FOGRA characterisation data for offset, continuous forms and screen printing

The data provided in the accompanying characterisation tables provide colorimetric characterisation of various reference printing conditions that relate to conditions specified in the parts 2 and 5 of the ISO 12647 series of international standards.

The characterisation tables show what colour to expect on a print if an image area with given CMYK data tone values is

- output one-to-one on to film with a (carefully linearised) image setter, with the half-tone screen frequency specified, and if
- the job is printed on the print substrate stated, with standard tone values and standard solid inking as specified in the pertinent part of ISO 12647, see [2] to [8], with inks conforming to the pertinent part of ISO 2846, see [12] to [16], and if
- the colorimetry measurement is made with the following conditions: D50, 2 degree observer, 0/45 or 45/0 geometry, no polarizing filters, CIELAB, white or black backing as indicated, see [11].

Characterization tables according to ISO 12642 [10] are usually used to produce ICC profiles or to check the contract-proof worthyness of a proof with respect to a certain printing condition.

The following table gives an overview of the files available:

<table>
<thead>
<tr>
<th>FOGRA</th>
<th>PT</th>
<th>g/m²</th>
<th>Backing</th>
<th>Process</th>
<th>Year of standard</th>
<th>Screen width</th>
<th>Profile name</th>
<th>ISO short form</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>115</td>
<td>black</td>
<td>Offset, POS</td>
<td>1989</td>
<td>60</td>
<td>suppereded</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>115</td>
<td>black</td>
<td>Offset, POS</td>
<td>1989</td>
<td>60</td>
<td>suppereded</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>65</td>
<td>black</td>
<td>Offset, POS</td>
<td>1989</td>
<td>60</td>
<td>suppereded</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>115</td>
<td>black</td>
<td>Offset, POS</td>
<td>1989</td>
<td>60</td>
<td>suppereded</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>115</td>
<td>black</td>
<td>Offset, NEG</td>
<td>1989</td>
<td>60</td>
<td>suppereded</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>115</td>
<td>black</td>
<td>Offset, NEG</td>
<td>1989</td>
<td>60</td>
<td>suppereded</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>65</td>
<td>black</td>
<td>Offset, NEG</td>
<td>1989</td>
<td>60</td>
<td>suppereded</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>115</td>
<td>black</td>
<td>Offset, NEG</td>
<td>1989</td>
<td>60</td>
<td>suppereded</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>_</td>
<td></td>
<td>black</td>
<td>Screen, gamut class 2, conv. UV or water-based air-dried ink</td>
<td>2001</td>
<td>30</td>
<td>SC_GC2_CO_F30</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>1,2</td>
<td>115</td>
<td>black</td>
<td>Offset, POS</td>
<td>2004</td>
<td>60</td>
<td>ISOcoated bb</td>
<td>suppereded</td>
</tr>
<tr>
<td>12</td>
<td>3</td>
<td>65</td>
<td>black</td>
<td>Offset, POS</td>
<td>2004</td>
<td>60</td>
<td>ISOwebcoated bb</td>
<td>suppereded</td>
</tr>
<tr>
<td>13</td>
<td>4</td>
<td>120</td>
<td>black</td>
<td>Offset, POS</td>
<td>2004</td>
<td>60</td>
<td>ISOuncoated bb</td>
<td>suppereded</td>
</tr>
<tr>
<td>14</td>
<td>5</td>
<td>120</td>
<td>black</td>
<td>Offset, POS</td>
<td>2004</td>
<td>60</td>
<td>ISOuncoated edyellow is hbb</td>
<td>suppereded</td>
</tr>
<tr>
<td>15</td>
<td>1,2</td>
<td>115</td>
<td>white</td>
<td>Offset, POS</td>
<td>2004</td>
<td>60</td>
<td>ISOcoated sb</td>
<td>suppereded</td>
</tr>
<tr>
<td>16</td>
<td>3</td>
<td>65</td>
<td>white</td>
<td>Offset, POS</td>
<td>2004</td>
<td>60</td>
<td>ISOwebcoated sb</td>
<td>suppereded</td>
</tr>
<tr>
<td>17</td>
<td>4</td>
<td>120</td>
<td>white</td>
<td>Offset, POS</td>
<td>2004</td>
<td>60</td>
<td>ISOuncoated edsb</td>
<td>suppereded</td>
</tr>
<tr>
<td>18</td>
<td>5</td>
<td>120</td>
<td>white</td>
<td>Offset, POS</td>
<td>2004</td>
<td>60</td>
<td>ISOuncoated edyellow is hsb</td>
<td>suppereded</td>
</tr>
<tr>
<td>19</td>
<td>1,2</td>
<td>115</td>
<td>black</td>
<td>Offset, POS</td>
<td>2004</td>
<td>70</td>
<td>ISOcoated</td>
<td>suppereded</td>
</tr>
</tbody>
</table>
The data of FOGRA1 to FOGRA8 are superseded because of the revision of the standard [4]. They were not deleted in order to provide them as a reference for older image data files. The data FOGRA9 relates to screen printing according to ISO 12647-5 with gamut class 2, which incidentally is practically identical with Offset on gloss coated art paper. Tables FOGRA11 to FOGRA14 and FOGRA19 to FOGRA22 pertain to offset printing according to ISO/DIS 12647-2:2004, as measured on a black backing. FOGRA15 bis FOGRA18 pertain to 60/cm screen (150 lpi), FOGRA23 to FOGRA26 to a 70/cm screen, both measured on a white backing. This backing should be matt, opaque, non-fluorescent with C*<3 and L* >92.

