

# BYK-mac i ROBOTIC

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

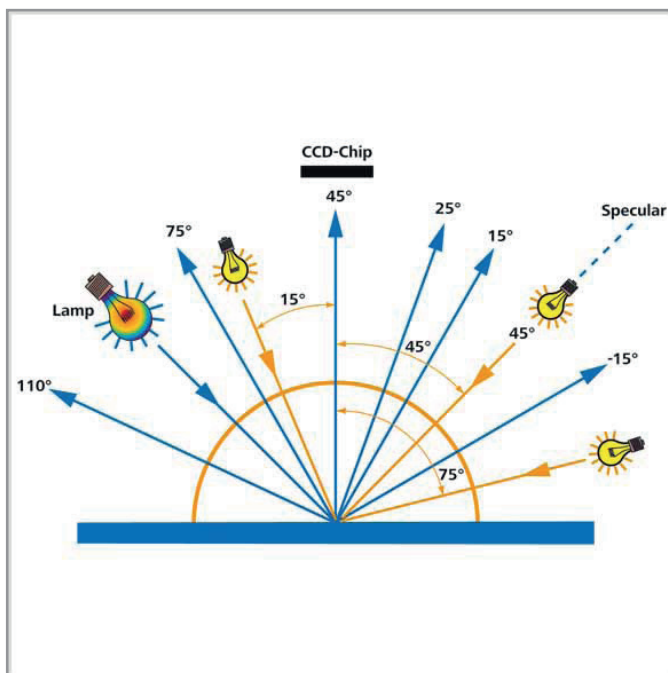
Products can only be manufactured with uniform and consistent quality when process stability is guaranteed. Therefore, multiangle color, sparkle and graininess must be measured on a routine basis. The BYK-mac i ROBOTIC spectrophotometer allows automated total color control as it is mounted on a robotic 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.



## Standards

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



<b>Catalog Number</b>	<b>7036</b>
<b>Short Description</b>	<b>BYK-mac i Robotic</b>
<b>Measuring Area</b>	87 x 23 mm (3.4 x 0.9 in)
<b>Color Geometry</b>	45° illumination; -15°, 15°, 25°, 45°, 75°, 110° aspecular viewing
<b>Spectral Range Colorimetric</b>	400 - 700 nm, 10 nm resolution
<b>Measurement Range</b>	0 to 600 % reflectance
<b>Repeatability Color</b>	0.01 $\Delta E^*$ (10 consecutive measurements on white)
<b>Reproducibility Color</b>	Grey BCRA II tiles: avg. $\Delta E^* < 0.10$ Chromatic BCRA II tiles: avg. $\Delta E^* < 0.25$
<b>Color Scales</b>	$\Delta E^*$ ; $\Delta E$ CMC; $\Delta E$ 94; $\Delta E$ 2000; $\Delta E$ 99; $\Delta E$ DIN6175 and customer specific scales
<b>Color Indices</b>	Flop, Int-Em
<b>Illuminants</b>	A; C; D50; D65; F2; F7; F11; F12; CIE 015:2018 LED illuminants
<b>Observer</b>	2°; 10°
<b>Effect Geometry</b>	15°, 45°, 75° and diffused illumination; perpendicular viewing with camera
<b>Effect Parameters</b>	$\Delta S$ ; $\Delta S_a$ ; $\Delta S_i$ ; $\Delta G$
<b>Repeatability Effect</b>	$S_a / S_i$ : 5% or $> 0.50 / G = \pm 0.05$
<b>Reproducibility Effect</b>	$S_a / S_i$ : 10% or $> 1.00 / G = \pm 0.15$
<b>Object Curvature</b>	Radius $> 40$ cm
<b>Measuring time</b>	$< 6$ seconds
<b>Power supply</b>	External power supply 24 VDC
<b>Robotic requirements</b>	Vibration-free operation
<b>Interface</b>	RS 422
<b>Dimensions: L x W x H</b>	21 x 12.5 x 17.5 cm 8.3 x 5 x 6.9 in
<b>Weight</b>	3.5 kg 7.7 lb
<b>Operating temperature</b>	10 - 42°C 50 - 110 °F
<b>Relative humidity</b>	up to 85%, 35° C (95° F); non-condensing

### Delivery Content

Multi-angle spectrophotometer, White calibration standard with certificate, Color checking tile, Effect checking tile, Protective cap, 2 light protection covers (6417), RS 422 Cable Kit (torsion resistant, drag chain, oil resistant, FTDI), Mounting Kit (hex key, screws, technical drawings, Software smart-process and smart-lab with 2 licences each, smart-robotic software, Manual, Carrying Case, 2-day training

### System Requirements

Operating system: Windows® 10 1607 or later  
Hardware: i5 2.5 GHz; i9 recommended, or equivalent (x86 & x64 architecture only)  
Memory: 16 GB RAM, 32 GB recommended  
Free hard-disk capacity: 4 GB during installation  
Monitor resolution: 1920 x 1080 pixel; 4K recommended  
Interface: free USB-port

Catalog Number	Short Description	Delivery Content
6417	Light Protection Cover for 7036	
7057	BYK-mac Robotic cable 8m torsion resistant	
7058	BYK-mac Robotic cable 10m drag chain cable	
7059	BYK-mac Robotic cable 20m oil resistant	
4862	smart-lab Metallic	Software with 2 licenses for download
4831	smart-process	Software with 2 licenses for download