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Color sample Siemens Cool Gray

Printing technique:	Sheet-fed offset with moisturizing; no UV inks
Printing ink:	Color formula 98640; Epple Druckfarben AG
Real properties:	Light: 7; Alcohol: YES; Nitro: YES; Alkali: JA
Transparency:	YES
Drying:	Absorbent and oxidative
Manufacturer:	Epple Druckfarben AG – www.epple-druckfarben.de
Varnish:	Huber PRINTLAC-ECO glossy 10 L 9510 (free of mineral oils)
Manufacturer:	Huber Group - www.hubergroup.de
Paper:	Hello Silk (fine coated paper) – sample print with 170 g/qm
Manufacturer:	Sappi
Batch coloration:	L*= 94.8; a*= 0.8; b*= - 3.3 (at the time of printing)

REFERENCE values: L* = 62.5; a* = - 4.5; b* = -13.0

Varnished and not varnished
Measured in the dry state (min. 12 hours after printing)
Reverse side print: Full tone Siemens Cool Gray or unprinted

Measurement condition:	D50; 2° monitor; ABS (absolute white reference); no filter; According to ISO 13655 – M1
Measuring device:	X-Rite (Gretag) Spectro Eye
Backing:	Black backing (according to ISO 5-x)

Information regarding quality assurance

1) REFERENCE value to check the inking on the wet sheet

The reference value must, under all circumstances, be individually determined, as deviations occur between various measuring devices and the type of sample measurement (inline/offline).

The individual reference value can be both densitometric or also spectral photometric.

Siemens Cool Gray becomes slightly brighter after drying (approx. 0.5 delta-L*; measured with the same measuring device).

If various measuring units are used, then significantly higher deviations can occur between the wet and the dry sample measurements. Deviations in the range of plus/minus 1.5 delta-L* have been observed.

For the reasons that have been explained, the above mentioned reference value must not be simply used as value for inking at the printing machine.

2) Possible deviations from the specified b* value

As the current measuring devices differ from the measuring condition M1, measurements with other measuring devices can result in deviations in the b* value due to the various UV components. If required, the deviation between the measuring device being used and an X-Rite (Gretag) Spectro-Eye should be determined by measuring on the paper used for printing.

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As a result of the varnish, the full tone Siemens Cool Gray becomes just slightly “yellow”. The deviation is approx. delta-b* = -0.5 (12.5 instead of 13.0). A “contact yellowing” cannot be completely excluded and should be checked. Differentiated reference values are not used as also the paper batches manifest fluctuations.

Deviations in the b* value below +/- 0.8 on unprinted and unvarnished paper from the above mentioned value do not result in a relevant deviation in the full tone of Siemens Cool Gray.

As the optical brightener in each paper changes due to aging and the effect of UV, if required, the paper should be checked before and after printing. This is especially the case if UV dryers are to be used.

3) Deviations of the MEASUREMENT from the REFERENCE value

It is a known fact that a monitor is in a position for non-colored (gray) colors to detect deviations below 0.5 delta-E*. However, these low deviations cannot be realized in the production process. However, in order to still achieve the highest possible level of acceptance, we recommend that the deviations are minimized corresponding to the following information.

The measuring device used should not indicate deviations higher than 1.75 delta-E* on the color sample for the above-mentioned measuring conditions. If this is available, the above-mentioned REFERENCE value should be used as reference value for the print run.

If the deviations of the measuring device for the color sample lie above 1.75 delta-E*, then the measurement should be repeated with a second color sample. The average value should be generated from a minimum of 3 measurements.

If deviations still occur, for the print run the average value of your own measurements (own REFERENCE value) should be used as reference value (dry). Where relevant, the measuring device should be checked.

4) Deviations of the PRINT RUN from the REFERENCE value

To check the deviation over the print run, at least 10 uniformly distributed sheets over the print run should be checked.

The average value of this sheet should, as far as possible, not deviate from the REFERENCE value by more than 1.5 delta-E*.
The L* value of 95% of the print run should lie in a range of plus/minus 2.0 to the average value of the print run.

5) Color assessment

The conditions specified in ISO 3664 must be maintained.

Daylight with a higher component of short-wave radiation results in visible differences between the varnished and unvarnished samples and cannot be used for the color assessment.

6) Screen ruling of Siemens Cool Gray

The tonal value stages on the ink samples are not intended for visual assessment or to determine reference values. They are used to determine the tonal value increase of the print condition starting from a “linear” print form.

When using screen ruled tonal values, it should be carefully ensured that the print form was adapted so that when printing, a tonal value increase is obtained corresponding to curve B in TABLE 7, Page 11 in the BVDM “Media standard 2008”.

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