
New!

# spectro2profiler

## Supports you through Ups and Downs to achieve Color and Grain Harmony

A member of ALTANA

BYK

Our visual quality perception is influenced by color, gloss and the surface structure. Our visual rating takes all 3 parameters into consideration and makes an overall judgement. Up to now, grain or surface structure could only be judged visually or with high sophisticated microscopes. This has changed with the new spectro2profiler. Like our total visual judgement, the new spectro2profiler measures all 3 parameters simultaneously in a robust, portable tool.

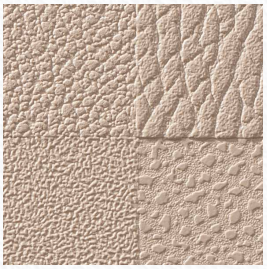
# spectro2profiler


## Measure Color as you see it

The spectro2profiler uses a circumferential illumination at 45° with 0° viewing. The proven, innovative BYK LED technology guarantees an outstanding performance. Short-term, long-term and temperature stability are unsurpassed in the industry. The extra-large measurement spot with homogenous illumination guarantees highly repeatable and representative readings. All together highest accuracy and inter-instrument agreement are ensured and allow you to use digital standards – the key for global color management.

## Measure Structure and Gloss as you see it

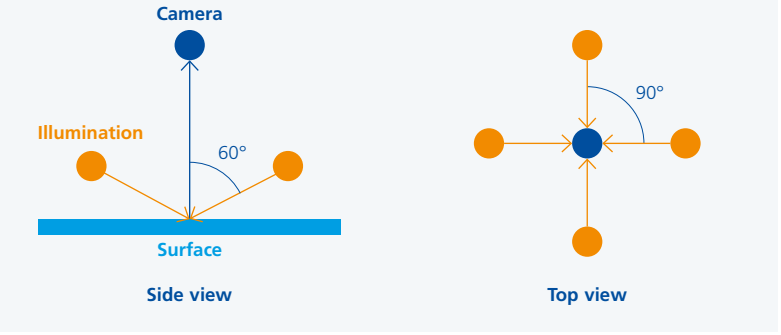
Design knows no limits. The look and feel of a product is defined by its color, gloss and surface finish. Depending on fashion trends, application and product size, the variety of textures can range from very fine to coarse or geometric to leather-like grains.

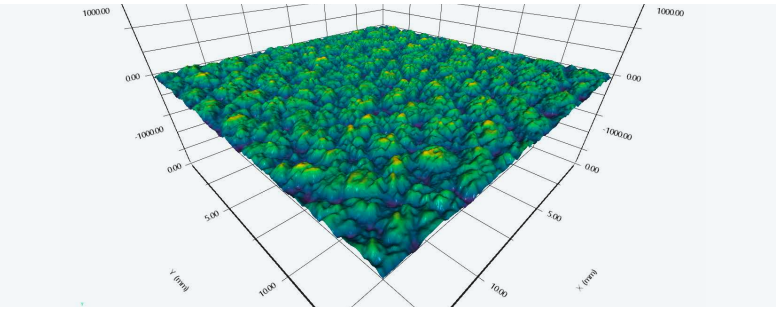



## NEW 3D – Structure Analysis

The spectro2profiler takes multiple images under different illumination directions to estimate surface curvature.

Based on curvature the height map of the surface is calculated resulting in objective measures for cell size (mm²) and perceived cell amplitude (P-µm) using the watershed analysis.

