Measuring Transmissive Specimens

Step 1   **Start SpectraShop.**

Step 2   **Click the *Measure Specimens* button.**
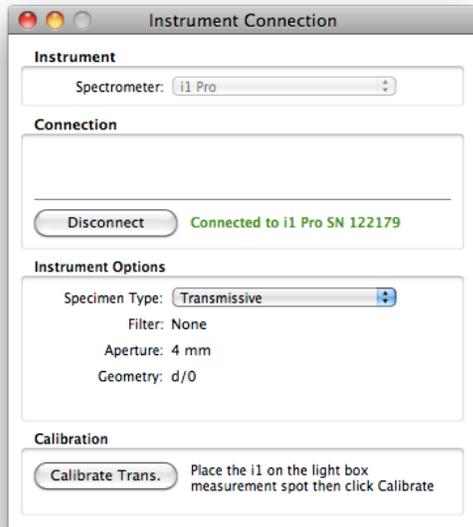
Step 3   **Select the *Instrument*.**

For this tutorial the i1Pro will be used.

Step 4   **Click the *Connect* button.**

When the connection is made the serial number of the instrument is displayed and the button's title is changed to *Disconnect*.

Step 5   **Select the Specimen Type to measure.**

For this tutorial select *Transmissive*.

Step 6   **Place the i1Pro on its calibration plate.**

Step 7   **Click the *Calibrate* button.**

When the calibration is completed successfully, place the i1Pro onto the lightbox so that it will measure the spot where the transmissive measurements will be taken.

Step 8   **Click the *Calibrate Trans.* button.**

When the calibration is completed successfully the *Measure Transmissive Specimens* window will appear.

Step 9   **Enter the *Specimen Information*.**

By default the *Auto Id* is active which will automatically generate Identifier 1 for each measured specimen. *Auto Id* is a very time saving feature if the specimens have a sequential naming system. Turn this off to manually enter each *Identifier 1*.

Step 10   **Select the measurement parameters.**

Selecting more than one *Measurement/specimen* will average the specified number of measurements. As each intermediate measurement is made a high pitched tone is sounded. A low pitched tone is produced to signify the last measurement for the specimen.
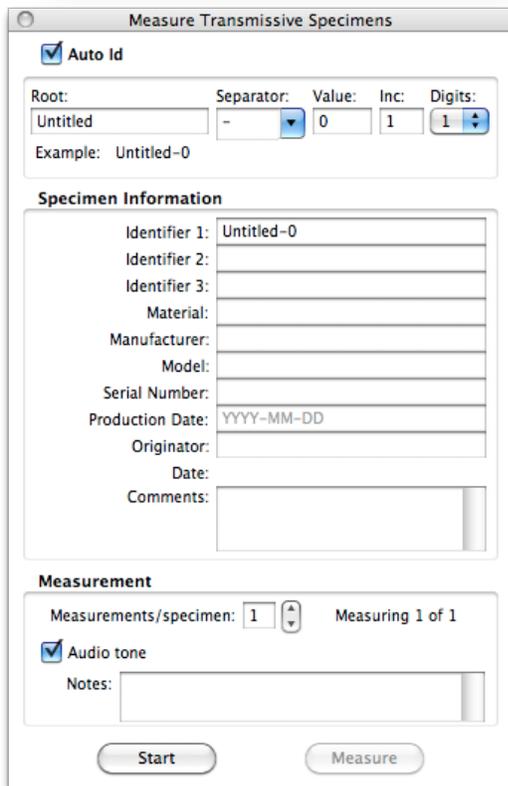
Step 11   **Measure the specimens.**

Place the transmissive specimens on the **exact** spot on the lightbox where the instrument was calibrated.

The measurements can be made by either pressing the button on the i1Pro or by clicking the window's *Measure* button.

Step 12   **Disconnect the instrument when finished.**

When all the specimens have been measured the *Disconnect* button in the *Instrument Connection* window may be clicked to prevent accidentally measuring additional specimens.

As each specimen's data is sent to the collection window, the specimen is selected in the specimen list, causing the spectrum, a simulated color patch, the metadata and the associated colorimetric values to be displayed. This gives visual authentication that the specimen was measured correctly.

Important notes about transmissive light sources

There are two very important qualities for the light source used for the measurements; the light source must be stable and the source should emit continuously across the spectrum from 380 to 780 nm.

Stability means that the emitted intensity of the source must not vary. Two examples of stable light sources include current controlled tungsten bulbs and fluorescent bulbs with high frequency electronic ballasts.

The spectrum measured by the instrument is the result of the multiplication of the light source emission with the spectral transmission of the specimen and the instrument's spectral sensitivity. The calibration of the lightbox measurement spot captures the light source emission and instrument's spectral sensitivity. To get the specimen's spectral transmission the measurement spectrum is divided by the calibration spectrum. If there are any regions of the light source's emission spectrum where there is no emission, then the division by the calibration spectrum will produce undefined mathematical errors since division by zero is undefined.

SpectraShop does have one feature that helps with discontinuous light sources, it will analyze the lowest and highest wavelength emissions and if it finds extremely low emission in these regions it will truncate the measured spectral range to the middle portion with usable emission.

For example, the following measurement of a white LED light source shows very little light emitted below 410 nm and the instrument does not measure above 730 nm. SpectraShop will truncate the measured spectra to the range of 410 to 730 nm.

Transmissive spectra will be limited to this range