

TeleFlash™ System

-Contact Spectrophotometer

Automatic Online
Color Quality Control

- Non-contact color measurement throughout production
- Continuous color quality reporting
- Comparison to a standard or absolute measurement



EXPERIENCE
the measurable color difference.™

TeleFlash™ System

Online and In Charge

Automated. Non-contact. Non-destructive. TeleFlash spectrophotometers bring innovation to a whole new level.

The TeleFlash system provides online color measurement and evaluation of color deviation to the running production line. Textured, finely patterned, gloss, no problem: TeleFlash tackles a breadth of products, including extruded vinyl, bulk goods, coil coatings, synthetic films, paints (wet and dry), textiles, carpeting, granules, food pigments, paper, powders, glass, ceramics, metal, minerals and plaster. The TeleFlash system even accommodates applications in environments that are very dusty or require explosion-proof protection.

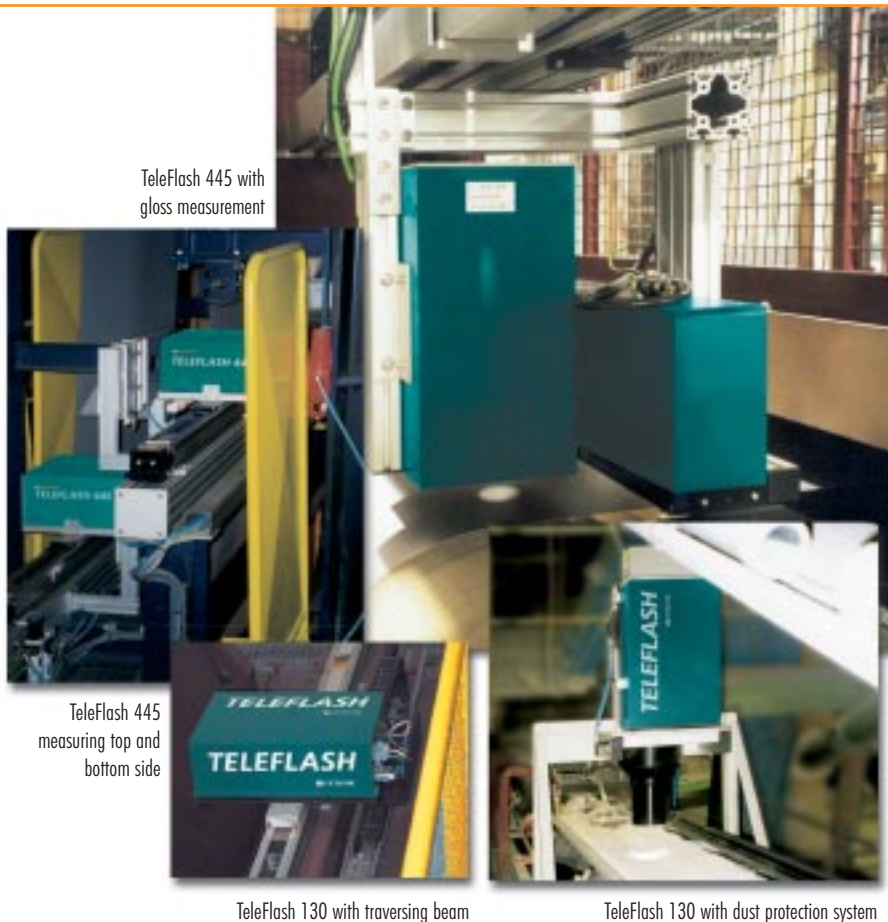
TeleFlash offers a measuring distance of up to five feet, tolerating small variations in the measuring distance from system to sample. Wait time? Not with the system's thermochromism compensation, which allows for color measurement without the time usually required for cooling and stabilizing.

Automated and Accurate

Automation translates to enhanced quality assurance and flexibility. Not to mention time and cost savings.

Mounted on a traversing beam, TeleFlash measures color at random points on a moving sample, generating continuous color quality reporting displayed onscreen in trend diagrams associated with the actual measurement position. Visual graphics and acoustic warnings indicate when color tolerances are exceeded.

Load jobs manually or with a network connection. The TeleFlash system intuitively senses the beginning of each batch and automatically initiates the

