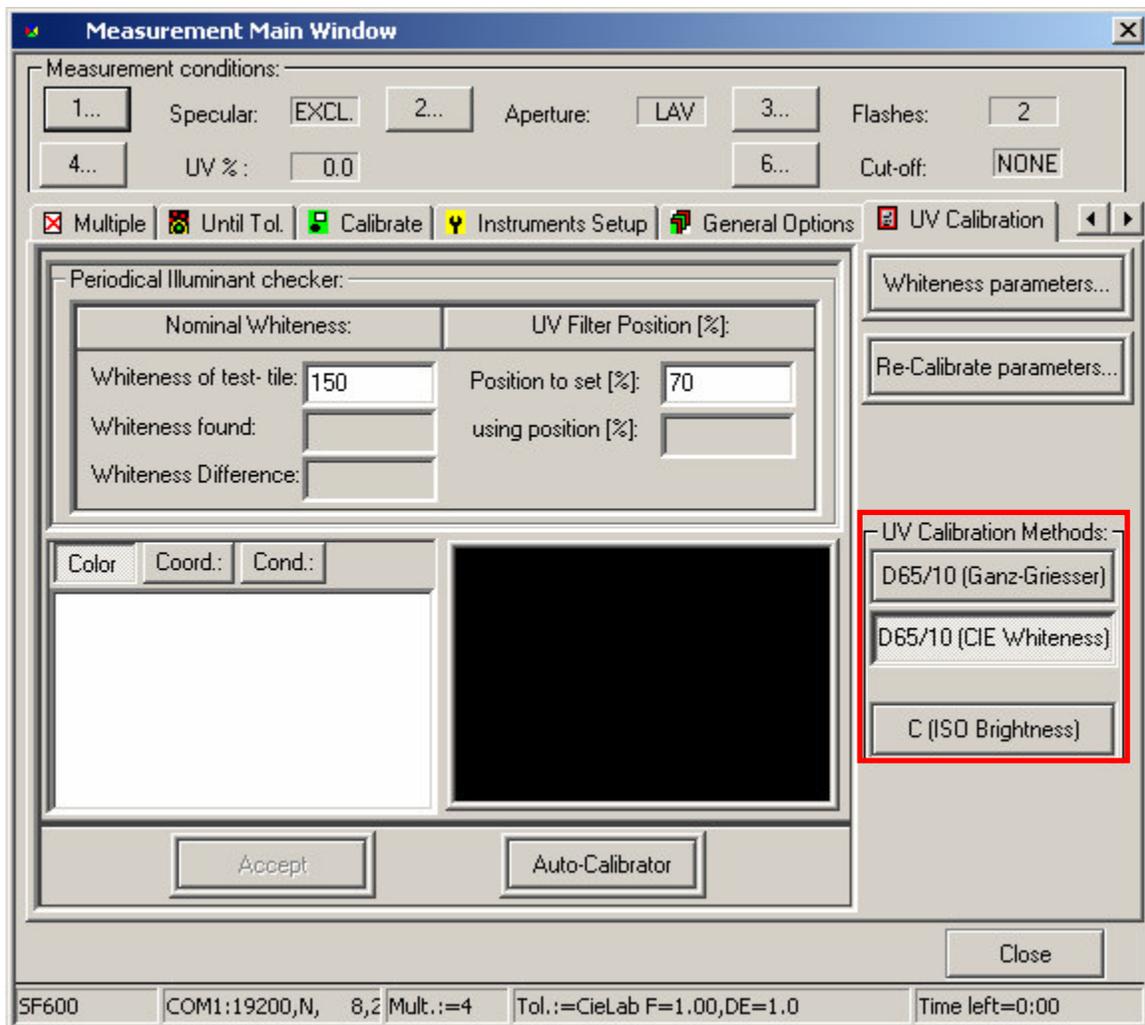
4 – Close the calibration screen after the instrument is successfully calibrated.



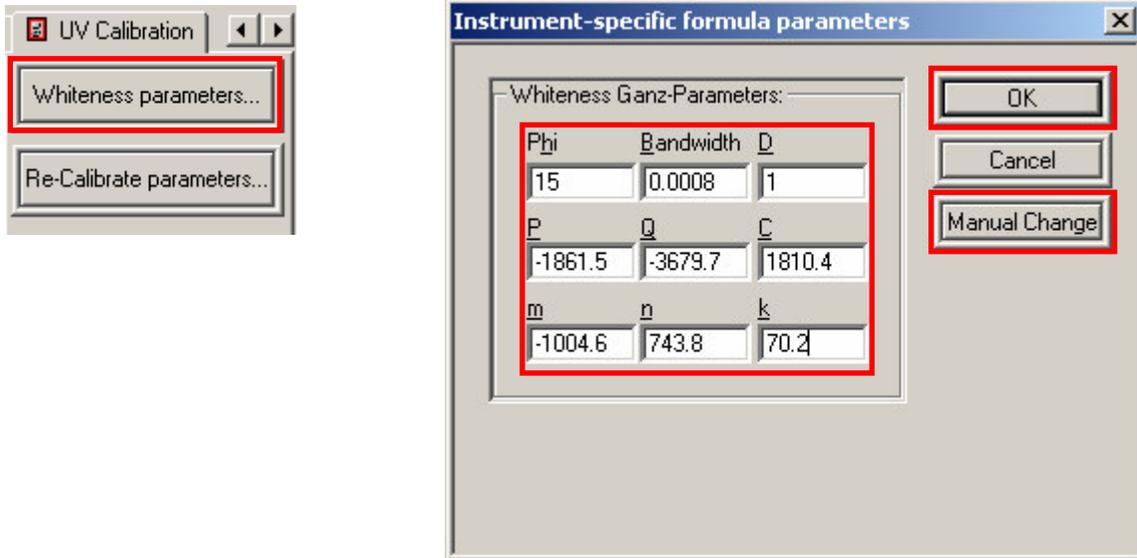
5 – Select “ UV Calibration Setup” from the “Instrument” drop-down menu in Datacolor Tools 1.x and click on the desired UV calibration method: CIE Whiteness, ISO Brightness, or Ganz Griesser.



