

Application Note 6



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Application hints to use specbos 1201 for surface color measurement

The spectroradiometer specbos 1201 can also be used for surface color measurement. The $45^\circ/0^\circ$ as well as the diffuse/ 8° measuring geometry can be applied.

Preparation:

Following parts are necessary:

1. the color measuring program JETI color

This program has to be installed on the PC according to the operation instruction.

2. a broadband light source

In case of the $45^\circ/0^\circ$ geometry it has to be a collimated source, directed on the measuring sample. If a sphere for a diffuse illumination is applied it has to be ensured that the light intensity on the sample is high enough to avoid extremely long measuring times. In all cases the light source has to cover the wavelength range of 380 ... 780 nm or at least of 400 ... 700 nm. Furthermore the light output has to be stable to obtain reproducible measuring results.

3. a white reflexion standard

The reflexion data for the choosen measuring geometry (data range from 0 ... 1) for the wavelength range of 380 to 780 nm in steps of 5 nm have to be arranged in a file according to the following structure:

Standard name

```
0.968 0.969 0.969 0.970 0.970 0.969 0.968 0.969 0.970 0.970 ..... 0.990 0.991  
0.993 0.991 0.989 0.987
```

The file has to contain 81 values and the file extension is .stw.

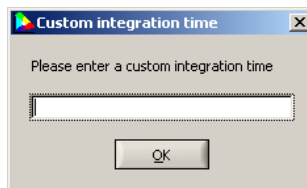
A standard file with a reflectivity of 100% for all wavelengths is included on the CD (def_standard.stw) which can be used for tests or relative measurements if the real reflexion data are not available.

Measuring procedure:

First arrange the measuring set up ($45^\circ/0^\circ$) or $d/8^\circ$.

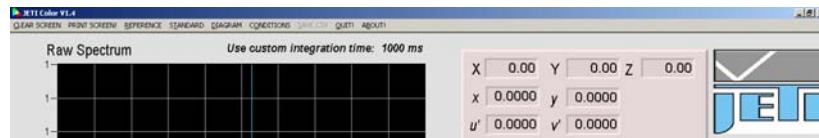
Remark: Use the laser target function of the radiometric software LiMeS to mark the measuring area.

Place the white reference standard at the measuring position and start the program JETI color. Switch on the light source, press **F12** and click on the button **Calibration**. The maximum of the raw spectrum has to be between 13 000 and 15 000 counts. If it is lower or higher press **CTRL T**. It opens the following window:

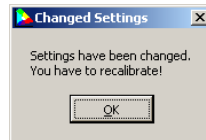


Enter an arbitrary integration time [ms] and press **OK**.

The integration time will be displayed above the diagram.



Confirm the following window and press the button **Calibration** again.



Check the maximum of spectrum. Repeat the procedure with increased or reduced integration time until the maximum is in the indicated range. The next **CTRL T** load the original stored integration time.

Now load the reference standard file with the menu point **STANDARD/ load** and click the **Calibration** button. Then change the diagram to display the reflexion spectrum (F6) or any desired chromaticity diagram (F7 ... F9).

The system is ready now for measurements. Replace the white standard by the samples to be measured and follow the operation instructions of JETI color.

Additional application hints

- Ensure the stability of the light source by a appropriate warm up time.
- Protect the measuring setup from the influence of environmental light, which could influence the measuring result.
- Repeat the adjustment of integration time if the light source or the other measuring set up was changed.
- It is necessary to enter the correct integration time again if the program is used next time.