

# OVERCOMING CHALLENGES SURROUNDING COLOR MANAGEMENT IN CERAMIC DIGITAL PRINTING THROUGH NEW APPROACHES

## DIGITAL PRINT WORKFLOW & COLOR MANAGEMENT SOLUTIONS FOR

### COMMERCIAL PRINTING



Large Format



Film & Repro



Proofing



Packaging



Textile



Décor



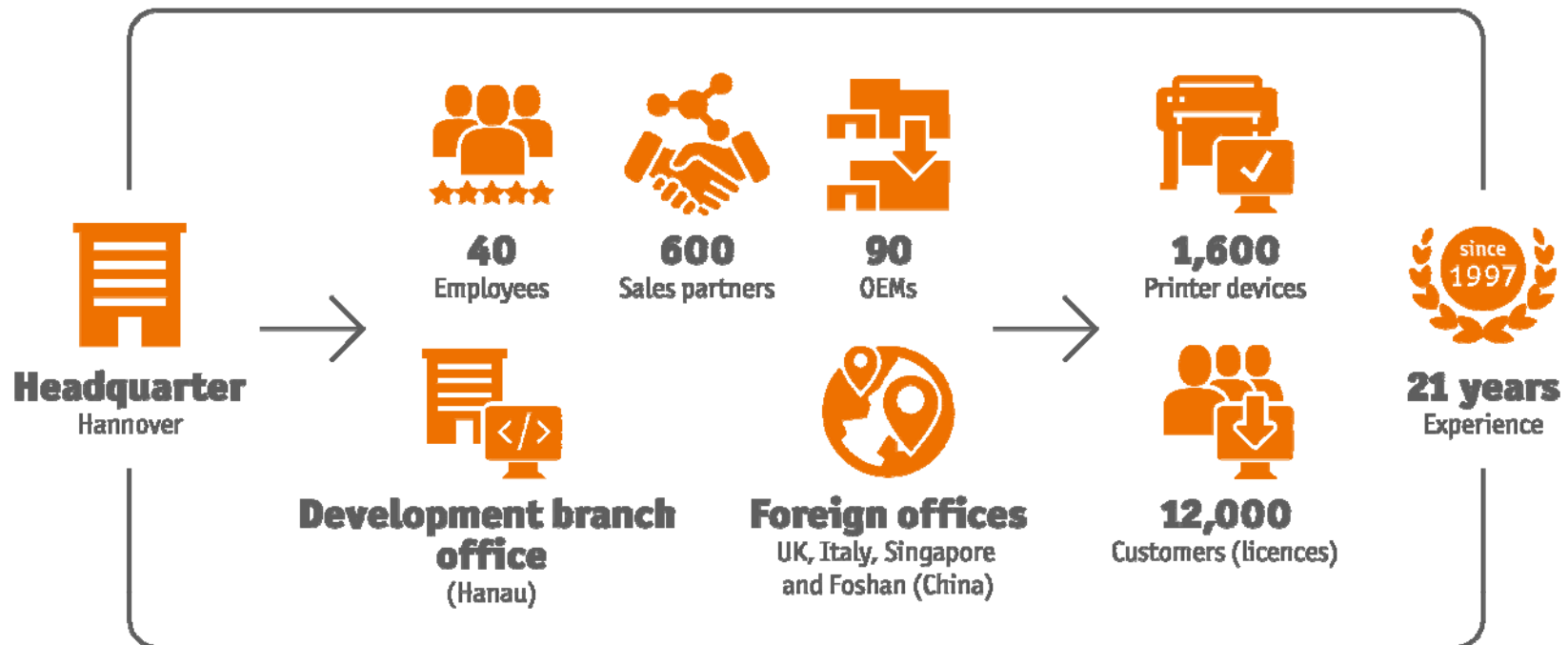
Ceramics

### INDUSTRIAL PRINTING



# ColorGATE at a glance

## About ColorGATE



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- Challenges in the digital decoration of ceramic materials
- measurement devices
- Fingerprint - a new approach to ICC profiling
- Workflowanimation

# Challenges in the digital decoration of ceramic materials

The color-consistent decoration of ceramic products is a big challenge due to varying natural materials and the complicated production, which for example provides a firing process between 800° and 1400° C.