The tables FOGRA27 to FOGRA32 were generated in the course of the production of the Altona Test Suite Application Kit [9]. They excel over FOGRA11 to FOGRA26 because of their ideal tone values for CMYK, hence better grey balance, and more realistic secondaries. They were corrected on the computer.
The data of FOGRA31 to FOGRA38 pertain to four-colour continuous forms printing according to ISO/DIS 12647-2:2004 on narrow-width web-type presses. Paper types 2 and 4, positive and negative acting plates and screen frequencies 54/cm and 60/cm are used. The print characteristic curves for this type of printing are slightly higher in the shadows as compared to those for offset commercial/speciality printing; the solids are the same.

Characterisation data and profiles for publication gravure may be obtained from (as well as profiles for offset printing) ECI, www.eci.org. Data and profiles for newsprinting are provided by IFRA at www.ifra.de.

Acknowledgements

The work towards the establishment of the data published here has been sponsored mainly by the German Printing and Media Industries Federation, the European Color Initiative (ECI), Wuppertal, www.eci.org, FOGRA Graphic Technology Association, Munich, www.fogra.org and EMPA/Ugra, St. Gall, www.ugra.ch. Furthermore, the numerous enterprises and individuals named in the documentation of the Altona Test Suite Application Kit [9] have greatly contributed to the result:

Literature


Graphic technology - Process control for the production of half-tone colour separations, proof and production prints - Part 6: Flexo printing

[9] BVDM (editor):
Altona Test Suite - Application Kit
Wiesbaden: Print & Medie Forum AG, 2004

Graphic technology - Prepress digital data exchange -
Input data for characterisation of 4-colour process printing
ISO Geneva, Switzerland

Graphic technology - Spectral measurement and colorimetric computation for graphic arts images
ISO Geneva, Switzerland

[12] ISO 2846-1
Graphic technology - Colour and transparency of printing ink sets - Part 1: Offset printing
ISO Geneva, Switzerland

Graphic technology - Colour and transparency of printing ink sets - Part 2: Newspaper printing
ISO Geneva, Switzerland

[14] ISO 2846-3
Graphic technology - Colour and transparency of printing ink sets - Part 3: Publication gravure printing
ISO Geneva, Switzerland

[15] ISO 2846-4
Graphic technology - Colour and transparency of printing ink sets - Part 4: Screen printing
ISO Geneva, Switzerland

[16] ISO 2846-5
Graphic technology - Colour and transparency of printing ink sets - Part 5: Flexo printing
ISO Geneva, Switzerland

Addresses and URLs
BVDM: Bundesverband Druck und Medien e.V., P.O.Box 18 69, 65008 Wiesbaden,
Germany, Fax +49-611-803-194, ppf@bvdm-online.de
ECI, European Color Initiative, source of the ECI Guidelines for colour managed workflows,
www.eci.org
FOGRA: FOGRA Forschungsgesellschaft Druck, P.O. Box 80 04 69, 81604 Munich,
Germany, Tel. +49-89-4 31 820, Fax +49-89-4 31 68 96, www.fogra.org
ISO International Organisation for Standardization, 3 rue de la Varembe, Case postale 131,
CH-1211 Genève, Switzerland, www.iso.ch
ISO standards may be obtained from ISO Geneva, www.iso.ch, or from national standards
institutions, in Germany from Beuth-Verlag, 10772 Berlin, www.beuth.de