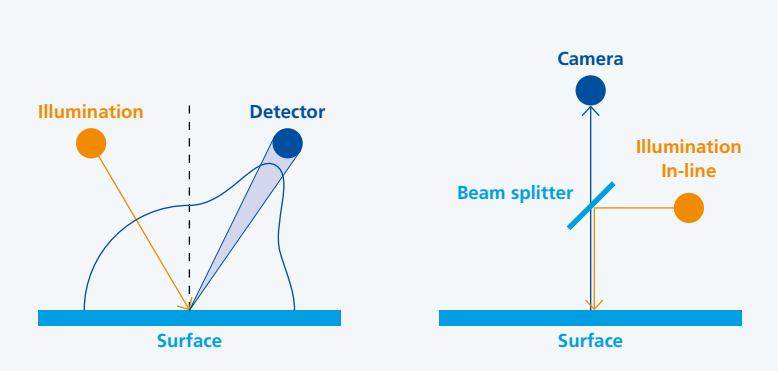


## From traditional Gloss to 2D Reflectivity

Traditionally, the reflection behavior is evaluated by gloss measurement which is the total amount of light reflected in the specular direction and detected within a defined aperture. In order to compare historical data, the spectro2profiler also measures the 60° gloss according to international standards.

The new spectro2profiler provides a 2D camera based reflectivity measurement for structured surfaces. The perceived depth of a leather-like surface is dependent on the reflection behavior on the hills and valleys. Therefore, a 2D reflectivity measurement is aligned with the 3D image data to separate the reflection of hills and valleys. The new measurement parameter, reflectivity contrast, is an ideal measure for production QC of injection or slush molded parts.



In automotive interior different parts are made of different materials with the same grain. In addition to color control the overall harmony can only be achieved by objectively controlling grain size as well as perceived depth.

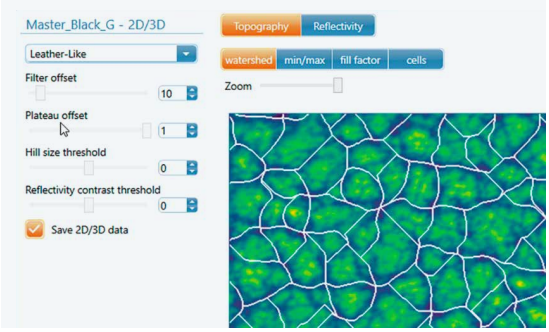
# smart-chart

## smart Standard Management

smart-chart includes a powerful standard management which allows defining Pass/Fail tolerances based on color, gloss and structure parameters.

**Color, gloss and 2D/3D scales with tolerances** can be managed with the same module. For color tolerancing CIELAB ΔE or weighted color equations which are based on visual correlation studies are offered.
**To analyze different structure types** 3 applications for leather-like, coarse paint and fine textures can be chosen. In order to define the proper settings color coded images are shown for ease of use.

Thus, digital standards containing color, gloss and 3D data with tolerances can be globally shared among the global supply chain.




## smart Data Analysis

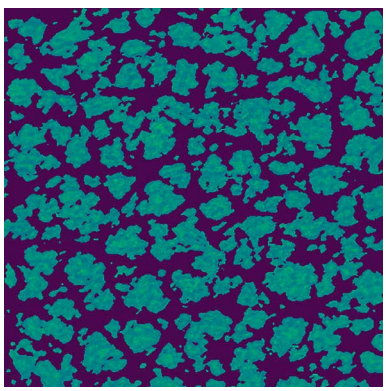
Color, gloss and 2D/3D structure results are simultaneously displayed in a data table and a variety of graphs highlighting the samples being out of specification.

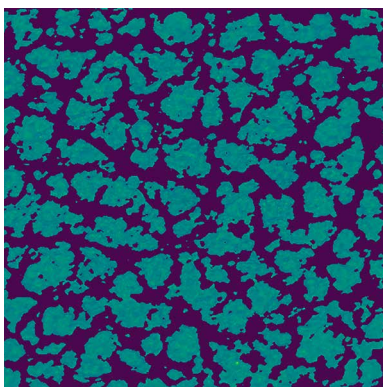
**For color analysis** easily toggle between measurement conditions like different illuminants and color equations or different data graphs like CIELAB scatter plot, line graph and spectral curves.