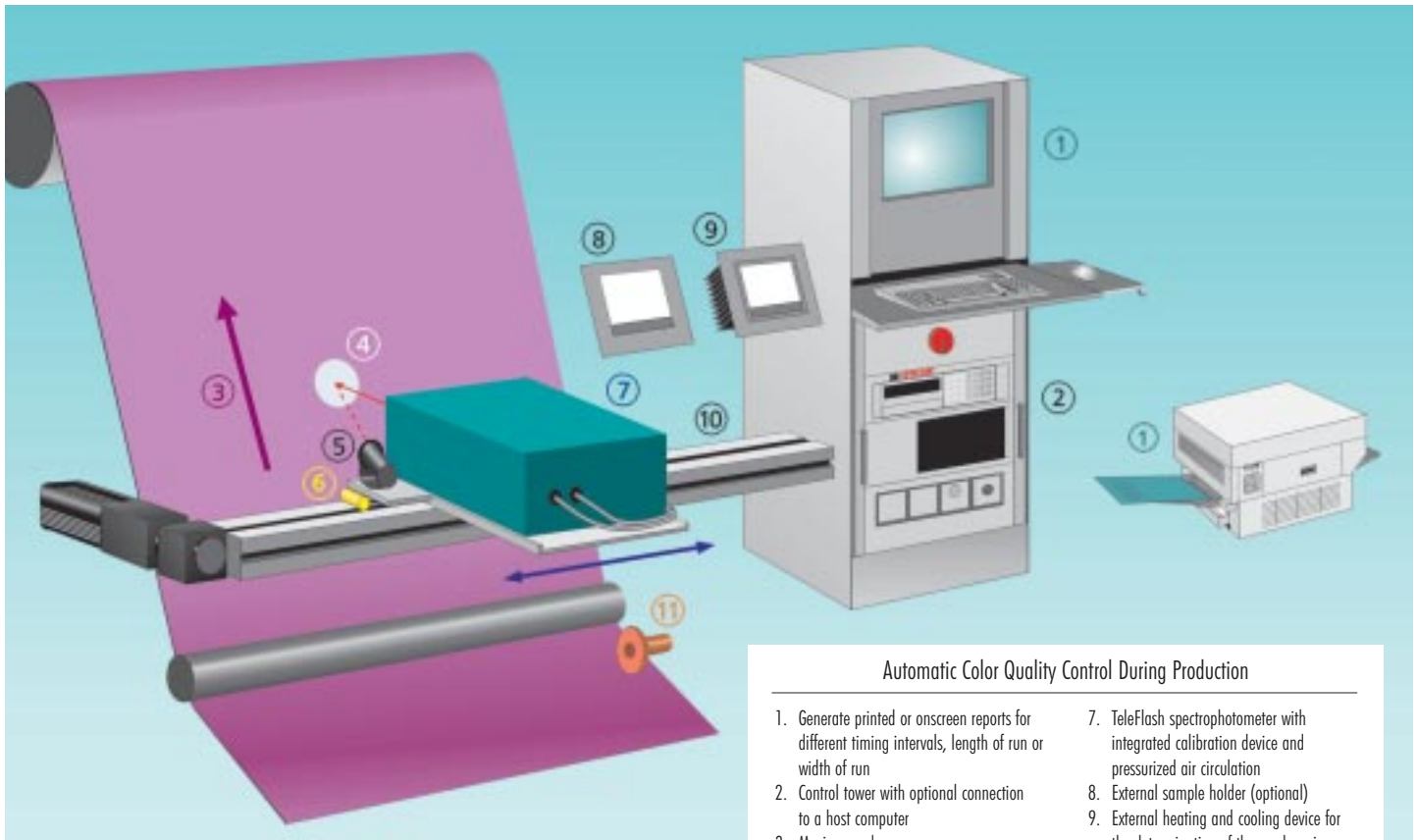


measurement process. When TeleFlash recognizes a batch change, a quality report for the completed job prints and the next job begins. Following each batch, data is either stored and compiled into a printed report or processed for automatic network transmission.

TeleFlash is as easy to operate as it is effective. TCP/IP protocol using a network connection or serial interface supports communication with a network of computers. This system uses a client / server concept that permits operation via a host computer and spreadsheet storage of data. Multitasking allows additional functions to be executed during operation. Calibration of the color measurement system may be conducted through optional automated calibration devices.

TeleFlash Advantages

- Early avoidance of waste in production
- Non-contact, non-destructive measurement
- Early recognition of deviations in color
- Long-term storage of sample measurements
- Complete documentation of color quality
- Objective, comprehensive color quality evaluation according to international standards
- Simple determination of uniform delivery tolerances
- Modular, flexible concept for application in production
- Ability to be combined with other non-contact measuring systems like the GLOSSFLASH gloss measuring system
- Reproducible measurement of color even with textured or finely patterned samples
- Determination and correction of thermochromism effects (optional)



Automatic Color Quality Control During Production

1. Generate printed or onscreen reports for different timing intervals, length of run or width of run
2. Control tower with optional connection to a host computer
3. Moving goods
4. Measuring diameter, measuring distance
5. Non-contact thermometer (optional)
6. Edge sensor (optional)
7. TeleFlash spectrophotometer with integrated calibration device and pressurized air circulation
8. External sample holder (optional)
9. External heating and cooling device for the determination of thermochromism (optional)
10. Traversing measuring bridge
11. Meter/counter

