

## Total color impression of effect finishes

The appearance of effect finishes is influenced by different viewing angles and viewing conditions. Apart from a light-dark flop and color shift special sparkling effects can be created.

The BYK-mac is unique as it measures both multi-angle color and flake characterization in one portable device.

- Traditional 5-angle color measurement: 15° / 25° / 45° / 75° / 110°
- Additional color measurement behind the gloss for color travel of interference pigments: -15°
- Sparkle and graininess measurement for flake characterization

## Ergonomic design and easy operation

The shape of the instrument is designed to ensure easy handling and true portability. With an intuitive menu control of metallic finishes has never been easier.

- Menu guided operation according to your own sampling procedure
- Designated buttons for standard and sample readings
- Scroll wheel to select menu functions
- Large display: complete statistics for selectable values and alphanumerical name input
- Storage of up to 1000 readings in selectable memories
- auto-chart software for professional analysis, documentation and data management

A close-up of the BYK-mac device's screen displaying measurement data for 'RoyalBlue'.

D65/10°	CenterHood	1/3
-15°	ΔE <sub>p</sub>	ΔS ΔG
15°	1.24	3.2
25°	0.94	
45°	1.37	1.5
75°	1.61	
110°	1.10	
diff		4.7
RoyalBlue		



## Reliable readings at any time

In order to guarantee stable positioning, the BYK-mac is equipped with trigger pins on the bottom plate of the instrument. If all pins do not contact the surface an error message is displayed. This ensures reproducible results on test panels and curved parts (r > 500 mm).

Additionally, the surface temperature is measured and saved with each measurement.

**Always ready**

The BYK-mac 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
- Excellent agreement between instruments
- 10 year warranty on the light source - no lamp changes needed

The instrument is operated with 4 AA NiMH rechargeable batteries - good for 1000 readings. Optionally an external power supply can be used.



*For Recertification and Calibration Services see page 199.*

In compliance with:

**Standards**

ASTM	D 2244, E 308, E 1164, E 2194
DIN	5033, 5036, 6174, 6175-2
ISO	7724
SAE	J 1545

**Ordering Information**

Cat. No.	Description
CM-6340	BYK-mac
SE-6340	Extended Warranty one year additional

**Comes complete with:**

- Black calibration standard
- White calibration standard with certificate
- Cyan checking reference
- Protective cap
- USB interface cable
- 8 x AA rechargeable batteries
- External battery charger
- BYKWARE auto-chart software
- Carrying case
- Operating manual
- Training

**Hardware Requirements:**

PC with Windows® 2000 or later operating system, min. 256 MB RAM (recommended 512 MB), min. 100 MB hard-disk space, XGA (1024 x 768) or higher resolution, CD-ROM or DVD drive, free USB interface, Excel® 2000 or later for pre-prepared worksheets, including VBA - Visual Basic for Applications

**Technical Specifications**

<b>Measuring Geometry:</b>	45° illumination -15°, 15°, 25°, 45°, 75°, 110° aspecular viewing
<b>Measuring Area:</b>	23 mm diameter
<b>Spectral Range:</b>	400 - 700 nm, 10 nm resolution
<b>Measurement Range:</b>	0 to 400 % reflectance
<b>Measuring Time:</b>	< 6 seconds
<b>Repeatability</b>	0.02 ΔE*, 1 σ (10 consecutive measurements on white)
<b>Reproducibility</b>	0.20 ΔE*, 1 σ (average on 12 BCRA II tiles)
<b>Color Scales</b>	ΔE*, ΔE CMC, ΔE DIN6175
<b>Effect Parameters</b>	Sparkle, Graininess
<b>Illuminants</b>	A; C; D50; D65; F2; F7; F11; F12
<b>Observer</b>	2°; 10°
<b>Memory</b>	1000 standards / samples
<b>Language</b>	English, German, French, Italian, Spanish
<b>Power Supply</b>	4 AA NiMH batteries
<b>Operating Temperature</b>	10 to 42° C (50 to 110° F)
<b>Relative Humidity</b>	up to 85%, 35° C (95° F); non-condensing
<b>Dimensions</b>	218 x 8.1 x 14.7 cm (8.6 x 3.2 x 5.8 in.)
<b>Weight</b>	approx. 1.3 kg (approx. 2.86 lbs)

## Training BYK-mac

BYK-Gardner offers you more than just an instrument. We assist you in analyzing your color readings together with sparkle and graininess data. As a result you will be able to use the BYK-mac to save time and money, while at the same time improving quality. Therefore, the instrument comes with a one day training course including:

### 2. Color Theory

- The building blocks of color: illuminant, observer, substrate
- Color differences with interpretation

### 2. Operation and Software training

- Set-up an "organizer" to create a routine measurement procedure
- Programming of the instrument with "organizer" and measurement of several samples
- Direct data transfer to Excel® for documentation of individual readings
- Data transfer to auto-chart software and saving in a database for routine QC
- Data analysis using standard reports:
  - Lab-scatter graph per angle to show at one glance whether all parts are within specifications
  - Color travel by sample to show how individual measurement zones perform per measurement angle
  - Trend by angle to show the uniformity of all measurement zones
  - Spectral curve for further analysis of different batches and metamerism control



- Create your own reports in Excel®
  - Transfer data from the database to Excel®
  - Pivot function to define layout in Excel®

The training can be performed in one day or two half days. It is recommended to split the training into two half days:

- Day 1: Theory and basic operation (set-up organizer, taking readings and saving in a database)
- Day2: 3-4 weeks later to ensure readings were taken and saved in a database. Data analysis and standard QC report can be explained using custom specific data.

## Ordering Information

Cat. No.	Description	Accessories
CM-6332	Black Calibration Standard*	To perform zero calibration
CM-6333	Protective Stand	To hold instrument and store accessories
CM-6336	Protective Cap	Snap on cover to protect optics and interior components
CM-6337	USB Interface Cable	PC cable, USB-A plug, 3 m length
CM-6338	External Power Supply	For external power supply, 100 - 240 V AC, European, UK and US plug
CM-6339	External Battery Charger	For external charging of batteries, 100-240 V AC, European, UK and US plug
AW-4809	BYKWARE auto-chart	Software for data analysis with database management and professional documentation in Excel®

\*Note: For replacement of white and cyan standard, please contact your local service department.

