



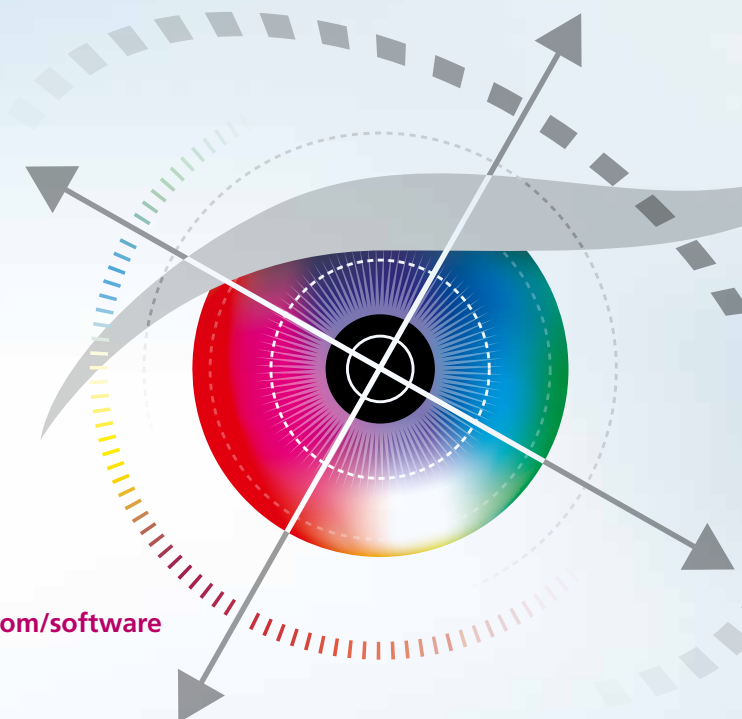
smart-process



smart-lab



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smart-chart

THE SMART WAY TO COMMUNICATE

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# Global QC Management



The trend towards globalization requires standardization across an organization and beyond, to suppliers, partners and customers, to be efficient in the long run. The requirements for testing solutions and data analysis have changed. Global specifications and standardized QC procedures are needed for a seamless, worldwide communication.

BYK-Gardner's software smart-chart combines color and appearance data in one data analysis software:

- › BYK-mac i: Multi-angle color and effect data
- › wave-scan: Orange Peel and Distinctness-of-Image
- › cloud-runner: Mottling analysis
- › haze-gard i: Total Transmittance, haze and clarity
- › micro-gloss: Gloss control
- › spectro2guide/color2view: Color, gloss and fluorescence
- › spectro2profiler: Color and 3D Surface Texture analysis

smart-chart is available in two different software packages:  
**smart-process and smart-lab.**



## smart-process



### Routine process control

Systematic planning and efficient data handling of large data sets is needed. The modern and intuitive software, **smart-process**, combines all critical color and appearance data into one data analysis software.

- › Organizers can be setup for menu guided test sequences and clear sample identification.
- › Data is saved in an SQL database which allows handling of large data sets over a long time period.
- › Process stability can be monitored with scorecards, trend reports, and SPC charts.

With **smart-process** you know where you are today and how to achieve tomorrow's goals.

## smart-lab



### Flexible data analysis in the lab

Color and appearance measurement tasks in the laboratory require flexible data analysis tools. Anything is possible with the state-of-the-art software, **smart-lab**.

- › Measurements can be transferred from the instrument or taken in an online mode.
- › Instantly professional QC-reports are displayed including data table and graphs.
- › Pass – Warning – Fail coloring is added, by defining product specifications in standard management.
- › Test series can be organized in projects and saved in an SQL database

With **smart-lab** you can start faster and finish sooner without getting lost in the details.

## smart-chart – The smart way to communicate!



# Gloss Control in the Lab

Gloss is perceived as an important quality criterion for many products. It requires professional and easy-to-use monitoring tools. Whatever your task is, smart-lab Gloss will do it for you: Immediate display of QC-reports with Pass/Fail coloring or trend reports to document process stability.

## Efficient data analysis and documentation

The micro-gloss stores up-to 999 readings and offers onboard analysis tools like statistic and difference mode. For further evaluation and documentation the stored readings can be transferred to smart-lab Gloss.

Results are immediately displayed in a **data table** and **line graph**.

Samples can be easily added by taking readings in an **online mode** and the graphs are updated in **real time**.

## Smart communication of measurement results

smart-lab Gloss uses a professional **project management module** which organizes measurement data in projects.

Gloss values of a specific material can be recorded in a project to show production process stability over time. Or on-going studies like weathering tests, influence of additive concentration etc. can be managed in separate files.

To share the results with all involved parties the data can be **exported to Excel** or sent as a **PDF-file** by email.





**micro-gloss with smart-lab**  
Professional data analysis to  
increase your efficiency



## Management of gloss specifications

For efficient production control, an easy to recognize Pass/Fail indication is a major benefit. Therefore, smart-lab Gloss supports a comprehensive **standard management**.

Product specifications can be defined by setting up product groups with **Pass/Fail limits**. If needed, “yellow” warning ranges can be input giving the user enough reaction time before production is out of specification.

**Gloss limits** can be entered for each geometry: 20°, 60° and 85°. In case of the micro-TRI-gloss  $\mu$  also **film thickness tolerances** can be defined.

To make sure that everybody is using the same specification, product groups can be **exported and imported** by another smart-lab user.

## Data Analysis with traffic lights

In data analysis, the samples that are out of specification are highlighted in the data table.