System Configuration

- TeleFlash 130 or TeleFlash 445 stationary spectrophotometer
- Certified calibration standards
- Software for color quality evaluation, including graphical output of differences in color against length of run or time
- Available formulas for calculating deviations in color: CIE Lab, HunterLab, CMC (l:c), CIE 94 (1:1:1), XYZ, Yxy, CIEUCS, CIE LUV, whiteness indices (ASTM E313-73, Stensby, CIE), yellowness indices (ASTM D1925-70), metamerism index, density (visual, filter: 29, 30, 33, 47, 47B, 50, 61, 70, 72B)
- Available illuminants for 2° and 10° normal observation: D65, D75, D55, D35, A, TL84, F2, F7, P, C, HOR, EGS, B, G, Xe, ADN
- Visual and/or acoustic signals



TeleFlash 445 in laboratory with heating-cooling device for determination of thermochromism

TeleFlash™ System



Hardware Options

- Traversing bridge for operation
- Edge sensor
- Non-contact temperature measurement with pyrometer
- Automated calibration
- Heating and cooling device for determination of thermochromism
- Counter for recording length of run
- Dust protection system
- Explosion-proof safety equipment
- GLOSSFLASH non-contact gloss measurement
- Personal computer with Windows® operating system

TELEFLASH 130 SPECTROPHOTOMETER SPECIFICATIONS

Measuring Geometry
Alpha/Alpha

Light Source
Xenon Flash Lamp

Measuring Range
0 - 160% reflectance light source

Spectral Range
400 to 700nm

Monochromator
Dual beam, 16 channel monochromator

Measuring Time
100 - 600 μ s micro seconds (depends on distance)

Measuring Interval
Min. 2 seconds

Short-Term Repeatability
 $\leq 0.05 \Delta E_{cmc}$ (2:1) for 12 colored tiles (BCRA)

Long-Term Repeatability
 $\leq 0.20 \Delta E_{cmc}$ (2:1) for 12 colored tiles (BCRA) (for 42 cm measuring distance)

Inter-Instrument Agreement
 $\leq 0.30 \Delta E_{cmc}$ (2:1)

Measuring Distance Range
16.5" - 59.1" (42 - 150cm)

Distance Stability
 $\leq 0.10 \Delta E_{cmc}$ (2:1) for 10mm

Measuring Area
2.4" - 5.1" (60 - 130mm) diameter (depends on distance and optical configuration)

Mounting Angle
22.5° from the surface normal (required by the measuring geometry)

Calibration
Black and white (external)
Integrated, automated daily calibration

Data Output
Serial, RS 232 (DB 25, female), 9600 baud

Working Environment
10 - 60°C, 10 - 90% relative air humidity (non-condensing)

Power Supply
90 - 265 VAC

Compressed Air Connection
Air Purge for Prevention of dust intrusion

Dimensions
6.3" H x 10.6" W x 15" L
160 H x 270 W x 380 L (mm)

Weight
Approx. 34 lbs. (15.4 kg)

Option
IR non-contact thermometer for 32 - 210°F (0 - 100°C) (external)

TELEFLASH 445 SPECTROPHOTOMETER SPECIFICATIONS

Measuring Geometry
45° / 0°

Light Source
Xenon Flash Lamp

Observation
0°

Measuring Range
0 - 160% reflectance

Spectral Range
400 to 700nm

Spectrophotometer
16 channel, Dual beam monochromator

Measuring Time
100 - 600 μ s micro seconds

Measuring Interval
Minimum 2 seconds

Short-Term Repeatability
 $\leq 0.03 \Delta E_{cmc}$ (2:1) for 12 colored tiles (BCRA)

Long-Term Repeatability
 $\leq 0.20 \Delta E_{cmc}$ (2:1) for 12 colored tiles (BCRA) specifications for 2" (50mm) measuring distance

Inter-Instrument Agreement
 $< 0.20 \Delta E_{cmc}$ (2:1)

Measuring Distance Range
2.17" \pm 0.2" (55mm \pm 5mm)

Distance Stability
0.10 ΔE_{cmc} (2:1) / 0.4" (10mm)

Measuring Area
1.2" (30mm) diameter

Mounting Position
Vertical to the mounting surface

Calibration
Black and white (external)

Data Output
Serial, RS 232 (DB 25, female), 9600 baud

Working Environment
50 - 140°F (10 - 60°C), 10 - 90% relative air humidity (non-condensing)

Power Supply
90 - 265 VAC

Compressed Air Connection
Air Purge for Prevention of dust intrusion (not necessary for application in laboratory)

Dimensions
7.9" H x 11.4" W x 15.8" L
200 H x 290 W x 402 L (mm)

Weight
Approx. 25 lbs. (11.2 kg)

Option
IR non-contact thermometer for 32 - 210°F (0 - 100°C) (integrated in TeleFlash 445)



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