## Challenges

- ∴ Often changing and non-standardized raw materials (e.g. frits, feldspar, clay, quartz, kaolin, silica, chemicals etc.)
- ∴ Complex and demanding production process whose parameters partly have a considerable influence on color development (e.g. compounding, pressing, engobing, glazing, drying, firing)
- ∴ Different compositions and formats require different kiln profiles
- ∴ Non standardized ink sets, configurations, effekt inks and colors



"With the ColorGATE solution it is much easier to produce fast, color-consistent prints specifically for the ceramics industry."

Barbara Galster, Deutsche Steinzeug

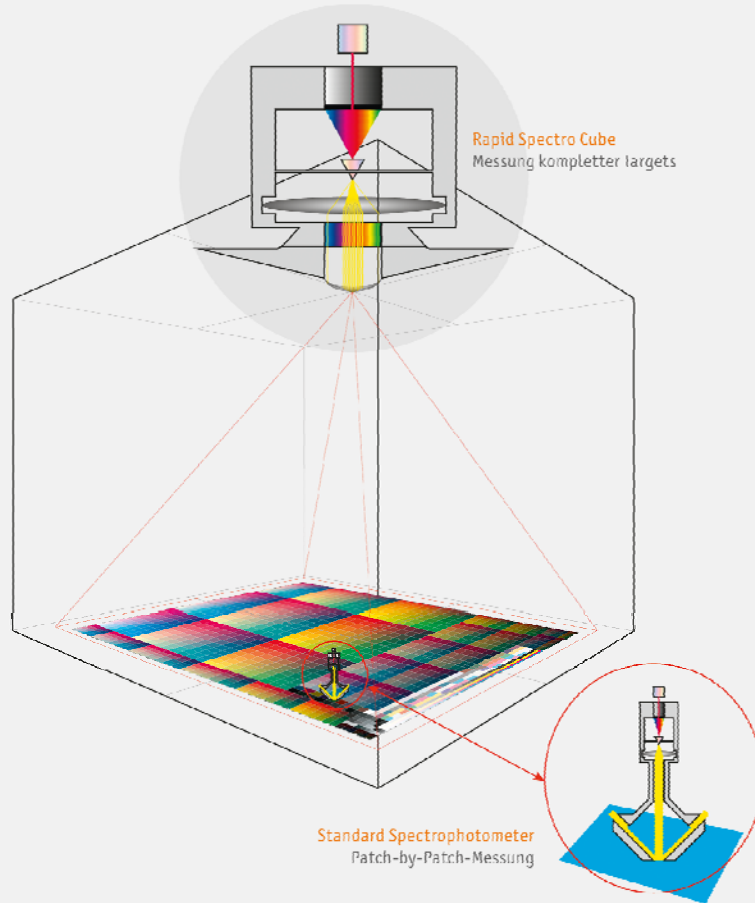
Unsuitable and suitable  
measurement technology

## Rapid Spectro Cube (RSC)

All-in-one Color Management solution  
for ultrafast color measuring and ICC  
profiling for industrial digital printing  
applications.



Rapid Spectro Cube vs. Standard Spectrophotometer  
Messung kompletter Targets vs. Messung Patch-by-Patch Messung



„What you see is what you get“ - “Measure like your own eyes“

Typical spectrophotometers for graphical applications are specialized to read the single patches of printed media in a standard compliant way according to their fixed illumination and sensor geometry. They apply low-resolution sensors which make the process very time-consuming and it may lead to incorrect measurements of structured or translucent or reflective surfaces, with the consequence that obtained measurement data is useless for accurate color management.

The RSC, however, with its high-resolution sensor technology is able to read a large surface at once and provides accurate measurement results, even for surfaces that are difficult to measure to characterize them precisely. In doing so, the reading method of the RSC corresponds to the actual color impression of the human eye.

**RAPID  
SPECTRO  
CUBE**

Measurements and profiles can be acquired from different conditioned substrates, such as.