The **2D/3D analysis** is supported with color coded images to visualize the measurement data for ease of interpretation.

smart-chart offers a dynamic print layout allowing you to create your own reports. Data can be easily shared by transferring smart-chart projects containing data and images.

| Master_Black_G | | | 2D/3D Scales | | | | | | D65/10 45°c:0° | | | | Gloss 60 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D65/10 | | | Images | Cs (mm²) | Ca (P-µm) | Rc | Rh | Rv | dE00 | L* | a* | b* | |
| Absolute Values | | | ✓ | 1.56 | 139 | 0.28 | 205 | 116 | | 24.48 | -0.18 | -0.62 | 1.3 |
| Fail High | | | | | | | | | 1.00 | | | | |
| Warning High | | | | | | | | | 0.70 | | | | |
| Warning Low | | | | | | | | | | | | | |
| Fail Low | | | | | | 0.20 | | | | | | | |
| Checkzone ▲ | Date | Status | 2D/3D Scales | | | | | | D65/10 45°c:0° | | | | Gloss 60 |
| | | | Images | Cs (mm²) | Ca (P-µm) | Rc | Rh | Rv | dE00 | dL* | da* | db* | |
| Match to Standard | | | | | | | | | | | | | |
| Dashboard | 17/01 15:58:38 | ● | ✓ | 1.76 | 154 | 0.17 | 176 | 124 | 0.64 | 0.82 | 0.08 | -0.19 | -0.1 |



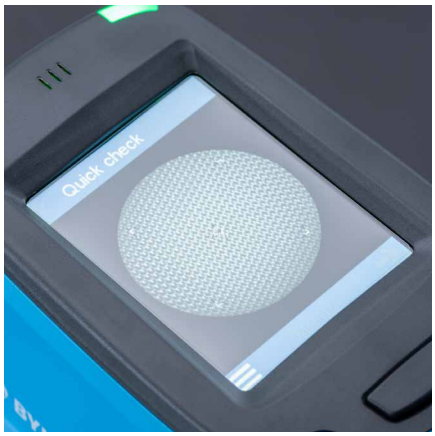


## Color Touch Display

The spectro2profiler offers a 3.5" large color touchscreen for ease-of-use. An icon-based menu with data tables and colorful graphs ensure an intuitive operation as you know it from your smartphone. You can touch or swipe with your fingers – it even works when wearing gloves!


## Live Preview and Reliable Positioning

An integrated camera shows a live preview of the measurement spot. This prevents false readings on imperfections or scratches. Tilting the instrument can be recognized by shadows on the image. The four rubber pins on the bottom plate of the spectro2profiler ensure stable positioning on flat and curved samples – highest security guaranteed!




## Auto Reminder for Calibration

The long-term stable calibration of the spectro2profiler can be monitored on an external color and gloss standard. If the values are out of specification, the instrument will automatically ask you to calibrate on the instrument standard.


## Protection for a Long Life

A protective cap avoids contamination of the optics. It snaps easily onto the measurement opening and is firmly kept in place by magnets.

## Extra-long Battery Life with Fast Charging

spectro2profiler uses a smart battery pack which is good for up to 1000 readings with one charge.

Charging the instrument is highly flexible. You can either use the external power supply or just connect the instrument with your PC via USB-C port for fast charging during data transfer.

## Color

| | |
|---|---|
| Geometry | 45°c:0° |
| Aperture Size | dia. 25 mm |
| Spectral Range | 400–700 nm, 10 nm resolution |
| Repeatability[1] | 0.01 ΔE94 (10 readings on white) |
| Reproducibility[1] | 0.1 ΔE94 (average of 12 BCRA tiles) |
| Color Systems | CIELab/Ch, Lab(h), XYZ, Yxy |
| Color Differences | ΔE*, ΔE(h), ΔE94, ΔECMC, ΔE99, ΔE2000 |
| Indices | $YI_{E313}$, $YI_{D1925}$, $WI_{E313}$, $WI_{CIE}$, $WI_{Berger}$, Opacity, Metamerism, Gray Scale |
| Illuminants | A, C, D50, D55, D65, D75, F2, F6, F7, F8, F10, F11, UL30 |
| Observer | 2°, 10° |

