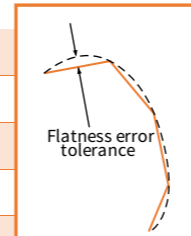


# PDF Association Cheat Sheet – Common Objects

## Graphics State

Parameter	Type(s)	Version	ExtGState Key(s)	Operator(s)	Initial Value
<b>CTM</b>	array (matrix)	1.0	-	<b>cm</b>	Identity matrix: [ 1 0 0 1 0 0 ]
<b>Clipping path</b>	path	1.0	-	<b>W, W*, ET</b> (if <b>Tr=4-7</b> )	<b>MediaBox</b> of page. <b>BBox</b> for XObjects.
<b>Color space</b>	name or array	1.0	-	various	<b>DeviceGray</b>
<b>Color</b>	various	1.0	-	various	black (0.0) in <b>DeviceGray</b>
<b>Text matrix</b>	array (matrix)	1.0	-	<b>Tm, Td, TD, T*, ', "</b>	Identity matrix: [ 1 0 0 1 0 0 ]
<b>Text font and size</b>	name and number	1.0	<b>Font</b>	<b>Tf</b>	no initial value (unset)
<b>Text horizontal scaling</b>	number (> 0, percentage)	1.0	-	<b>Tz</b>	100.0
<b>Text Knockout</b>	boolean	1.4	<b>TK</b>	-	<b>false</b>
<b>Text character spacing</b>	number	1.0	-	<b>Tc, "</b>	0.0
<b>Text word spacing</b>	number	1.0	-	<b>Tw, "</b>	0.0
<b>Text Leading</b>	number	1.0	-	<b>TL, TD, T*</b>	0.0
<b>Text rendering mode</b>	integer (0-7)	1.0	-	<b>Tr</b>	0 (fill)
<b>Text rise</b>	number	1.0	-	<b>Ts</b>	0.0
<b>Line Width</b>	number	1.0	<b>LW</b>	<b>w</b>	1.0
<b>Line Cap</b>	integer (0-3)	1.0	<b>LC</b>	<b>J</b>	0 (butt cap)
<b>Line Join</b>	integer (0-3)	1.0	<b>LJ</b>	<b>j</b>	0 (miter join)
<b>Miter Limit</b>	number	1.0	<b>ML</b>	<b>M</b>	10.0
<b>Dash pattern</b>	array and number	1.0	<b>D</b>	<b>d</b>	[ ] 0 (solid undashed line)
<b>Rendering Intent</b>	name	1.3	<b>RI</b>	<b>ri</b>	<i>RelativeColorimetric</i>
<b>Stroke Adjustment</b>	boolean	1.2	<b>SA</b>	-	<b>false</b>
<b>Blend Mode</b>	name or array (array deprecated in PDF 2.0)	1.4	<b>BM</b>	-	<i>Normal</i>
<b>Soft Mask</b>	dictionary or name	1.4	<b>SMask</b>	-	<i>None</i>
<b>Constant Alpha</b>	number	1.4	<b>ca, CA</b>	-	1.0 (fully opaque)
<b>Alpha Is Source</b>	boolean	1.4	<b>AIS</b>	-	<b>false</b>
<b>Black Point Compensation</b>	name	2.0	<b>UseBlackPtComp</b>	-	<i>Default. Values are ON, OFF and Default.</i>
<b>OverPrint</b>	boolean	1.3	<b>op, OP</b>	-	<b>false</b>
<b>OverPrint Mode</b>	number	1.3	<b>OPM</b>	-	0
<b>Black Generation</b>	function or name	1.2	<b>BG, BG2</b>	-	<i>implementation dependent</i>
<b>UnderColor Removal</b>	function or name	1.2	<b>UCR, UCR2</b>	-	<i>implementation dependent</i>
<b>TRansfer function</b>	function, name, or array	1.2	<b>TR, TR2</b>	-	<i>implementation dependent</i>
<b>HalfTone</b>	dictionary, stream, or name	1.2	<b>HT</b>	-	<i>implementation dependent</i>
<b>HalfTone Origin</b>	array (2 numbers, point)	2.0	<b>HTO</b>	-	<i>implementation dependent</i>
<b>FLatness tolerance</b>	number	1.0	<b>FL</b>	<b>i</b>	1.0 (output device pixels)
<b>SMoothness tolerance</b>	number	1.3	<b>SM</b>	-	<i>implementation dependent</i>

- UPPERCASE = stroking
- lowercase = filling (non-stroking)