From non-white/tinted or colored substrates, such as:

- ✦ Corrugated
- ✦ Leather
- ✦ Wood, ceramics
- ✦ Metallic surfaces

From translucent substrates, such as:

- ✦ Backlit materials
- ✦ Glass
- ✦ High gloss ceramic tiles
- ✦ High gloss finished décor panels
- ✦ Metallic surfaces

From structured substrates, such as:

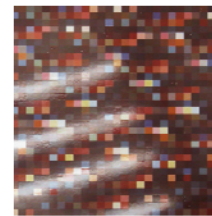
- ✦ Carpets
- ✦ Ceramic tiles
- ✦ Leather
- ✦ Textiles



Target on substrate



Final print on substrate



Target on substrate



Final print on substrate

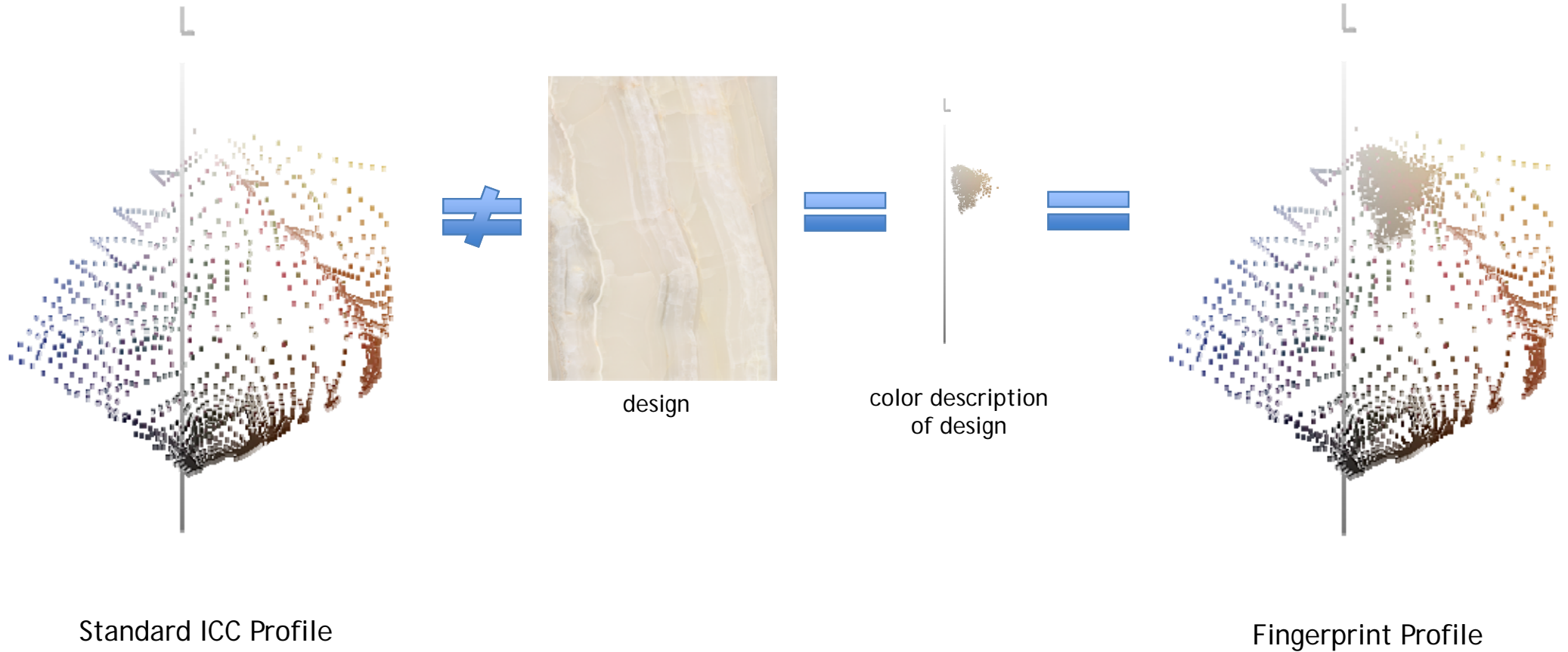
# Fingerprint Module (FPRM)

Patented technology for a “digital color twin”





