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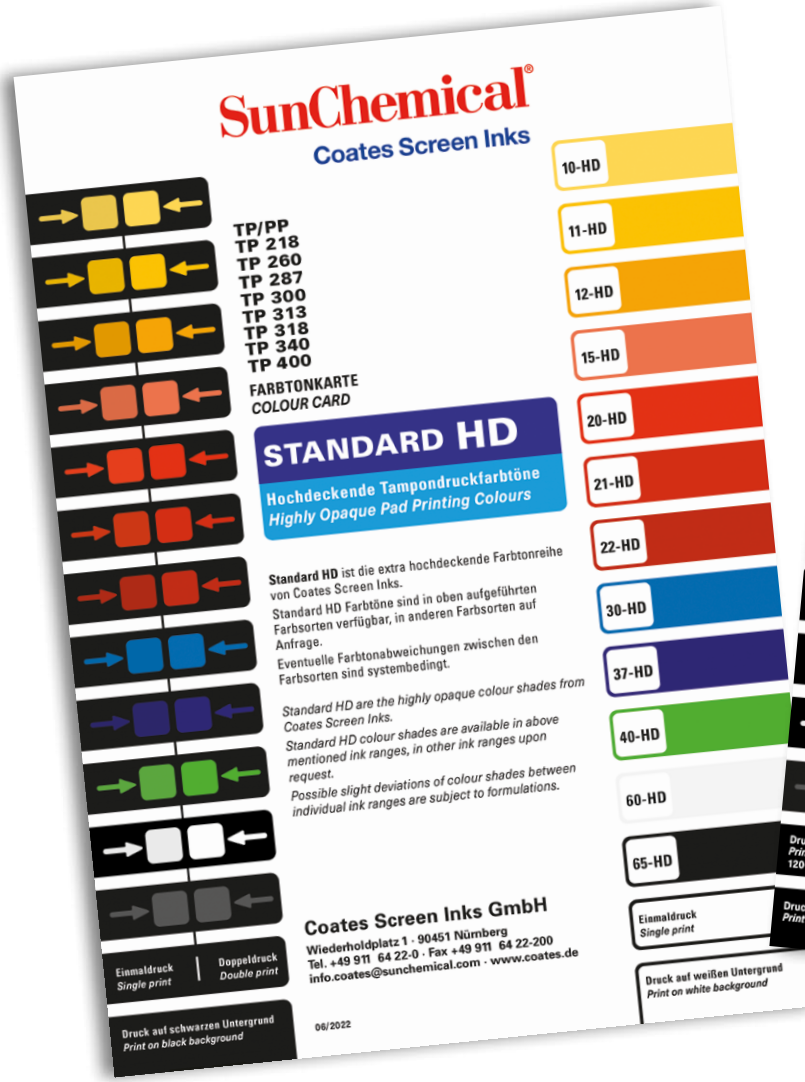
Training

STANDARD HD

The highly opaque Colour Range



Colour templates for print jobs

Screen and pad printers often have to match Pantone® PMS colours. As the brilliant PMS colours (as well as HKS colours) are designed for offset printing applications on white back grounds they are very transparent. For best possible matches of screen and pad printings inks of Coates Screen Inks GmbH we use the semi- or highly transparent colours of the C-MIX 2000 system.

For strong colour shades on coloured, mainly dark, and black substrates, the C-MIX 2000 system has limitations. Here colour shade adjustments with best possible opacity are necessary.

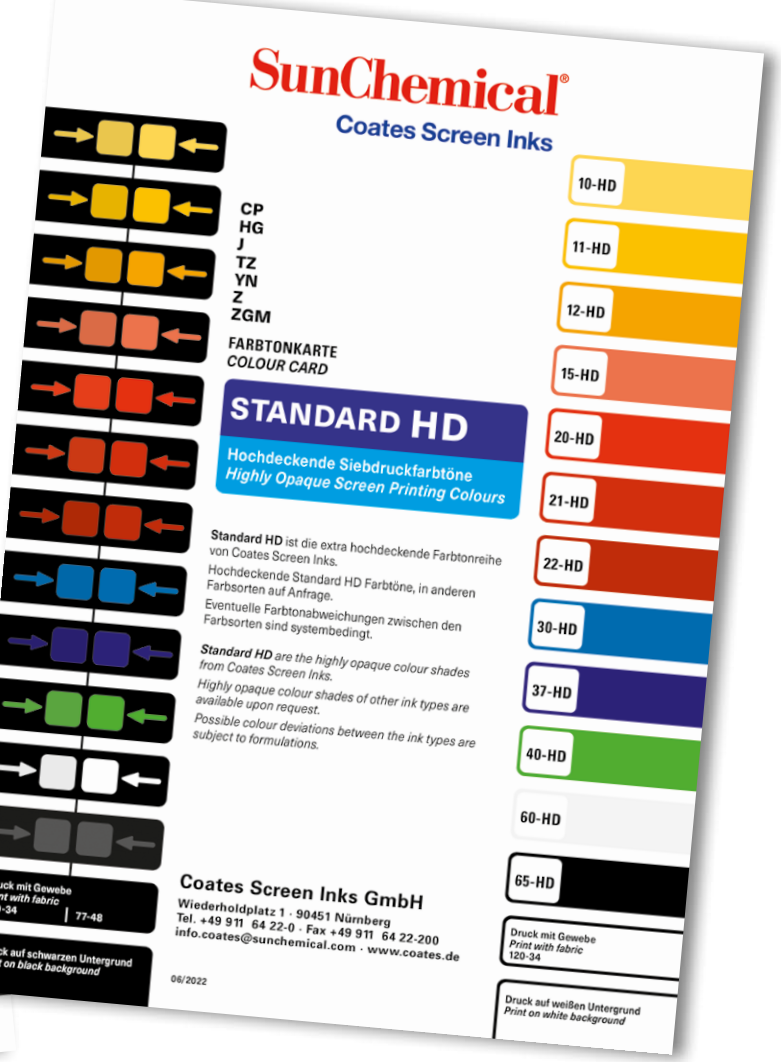
Note:

The more brilliant and bright a colour should be, the more transparency (translucency) is required and it must be printed on a smooth white substrate (see Pantone PMS C for differences compared to PMS U colour fans).

The opaquer a colour shade is, the "dirtier", duller it appears compared to a transparent ink, printed on a white substrate. A transparent ink layer is like a colour filter. The incident light can pass through "straight“ to the white substrate and is emitted again in a direct reflection. To obtain a good opacity on a black substrate a diffuse light reflection is required within the ink layer. For darker shades, an additional absorption of the incident light is required. This is the reason for the duller, often also pastel-like appearance of the colour.

Matching of PMS or HKS colours on a dark background, will therefore always be a compromise. On the other hand, the opaquer RAL or NCS colours are usually much easier to match.

Difference of opacity between a brilliant, transparent blue and a highly opaque blue.



Requirements of Highly Opaque Colours

1. Pigments with a high light scattering capacity or in the case of black with high light absorption.
2. For colour shades a mixture of opaque white and colour pigments.
3. High pigment content in the ink.
4. Thick ink layers. Coarse screen fabrics or for pad printing multi-layer prints.

Possibilities and Limits

Because of the different properties of pigments, very high opacity can be achieved with blue, green or violet colours. Such high values cannot be achieved with yellow, orange, and red pigments.

You cannot add unlimited amounts of pigments (powder) to an ink. There is a maximum addition for each pigment. If that maximum amount is exceeded the printing ink will become instable, the printed ink layer will crack, there will be insufficient adhesion and the resulting ink layer will be very sensitive to scratches. Opaque white can contain more than 50% pigments, opaque black about 30%. Colour shades, depending on pigment up to 20%.

Colour Range STANDARD HD

For many years now, we have been offering with great success our colour range STANDARD HD, 12 colours with extra high opacity. The different colours have been formulated with maximum possible pigment concentration in respect to chemical properties and printability. The colour numbers are based on our regular Standard colour range with the addition HD.

Colour Numbers STANDARD HD

Citric yellow, highly opaque	10/HD
Medium yellow, highly opaque	11/HD
Dark yellow, highly opaque	12/HD
Orange, highly opaque	15/HD
Light red, highly opaque	20/HD
Bright red, highly opaque	21/HD
Carmine red, highly opaque	22/HD
Light blue, highly opaque	30/HD
Violet, highly opaque	37/HD
Light green, highly opaque	40/HD
White, highly opaque	60/HD
Black, highly opaque	65/HD

STANDARD HD Colours are available in solvent based screen ink ranges:
CP, HG, J, TZ, YN, Z, ZGM
(for further ink ranges upon request)

STANDARD HD Colours are available in the following solvent based pad printing ink ranges:
TP/PP TP 218 TP 260 TP 287 TP 300 TP 313 TP 318 TP 340 TP 400
(for further ink ranges upon request)

Colour Card STANDARD HD

Screen printed colour cards STANDARD HD are available upon request. The colours were printed on white and black substrate with 120-*34* screen fabric and in addition with a 77-*48* fabric on black only. The version for pad printing inks was also screen printed, colour reproduction was simulated by single and double prints.

Light Fastness and Weather Resistance

The pigments used for STANDARD HD colours show good light fastness. Because of the high pigmentation combined with a high content of white pigments out-door use of such prints is not recommended.

Colour Mixture

All STANDARD HD colours of one ink range are inter-miscible and can also be combined with C-MIX 2000 colours of the same ink type if you only require medium opacity combined with high brilliance.