## Annotations (28)

Subtype	Version	Description
<b>Caret</b>	1.5	Caret mark, indicating presence of text edit.
<b>Circle</b>	1.3	Ellipse-shaped markup.
<b>FileAttachment</b>	1.3	File attachment linked to a file specification dictionary.
<b>FreeText</b>	1.3	Displays free (variable) text directly on top of the page as a callout.
<b>Highlight</b>	1.3	Highlight-style annotation. <b>Highlight</b>
<b>Ink</b>	1.3	Freehand "scribble" (arbitrary disjoint paths).
<b>Line</b>	1.3	Single straight line, with caption, leader lines, measurement.
<b>Polygon</b>	1.5	Display closed polygons, with lines or curves and various line ending styles.
<b>PolyLine</b>	1.5	Polyline annotation, with lines or curves (not closed) with various line ending styles.
<b>Projection</b>	2.0	Comments within 3D environments.
<b>Redact</b>	1.7	Redaction annotation for content identification that is to be removed.
<b>Sound</b> <i>(Deprecated in PDF 2.0)</i>	1.2	Sound annotation, with associated text. Use <b>RichMedia</b> annotation instead.
<b>Square</b>	1.3	Rectangular markup.
<b>Squiggly</b>	1.4	Squiggly-underline markup. <b>Squiggly</b> .
<b>Stamp</b>	1.3	Rubber stamp style annotation.
<b>StrikeOut</b>	1.3	Strikethrough annotation ( <b>strikethrough</b> )
<b>Text</b>	1.0	"Sticky note" style annotation. Does not rotate or scale with page.
<b>Underline</b>	1.3	Underline markup. <b>Underline</b> .
<b>3D</b>	1.6	3D artwork using U3D or PRC 3D data formats.
<b>Link</b>	1.0	Hyperlink to destination in a PDF or perform an action (e.g. URL).
<b>Movie</b> <i>(Deprecated in PDF 2.0)</i>	1.2	Movie annotation. Use <b>RichMedia</b> annotation instead.
<b>Popup</b>	1.3	Popup annotation. Must be used with markup annotations.
<b>PrinterMark</b>	1.4	Printer's marks such as registration targets, color bars, cut marks, etc.
<b>RichMedia</b>	2.0	Rich media content such as 3D, audio or video.
<b>Screen</b>	1.5	Region of a page where media clips are played, with rendition actions.
<b>TrapNet</b> <i>(Deprecated in PDF 2.0)</i>	1.3	Defines any page trapping. Only one per page. Must be last annotation on a page.
<b>Watermark</b>	1.6	Fixed size and position watermark annotation.
<b>Widget</b>	1.2	Widget annotations for field appearances on interactive forms.

See §12.5 and §13 in ISO 32000-2:2020.

## Color Spaces (11)

	Color Space	Comp.	Version	Type	PDF object / description
Device (3)	Device Gray	1	1.1	name	<ul style="list-style-type: none"> <li><code>/DeviceGray</code></li> <li>Additive color space</li> </ul>
	Device RGB	3	1.0	name	<ul style="list-style-type: none"> <li><code>/DeviceRGB</code></li> <li>Additive color space</li> </ul>
	Device CMYK	4	1.1	name	<ul style="list-style-type: none"> <li><code>/DeviceCMYK</code></li> <li>Subtractive color space</li> </ul>
CIE-Based Color Spaces (4)	Calibrated Gray	1	1.1	array	<ul style="list-style-type: none"> <li><code>[ /CalGray dict ]</code></li> <li><code>&lt;&lt; /WhitePoint [X<sub>W</sub> 1.0 Z<sub>W</sub>] /BlackPoint [X<sub>B</sub> Y<sub>B</sub> Z<sub>B</sub>] /Gamma g &gt;&gt;</code></li> </ul>
	Calibrated RGB	3	1.1	array	<ul style="list-style-type: none"> <li><code>[ /CalRGB dict ]</code></li> <li><code>&lt;&lt; /WhitePoint [X<sub>W</sub> 1.0 Z<sub>W</sub>] /BlackPoint [X<sub>K</sub> Y<sub>K</sub> Z<sub>K</sub>] /Gamma [G<sub>R</sub> G<sub>G</sub> G<sub>B</sub>] /Matrix [ ... 9 numbers ... ] &gt;&gt;</code></li> </ul>
	L*a*b*	3	1.1	array	<ul style="list-style-type: none"> <li><code>[ /Lab dict ]</code></li> <li><code>&lt;&lt; /WhitePoint [X<sub>W</sub> 1.0 Z<sub>W</sub>] /BlackPoint [X<sub>B</sub> Y<sub>B</sub> Z<sub>B</sub>] /Range [ a<sub>min</sub> a<sub>max</sub> b<sub>min</sub> b<sub>max</sub> ] &gt;&gt;</code></li> <li>Default Range is <code>[ -128 127 -128 127 ]</code>. <math>0 \leq L^* \leq 100</math>.</li> </ul> <div style="text-align: center;"> <p>The diagram illustrates the L*a*b* color space. It features a vertical axis representing lightness (L*) from 0 (black) at the bottom to 100 (white) at the top. A horizontal plane at L*=100 shows a color wheel with two axes: a* (ranging from -100 green to 100 red) and b* (ranging from -100 blue to 100 yellow).</p> </div>
	ICC based	1,3,4	1.3	array	<ul style="list-style-type: none"> <li><code>[ /ICCBased stream ]</code></li> <li>Additional stream dictionary entries for <code>ICCBased</code>: <code>&lt;&lt; /N n /Alternate altCS /Range [ ... 2×n numbers ... ] ... &gt;&gt;</code></li> </ul>
Special Color Spaces (4)	Separation	1	1.2	array	<ul style="list-style-type: none"> <li><code>[ /Separation spotname altCS tintTransform ]</code></li> <li><code>spotname</code>: All, None, Cyan, Magenta, Yellow, Black, or custom.</li> <li><code>altCS</code>: any device or CIE-based colour space with <i>m</i> components.</li> <li><code>tintTransform</code>: PDF function object with 1 in <math>\rightarrow</math> <i>m</i> out.</li> <li>Treated as subtractive color space: <math>0.0</math> (lightest) <math>\leq</math> <i>tint</i> <math>\leq</math> <math>1.0</math> (darkest)</li> </ul>
	Device N	<i>N</i>	1.3	array	<ul style="list-style-type: none"> <li><code>[ /DeviceN [ spot1 ... spotN ] altCS tintTransform attributes ]</code></li> <li><code>[ spot1 ... spotN ]</code>: an array containing <i>N</i> names of the spot colors</li> <li><code>altCS</code>: any device or CIE-based colour space with <i>m</i> components.</li> <li><code>tintTransform</code>: PDF function object with <i>N</i> in <math>\rightarrow</math> <i>m</i> out.</li> <li><code>attributes</code>: optional attributes dictionary. <code>/Subtype</code> DeviceN or NChannel</li> <li>Treated as subtractive color space: <math>0.0</math> (lightest) <math>\leq</math> <i>tint</i><sub><i>i</i></sub> <math>\leq</math> <math>1.0</math> (darkest)</li> </ul>
	Indexed	1-256	1.1	array	<ul style="list-style-type: none"> <li><code>[ /Indexed baseCS hival lookup ]</code></li> <li><code>baseCS</code>: any device or CIE-based colour space or (PDF 1.3) a Separation or DeviceN space, but not a Pattern or another Indexed color space.</li> <li><math>0 \leq hival \leq 255</math>. All indices snapped to-range <math>0 - hival</math>, 0.5 is rounded up to next valid index.</li> <li><code>lookup</code> is a byte string (PDF 1.2) or stream which is <math>hival \times m</math> bytes, where <i>m</i> is the number of components (channels) in <code>baseCS</code></li> </ul>
	Pattern	<i>n/a</i>	1.2	array	<ul style="list-style-type: none"> <li><code>[ /Pattern baseCS ]</code></li> </ul>