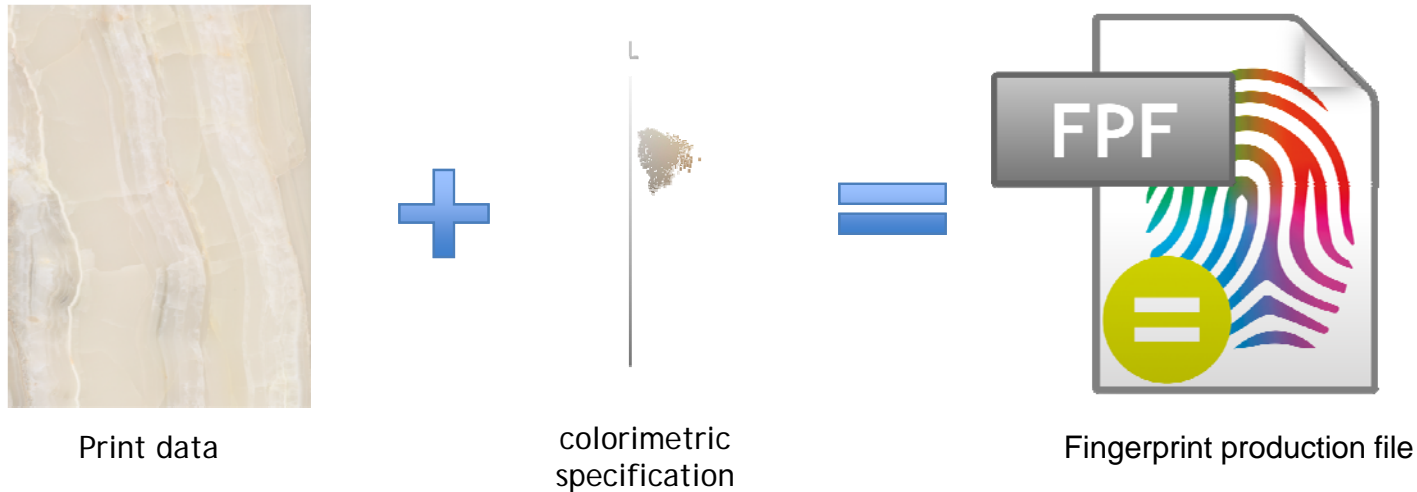
# ICC Profile versus Fingerprint Profile



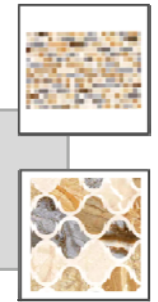
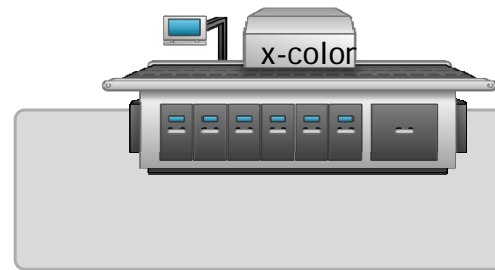
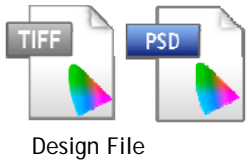
# Fingerprint Module (FPRM): How does it work?

The production file will be saved including the embedded color characterization.

This fingerprint production file, which includes a colorimetric specification of the initial print, represents a digital master that provides a reliable reference so that future reprints can be reproduced exactly and color consistent.



### 1. Initial Production & Fingerprint Creation



Result Production



Fingerprint Measurements

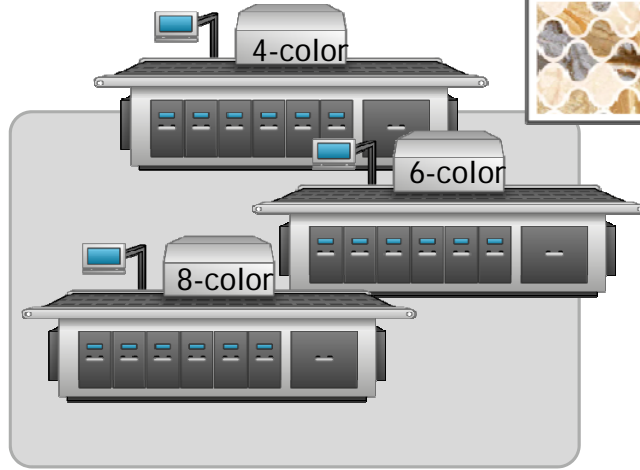
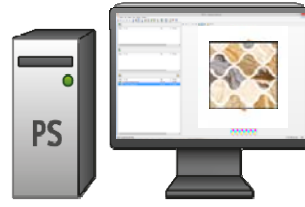
Productionserver (PS) processes Fingerprint Measurements