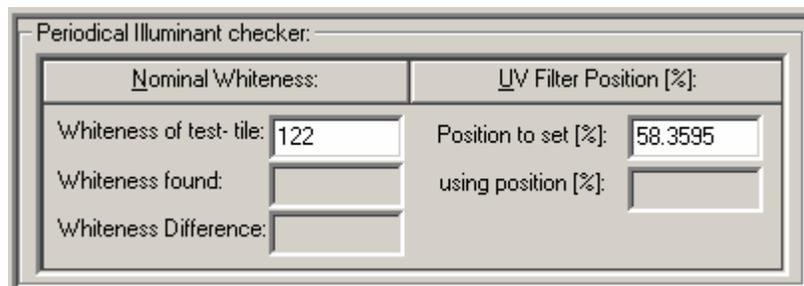
6 – The Measurement Main Window will be displayed and the specified UV calibration method will be selected.



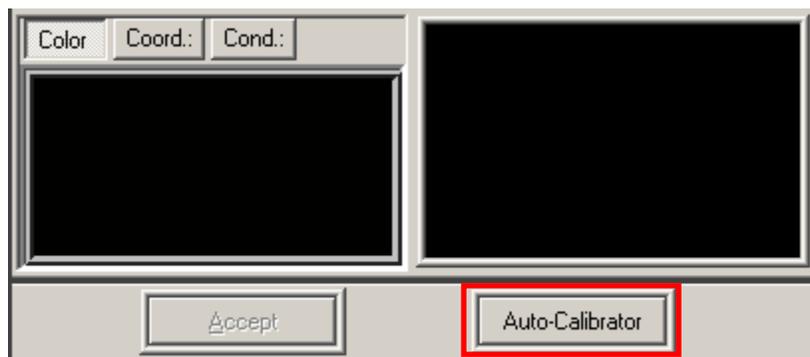
7 – If using the “Ganz-Griesser” method, the Ganz-Griesser whiteness parameters must be entered into the software. Click on “Whiteness parameters” to display the entry form for the Ganz-Griesser whiteness parameters. Click on “Manual Change”, enter the corresponding parameters from the “Instrument Ultraviolet Calibration” document, and then click on “OK”.



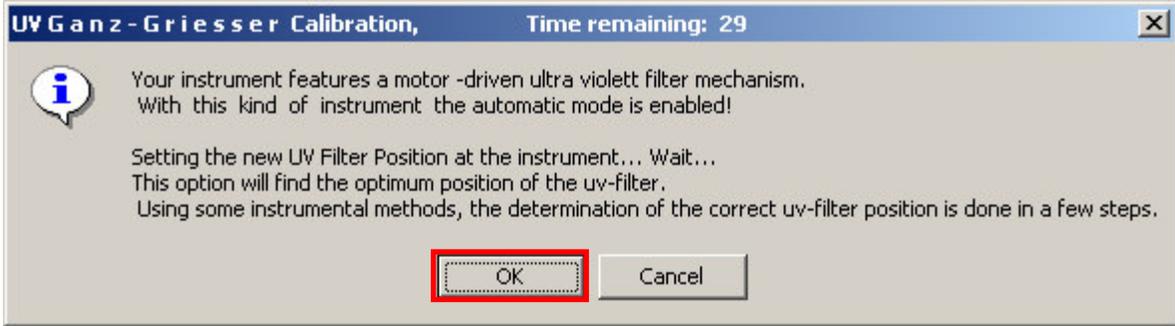
8 – Enter either the “CIE Whiteness” or “Ganz Whiteness” value – such as 122 or 169 – from the “Instrument Ultraviolet Calibration” document into the field labeled “Whiteness of test-tile”.