## Fonts (7)

	Subtype	Description
Type 0	Type0	A composite font — a font composed of glyphs from a descendant <b>CIDFont</b> . (PDF 1.2)
Type 1	Type1	A simple font that defines glyphs using Type 1 (PostScript based) font technology
	MMType1	A multiple master font — an extension of Type 1 fonts that allows generation of a wide variety of typeface styles from a single font.
Type 3	Type3	A simple font where glyph descriptions are PDF content streams defined in the <b>CharProcs</b> array. Each content stream must start with either the <code>d0</code> or <code>d1</code> operator.
TrueType	TrueType	A simple font based on TrueType or OpenType.
CIDFont	CIDFontType0	A CIDFont whose glyph descriptions are based on CFF font technology. Cannot be used with <code>Tf</code> operator. (PDF 1.2)
	CIDFontType2	A CIDFont whose glyph descriptions are based on TrueType glyph technology. Cannot be used with <code>Tf</code> operator. (PDF 1.2)

## Document Catalog Names name-trees (10)

Key	Version	String maps to...
<b>AlternatePresentations</b> <i>(deprecated in PDF 2.0)</i>	1.4	Alternate presentations.
<b>AP</b>	1.3	Annotation appearances.
<b>Dests</b>	1.2	Destinations.
<b>EmbeddedFiles</b>	1.4	File specifications for embedded files.
<b>IDS</b>	1.3	ID strings mapped to Web Capture content sets.
<b>JavaScript</b>	1.3	Document-level ECMAScript actions.
<b>Pages</b>	1.3	Visible pages for use with interactive forms.
<b>Renditions</b>	1.5	Rendition objects.
<b>Templates</b>	1.3	Invisible (template) pages for use with forms.
<b>URLS</b>	1.3	URLs mapping to Web Capture content sets.

See Table 32 in ISO 32000-2:2020

## Resource dictionary objects (8)

Key	Version	Type	Description
<b>ColorSpace</b>	1.0	dictionary	Names of a device-dependent color space, or color space array objects.
<b>ExtGState</b>	1.0	dictionary	Graphic state parameter dictionaries.
<b>Font</b>	1.0	dictionary	Font dictionaries.
<b>Pattern</b>	1.0	dictionary	Pattern objects.
<b>ProcSet</b>	1.0	array	Pre-defined PostScript procedure set names. <i>(Deprecated in PDF 1.4)</i>
<b>Properties</b>	1.2	dictionary	Property list dictionaries for Marked Content.
<b>Shading</b>	1.3	dictionary	Shading dictionaries.
<b>XObject</b>	1.0	dictionary	Form and Image XObjects.

See Table 34 in ISO 32000-2:2020