### 2. Reproduction with Fingerprint Production File

PS generates the Fingerprint Production File



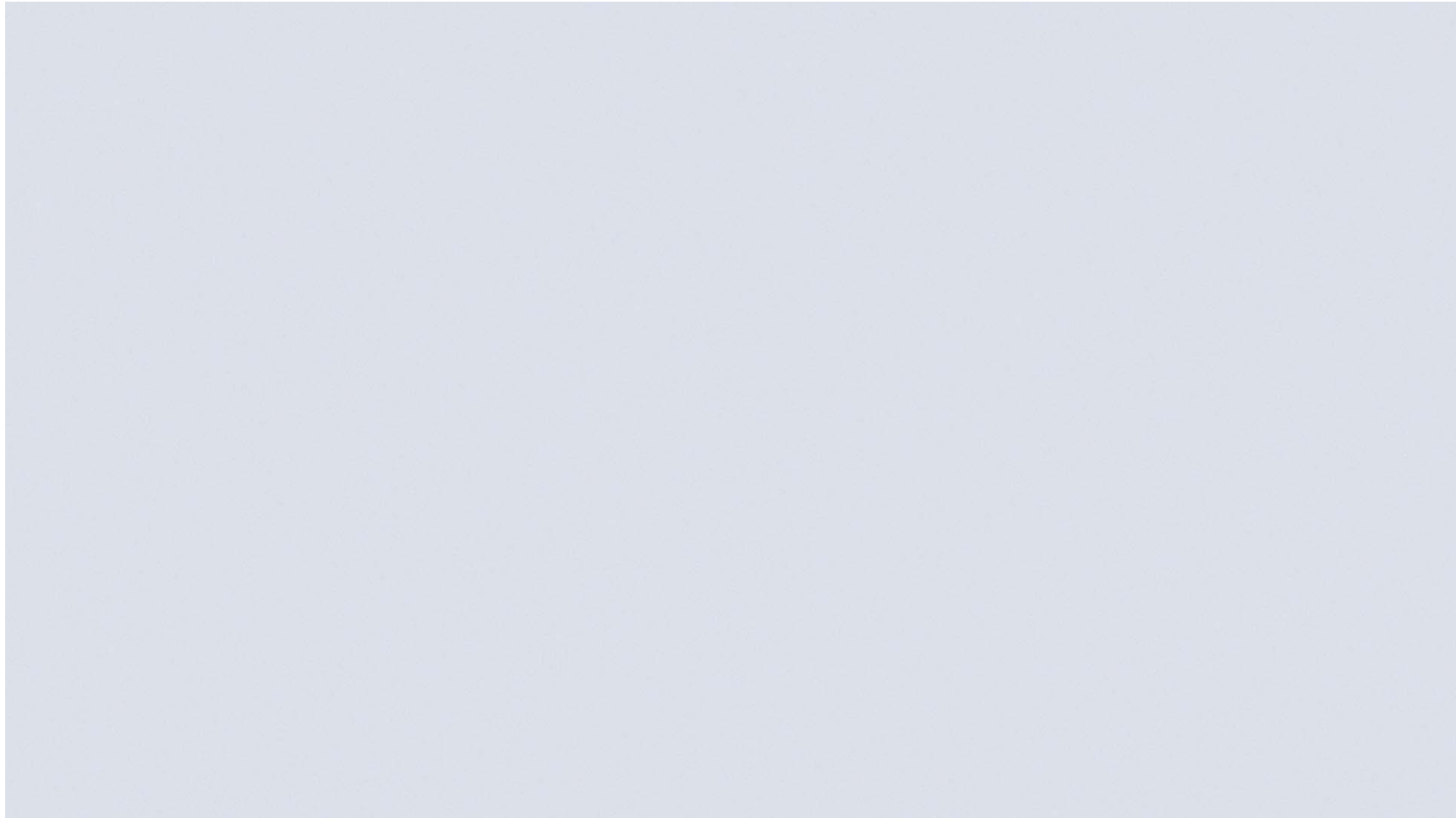
- Fingerprint Production File
- Designspecific
- Colorimetric fingerprint
- Universal reproducible



Result Reproduction



# Workflowanimation/Cooperation with Durst



[www.colorgate.com](http://www.colorgate.com)



 **ColorGATE**