Additionally, the Pass/Fail result is indicated by a **traffic light symbol** using a green – yellow – red dot. And in the graphs a limit line is displayed.



# Process Control with smart-process

In order to guarantee gloss uniformity over time and be able to proactively take measures before the quality starts to drift, process stability has to be controlled. The software smart-process offers a comprehensive standard management module which defines Pass/Fail tolerances, organizer set-up for menu-guided operation and innovative data analysis reports that actually make statistical analysis a fun project.

## Management of gloss specifications

For efficient production control an easy to recognize Pass/Fail indication is a benefit. Therefore, smart-process supports a comprehensive **standard management** module.

Product specifications can be defined by setting up **product groups with Pass/Fail limits**. If needed, even “yellow” warning ranges can be input giving the user enough reaction time before production is out of specification.

**Gloss limits** can be entered for each geometry: 20°, 60° and 85°. In case of the micro-TRI-gloss  $\mu$  also **film thickness tolerances** can be defined.

To make sure that everybody is using the same specification, product groups can be exported and imported by another smart-chart user.





### micro-gloss with smart-process

Routine process control made easy to guarantee consistent appearance



### Standardized measurement procedure

smart-process offers set-up of Organizers for **clear sample identification** and a **menu-guided operation** on the instrument.

The entered parameters can be later used for **filtering** the measured data saved in the database. Typical identifiers are model, color or product ID.

In order to define the individual check zones, default and custom specific **product schematics** can be loaded.

Single check zones can be combined in **groups (e.g. horizontal and vertical)**. The results for these groups are also displayed in the final Test Report and give valuable information about **appearance harmony** of the complete vehicle in an audit situation.

Just connect the micro-gloss with the PC, **send the organizer** including product specifications and you are ready to measure a representative number of products to control **process stability** over time.



### Select Parameter 1 ←

- Sedan ▶
- Sport Sedan ▶
- Compact ▶
- Convertible ▶
- Pickup ▶
- SUV ▶

# Process Control with smart-process



## Data analysis – green light for shipping

Measurement data are saved in an **SQL database** which allows handling of large data sets over a long time period.

In the first step, all saved test series are listed and the Pass/Fail result is indicated by a **traffic light symbol** using a green – yellow – red dot.

Clearly structured **filters**, such as a time range, a specific color or all “red” test series, can be used for data selection and further analysis.

ID	Name	Status	...
10000000000000000000	10000000000000000000	Green	...
10000000000000000000	10000000000000000000	Yellow	...
10000000000000000000	10000000000000000000	Red	...

## Test Report for a single test series

By showing the measurement data for a single test series, this report is ideal for color **harmony reviews**.

The **product schematic** quickly indicates where the “problem areas” are. Single dots represent the Pass/Fail result of the individual check zones, quadruple dots stand for the groups (horizontals or verticals).

The data are also displayed in an easy-to-read **data table** highlighting the measurements being within the warning range or out of specification.

Besides the individual check zone, the **averages of groups** are calculated and shown on top of the report.





### Scorecard with drill-down charts

This report gives a quick overview how production is running over the selected time range and can be used as a **Management Summary Report**.

An easy-to-read data table is showing the average of all selected test series and is highlighting values being within the warning range or out of specification. A **pivot function** can be used to set-up **customized data tables**.

If an average is marked "red", a **single click** will display **the details** being single data records. A line graph of the individually measured parts including the gloss limit is shown.

### Trend Report over time

If a color is out of spec, detailed analysis can be done with the trend report function.

Trend report is a typical **process control chart** showing the measurement data over time (by day, week, month) or by individual.

It can be used for production or batch process control. Results are charted in a **line graph** including the gloss limit.

A **trend comparison report** allows comparison of different parts or measurement areas (left vs right side).

All reports can be sent to **Excel**, printed out or sent by email as a **PDF-file**.



# smart-chart Installation



## System Requirements

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



## Administrator Rights

During installation full administrator rights are necessary.



## Older smart-chart version installed

smart-chart install program will automatically remove older versions being installed on the computer. Depending on the amount of smart-chart versions, the installation process must be started several times. Messages will guide you through. Please read them carefully!



## Software installation

Download the zip-file, save it on your hard drive into a new folder and extract the complete archive. In the extracted folder, right mouse click on the file "install.exe" and select "Run as administrator". Follow the setup instructions on the screen.



### **Instrument driver installation**

During installation you are asked to connect the instrument with the computer. It is highly recommended to do so exactly at that time and not before.



### **smart-chart License Activation**

The software can be used for 30 days free trial. Thereafter, you need to register for either smart-lab Gloss or smart-process Gloss. The standard delivery includes two licenses for the selected software package.



### **How to activate the license?**

- › Make sure to have a reliable internet connection
- › Start smart-chart and click on "About/License"
- › Connect the instrument with the computer and click on the "License" tab
- › Two license fields appear: one for smart-lab Gloss and one for smart-process Gloss. Select the desired software by clicking on the appropriate "Validate License" button.
- › In case a license is available the button "Import Online License" appears. Click on this button, fill in the registration form and click on "Register"
- › The activation of the license is shown in the upper "License Information" field.



### **How to transfer the license?**

If smart-chart needs to be transferred to another computer, the license needs to be returned from the actual computer and activated on the new computer.

- › Make sure to have a reliable internet connection
- › Start smart-chart and click on "About/License"
- › Find the respective software license in the upper "License Information" field and click on the "Return License" button
- › A confirmation is shown that the license was successfully returned

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