

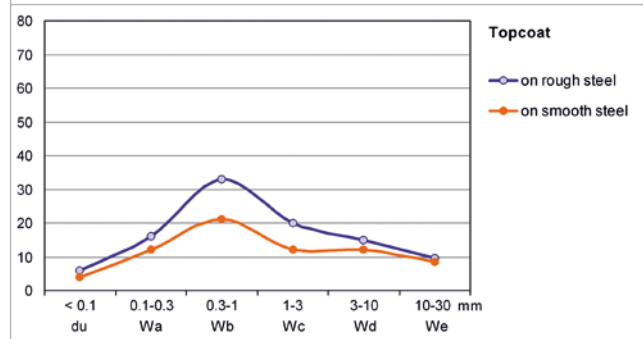
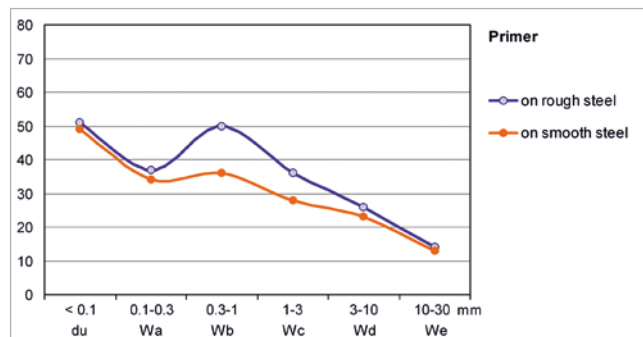
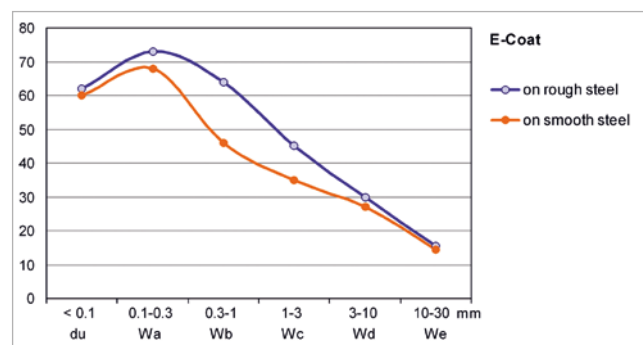
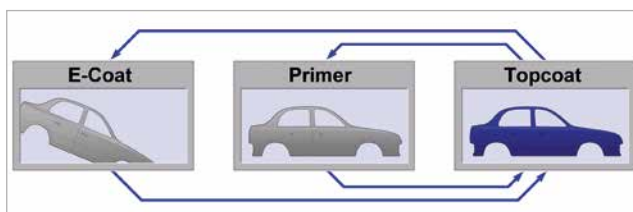
# wave-scan dual

## Orange Peel and DOI measurement on high to semi gloss surfaces

... appearance control is no longer limited to final topcoat inspection. The orange peel meter scans the optical profile of high gloss surfaces using a laser light source. An additional, infrared – high energy LED allows measuring the same structure spectrum (0.1 – 30 mm) on medium gloss surfaces. The dullness measurement is recorded with state-of-the-art CCD camera technology. It gives information on the image forming qualities of the surface caused by structures < 0.1 mm.

## Close the appearance control loop for the entire paint process

Thus, the surface quality after each paint process step can be objectively evaluated. No more guessing which substrate layer is influencing the final appearance. The wave-scan dual will help you to objectively analyze appearance problems and reduce the time necessary for trouble shooting.



## Example: Influence of Steel Quality on Final Appearance

### Step 1: Appearance Control after E-coat

Same E-coat system was applied on rough and smooth steel. The influence of rougher steel can be seen in increased Wb and Wc-values.

### Step 2: Appearance Control after Primer Surfacer

The primer surfacer was applied on both panels. The roughness of the steel quality can still be detected in increased Wb and Wc- values. This primer system could not completely cover the steel influence.

### Step 3: Appearance Control after Topcoat

The final appearance shows higher shortwave values on the rougher steel panel. Therefore, the smooth panel will appear more brilliant.

### wave-scan dual – a diagnostic tool for trouble shooting and optimizing appearance

Now, you can establish appearance specifications for each paint layer to ensure the final appearance is always on target.

## Objective and reliable appearance data

- Good correlation to wave-scan DOI on high gloss surfaces
- Good correlation to mechanical profilometer readings on medium gloss surfaces

## Easy to use with one hand

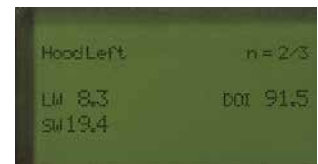
- For flat and curved areas
- Small and light weight
- Scroll wheel operation and multilingual menu
- Selectable scales and scan lengths
- Full statistics with saving in selectable memories
- USB port for data transfer to PC
- Software smart-chart:
  - Organizer files for sample identification
  - Data management with SQL Database
  - Standard QC Reports



select mode ...



and measure



## Always ready

The orange peel meter is operated with a rechargeable battery pack (Li-Ion). The docking station automatically charges the battery pack and transfers the measured data to the PC.