## Gloss

| | | | |
|---|---|---|---|
| Aperture Size | 25 × 15 mm | | |
| Measurement Range | | Repeatabiliy | Reproducibility |
| | 0 – 20 GU | ± 0.1 GU | ± 0.2 GU |
| | 20 – 100 GU | ± 0.2 GU | ± 1.0 GU |

## General Data

| | |
|---|---|
| Memory | 3000 samples with images<br>10000 samples without images |
| Languages | English, German, French, Italian, Spanish, Russian, Japanese, Chinese |
| Dimensions (L × W × H) | 150 × 240 × 155 mm (5.9 × 9.5 × 6.1 in) |
| Weight | 1530 g (3.37 lbs) |
| Interface | USB Type-C (USB 3.1) |
| Battery | 7.2 V, 2350 mAh, 16.92 Wh |
| Device | Input: 5 V – 12 V DC, max. 3.0 A |
| Power supply | Input: 100–240 V AC, 50–60 Hz, max. 1 A<br>Output: 5 V DC, max. 2.1 A |
| Temperature range | Operation: 10° C to 40° C (50° F to 104° F)<br>Storage: 0° C to 60° C (32° F to 140° F) |
| Relative humidity | up to 85 % at 35° C (95° F) non-condensing |
| Operating altitude | up to 2000 m/6561 feet |

## 3D Structure (Cs, Ca)

| | |
|---|---|
| Aperture Size | 15 × 15 mm |
| Measurement Range | Cs: 0–255 mm², Ca: 2 µm–2 mm (perceived) |
| Spatial Resolution | 60 µm |
| Height Resolution | 1–2 µm |
| Repeatability[1] | 2 % (10 readings on structure reference standard) |
| Reproducibility[1] | 5 % (on structure reference standard) |

## 2D Reflectivity (R)

| | |
|---|---|
| Aperture Size | 15 × 15 mm |
| Measurement Range | 0–500 000, technical performance guaranteed within 0–2500 |
| Spatial Resolution | 60 µm |
| Repeatability[1] | 0.5 % (10 readings on structure reference standard) |
| Reproducibility[1] | 1.0 % (on structure reference standard) |

| | 2D Reflectivity results | | 3D Topography results | |
|---|---|---|---|---|
| Leather-like Grain | R | Mean Reflectivity | Cn | Number of Cells (count) |
| | Rh | Reflectivity Hills | Cs | Mean Cell Size (mm²) |
| | Rv | Reflectivity Valleys | Ca | Mean Cell Amplitude (P-µm)* |
| | Rc | Reflectivity Contrast | Hs | Mean Hill Size (mm²) |
| | | | F% | Fill Factor |
| Coarse Paint | | | Cn | Number of Cells (count) |
| | | | Cs | Mean Cell Size (mm²) |
| | | | Ca | Mean Cell Amplitude (P-µm)* |
| | | | CsMin | Cell Size Minimum (mm²) |
| | | | CsMax | Cell Size Maximum (mm²) |
| | | | CsDev | Cell Size Deviation |
| Fine Texture | R | Mean Reflectivity (a.u.) | µPd | Micro Mean Peak Distance (µm) |
| | µRc | Micro Reflectivity Contrast | µA | Micro Mean Local Amplitude (P-µm)* |

[1] Standard deviation
* P-µm = Perceived height

225 025 734 E 2001

## Comes complete with:

- spectro2profiler
- White calibration standard
- Color and gloss test standards
- Certificate
- Software smart-chart with 2 licenses
- USB cable for data transfer
- Fast charging USB cable type C/C
- External power supply (type A/C/G/I)
- Protection cap
- Operating manual
- Carrying case
- 1-day installation training