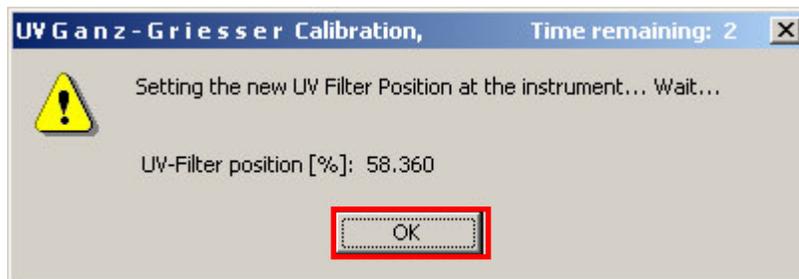
9 – Position the “Fluorescent Reference Standard” (the white tile with the red label) against the instrument, with the sample-holder arm firmly positioned into the recess on the back of the tile. Click on “Auto-Calibrator” to begin the UV calibration process.



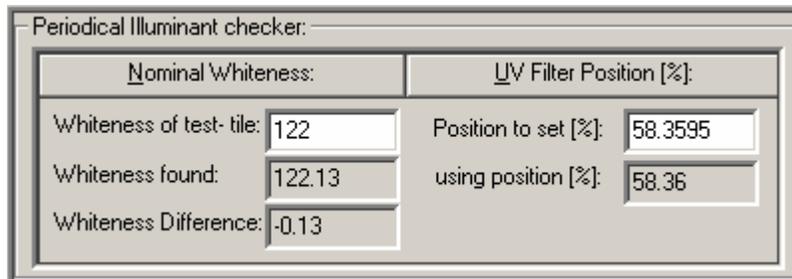
10 – Click on “OK” to start the UV calibration or “Cancel” to cancel the UV calibration.



11 – The UV filter will be automatically adjusted and measurements will be taken until the appropriate UV filter setting has been determined. Messages will be displayed for each UV filter adjustment. Click on “OK” when each message is displayed, or allow the program to automatically proceed. Several adjustments may be required in order to achieve the target whiteness value.



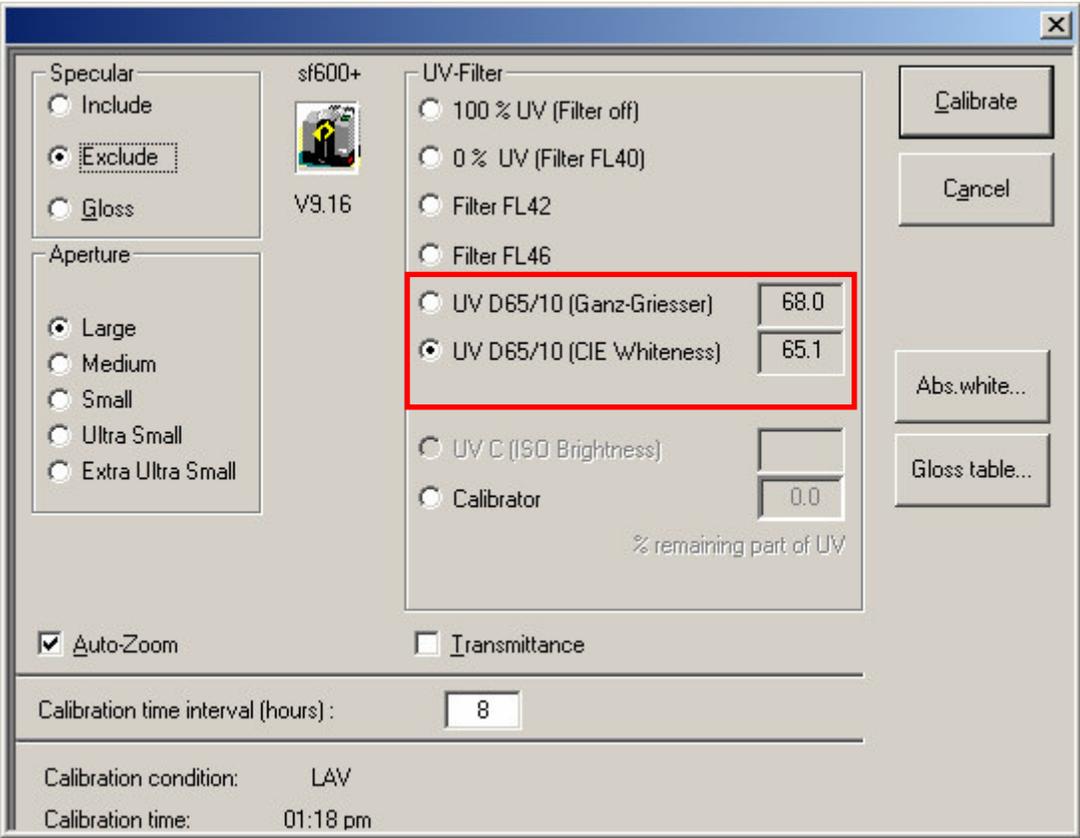
12 – The final UV filter percentage to be used will be displayed in the “Using Position (%)” field. The whiteness obtained with this percentage will be displayed in the “Whiteness Found” field. The difference between the target whiteness and the actual whiteness will be displayed in the “Whiteness Difference” field.



13 – Click on “Accept” to save the calculated UV filter position. Then click on “Close” to close the measurement window.



14 – Recalibrate the spectrophotometer as directed in steps 1-4, but use the appropriate UV filter setting as determined by the sample to be measured and/or the whiteness value to be calculated.



15 – Proceed with measurement of samples.