Optionally, the instrument can be operated with 3 standard mignon alkaline or rechargeable batteries – good for 1000 readings.



## Ordering Information

| Cat. No. | Description    |
|----------|----------------|
| 4840     | wave-scan dual |

### Comes complete with:

Orange peel meter, Protective cover,  
Reference tile with certificate,  
Software smart-chart on CD,  
Docking station and USB-cable,  
2 rechargeable Li-Ion battery packs,  
Battery holder for AA batteries,  
3 Batteries, Operating manual,  
Carrying case  
Training

**Extended Warranty:** see pages about Technical Service

**Free** 1x preventive maintenance service during warranty period

### System requirements:

Operating system 32-bit: Windows® XP SP3,  
Vista SP2 or Windows 7 SP1,  
Microsoft® .NET Framework 4,  
Excel® version 32-bit: 2003, 2007 or 2010, incl. VBA  
Hardware: Core 2 Duo, 2.2 GHz, or equivalent,  
Memory: 2 GB RAM,  
Hard-disk space: min. 100 MB,  
Monitor resolution: 1280 x 1024 pixel or higher,  
Disk drive: CD-ROM or DVD drive,  
Interface: free USB port

## Technical Specifications

|                                    |   |
|------------------------------------|---|
| <b>Application</b>                 |   |
| <b>High to Semi Gloss</b>          | du < 65, linear range   |
| <b>Structure Spectrum</b>          |   |
| <b>du</b>                          | <0.1 mm   |
| <b>Wa</b>                          | 0.1 to 0.3 mm   |
| <b>Wb</b>                          | 0.3 to 1 mm   |
| <b>Wc</b>                          | 1 to 3 mm   |
| <b>Wd</b>                          | 3 to 10 mm  |
| <b>We</b>                          | 10 to 30 mm   |
| <b>Repeatability<sup>1</sup></b>   | du < 40: 4% or > 0.4<br>du > 40: 6% or > 0.6  |
| <b>Reproducibility<sup>1</sup></b> | du < 40: 6% or > 0.6<br>du > 40: 8% or > 0.8  |
| <b>Object Curvature</b>            | radius > 500 mm   |
| <b>Min. Sample Size</b>            | 35 mm x 150 mm  |
| <b>Scan Length</b>                 | 5 / 10 / 20 cm  |
| <b>Resolution</b>                  | 375 points/cm   |
| <b>Memory</b>                      | 1500 readings   |
| <b>Interface</b>                   | USB port  |
| <b>Languages</b>                   | English, French, German, Italian, Japanese,<br>Portuguese, Spanish                          |
| <b>Light Source</b>                | Laser diode, LED and IR-SLED  |
| <b>Laser Energy</b>                | < 1 mW (Laser class 2)  |
| <b>Dimensions</b>                  | 150 x 110 x 55 mm (5.9 x 4.3 x 2.2 in.)   |
| <b>Weight</b>                      | 650 g (1.5 lbs)   |
| <b>Power Supply</b>                | rechargeable battery pack or 3 alkaline AA Batteries,<br>approx. 1000 readings              |
| <b>Temperature Range</b>           | operation: +10 °C to 40 °C (+ 50 °F to 104 °F)<br>storage: 0 °C to 60 °C (+ 32°F to 140 °F) |
| <b>Rel. Humidity</b>               | up to 85 % at 35 °C (95 °F) non-condensing  |

<sup>1</sup>Standard deviation

### Training wave-scan dual

BYK-Gardner offers you more than just an instrument. We assist you in operating the wave-scan system and understanding your appearance readings. As a result you will be able to use the orange peel meter to save time and money and at the same time improve your quality.

Therefore, the instrument comes with a one day training course including:

#### 1. Orange Peel and DOI Theory

- Visual perception and instrumental measurement of Orange Peel and DOI
- Data interpretation: How can the structure spectrum be used to optimize process / material parameters

#### 2. Operation and Software Training

- Set-up of 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 smart-chart software and saving in a database for routine QC

- Data analysis using standard QC-reports:
  - Summary by lines to show at one glance how various colors are running at different paint lines
  - Trend chart to show how specified zones perform over a defined time range
  - SPC-chart for daily process control of your critical colors and highrunners: xR-chart
  - Zone profile for trouble shooting using the structure spectrum
- 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 data in a database)

Day 2: 3-4 weeks later to ensure readings were taken and saved in a database. Data analysis and standard QC reports can be explained using customer specific data.

### Ordering Information

| Cat. No. | Description                    |
|----------|--------------------------------|
| 4843     | Checking Tile wave-scan dual   |
| 4841     | Docking Station, for 4840/4846 |
| 4842     | Battery Pack, for 4840/4846    |
| 4831     | Software smart-chart           |

### Accessories

|  |
|--|
| To check performance of the orange peel meter, with certificate              |
| Incl. USB interface cable and recharger 100 – 240 V self adapting            |
| Rechargeable battery for automatic charge in docking station                 |
| Software for professional analysis and documentation of color and appearance |



**Certified** Please refer to section Preventive Maintenance.