

BYK-mac i ROBOTIC

Automatic measurement of total color impression of effect finishes at the line

Products can only be manufactured with uniform and consistent quality when process stability is guaranteed. Therefore, multi-angle color, sparkle and graininess must be measured on a routine basis. The BYK-mac i ROBOTIC spectrophotometer allows automated total color control as it is mounted on a robotic arm. The robotic system not only measures a high number of cars, but also on the same areas.



Total color impression of effect finishes

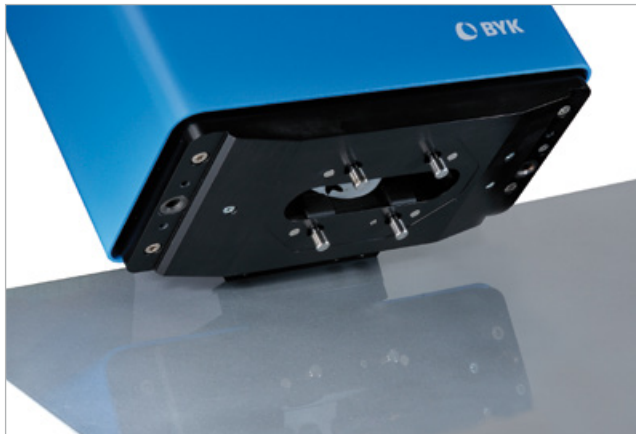
The BYK-mac i ROBOTIC measures both multi-angle color and flake characterization.

- Multi-angle color measurement at 6-angles clearly defines the light-dark as well as color flop behavior of effect finishes
- Sparkling and Graininess control with a high resolution CCD camera simulates effect changes under direct and diffuse lighting conditions.
- Multi-angle color and effect data help to analyze the cause of a color mismatch

Reliable and objective color and effect data

The BYK-mac i ROBOTIC spectrophotometer uses a light source with long-term stability and patented illumination control which provide superior accuracy and low maintenance for many years.

- Stable, long-term calibration – needed only every three months
- Temperature independent measurement results between 10 - 40°C – without calibration
- 10 year warranty on light source – no lamp changes needed
- Excellent agreement between instruments and correlation to BYK-mac i and BYK-mac i COLOR



Reliable readings at any time

In order to guarantee stable positioning, the BYK-mac i ROBOTIC is equipped with trigger pins on the bottom plate of the instrument. The sensitivity of the pins can be adjusted to the curvature of the measurement area. If the pins do not have contact with the surface an error message will be displayed.

Quantification of Fluorescent Light

The BYK-mac i ROBOTIC spectrophotometer is equipped with additional sensors to detect fluorescent light excited in the visible range. The Intensity Emission value quantifies the fluorescent light and can be used as a preliminary indicator for light fastness.

In compliance with:

Standards

ASTM	D 2244, E 308, E 1164, E 2194
DIN	5033, 5036, 6174, 6175-2
DIN EN ISO	11664
SAE	J 1545

Ordering Information

Cat. No.	Description
7036	BYK-mac i ROBOTIC

Comes complete with:

Multi-angle spectrophotometer
White calibration standard with certificate
Color and effect checking reference
Light protection cover
BYKWARE smart-chart software
Communication software
Installation kit
Operating manual on CD
Carrying case; Training

Extended Warranty: see pages about Technical Service

Hardware Requirements:

Operating system: Windows 7 SP1 or 8.1
Microsoft® .NET Framework 4
Hardware: Core 2 Duo, 2.2 GHz; i7, 2.5 GHz recommended, or equivalent
Memory: 4 GB RAM, 8 GB recommended
Hard-disk capacity: min. 300 MB
Monitor resolution: 1280 x 1024 pixel or higher
Disk drive: CD-ROM or DVD drive



Technical Specifications

Color	
Measuring Geometry	45° illumination -15°, 15°, 25°, 45°, 75°, 110° specular viewing
Measuring Area	87 x 23 mm (3.4 x 0.9 in.)
Spectral Range	400 - 700 nm, 10 nm resolution
Measurement Range	0 to 600 % reflectance
Repeatability	0.01 ΔE^* (10 consecutive measurements on white)
Reproducibility	Grey BCRA tiles: avg. $\Delta E^* < 0.10$ Chromatic BCRA tiles: avg. $\Delta E^* < 0.25$
Color Scales	ΔE^* ; ΔE CMC; ΔE 94; ΔE 2000; ΔE 99; ΔE DIN6175
Index	Flop, Int-Em
Illuminants	A; C; D50; D65; F2; F7; F11; F12
Observer	2°; 10°
Effect	
Measurement Geometry	15° / 45° / 75° and diffused illumination perpendicular viewing
Effect Parameters	ΔS ; ΔS_a ; ΔS_i ; ΔG
Repeatability	S_a / S_i : 5% or $> 0.50 / G = \pm 0.05$
Reproducibility	S_a / S_i : 10% or $> 1.00 / G = \pm 0.15$
Object Curvature	Radius > 400 mm
Measuring Time	< 6 seconds
Memory	1000 standards / samples
Power Supply	External power supply 24 VDC
Interface	RS 422
Robotic Requirements	Vibration-free operation
Operating Temperature	10 to 42° C (50 to 110 ° F)
Relative Humidity	up to 85%, 35° C (95° F); non-condensing
Dimensions	21 x 12.5 x 17.5 cm (8.3 x 5 x 6.9 in.)
Weight	approx. 3.5 kg (approx. 7.7 lbs)

BYK-mac i ROBOTIC Training

BYK-Gardner offers you more than just an instrument. We assist you in operating the whole system and analyzing your color, sparkle and graininess data. Therefore, the instrument comes with a two day training course including:

Color and Effect Theory

- Visual perception and instrumental measurement of multi-angle color, sparkle and graininess.
- Data interpretation for trouble shooting
- Support in integrating the BYK-mac i ROBOTIC sensor into an automated measurement system

Software training

- Data analysis using standard reports:
 - Test Report:
Shows measurement data for a single test series – ideal for color harmony reviews
 - Scorecard (Management Summary Report):
Quick overview how production is running over the selected time range
 - Trend Report:
Typical process control chart showing the data over time or by individual.

- Day 1: Color and Effect theory with data interpretation for optimization and trouble shooting
Support in integrating the BYK-mac i ROBOTIC sensor into an automated measurement system
- Day 2: Software training with data analysis using standard reports

Ordering Information

Cat. No.	Description
6417	Light Protection Cover for 7036
4831	BYKWARE smart-process

Note: For replacement of white, color and effect standard, please contact your local service department.

Accessories

To avoid the influence of ambient light
Process QC software for BYK-mac i ROBOTIC and wave-scan ROBOTIC

Certified Please refer to section Preventive Maintenance.