

# The pdfcol package

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## Abstract

Since version 1.40 pdfTeX supports color stacks. The driver file `pdfTeX.def` for package `color` defines and uses a main color stack since version v0.04b. Package `pdfcol` is intended for package writers. It defines macros for setting and maintaining new color stacks.

## Contents

<b>1</b>	<b>Documentation</b>	<b>2</b>
1.1	Requirements . . . . .	2
1.2	Interface . . . . .	2
<b>2</b>	<b>Implementation</b>	<b>3</b>
2.1	Reload check and package identification . . . . .	3
2.2	Catcodes . . . . .	4
2.3	Check requirements . . . . .	5
2.3.1	Check package <code>luacolor</code> . . . . .	5
2.3.2	Check PDF mode . . . . .	5
2.3.3	Check version of pdfTeX . . . . .	5
2.3.4	Check <code>pdfTeX.def</code> . . . . .	6
2.4	Enabled interface macros . . . . .	6
2.5	Disabled interface macros . . . . .	8
<b>3</b>	<b>Test</b>	<b>9</b>
3.1	Catcode checks for loading . . . . .	9
3.2	Very simple test . . . . .	10
3.3	Detection of package <code>luacolor</code> . . . . .	11
<b>4</b>	<b>Installation</b>	<b>11</b>
4.1	Download . . . . .	11
4.2	Bundle installation . . . . .	11
4.3	Package installation . . . . .	11
4.4	Refresh file name databases . . . . .	12
4.5	Some details for the interested . . . . .	12
<b>5</b>	<b>History</b>	<b>12</b>
	[2007/09/09 v1.0] . . . . .	12
	[2007/12/09 v1.1] . . . . .	13
	[2007/12/12 v1.2] . . . . .	13
<b>6</b>	<b>Index</b>	<b>13</b>

# 1 Documentation

Version 1.40 of pdfTeX adds new primitives `\pdfcolorstackinit` and `\pdfcolorstack`. Now color stacks can be defined and used. A main color stack is maintained by the driver file `pdfTeX.def` similar to dvips or dvipdfm. However the number of color stacks is not limited to one in pdfTeX. Thus further color problems can now be solved, such as footnotes across pages or text that is set in parallel columns (e.g. packages `parallel` or `parcolumn`). Unlike the main color stack, the support by additional color stacks cannot be done in a transparent manner.

This package `pdfcol` provides an easier interface to additional color stacks without the need to use the low level primitives.

## 1.1 Requirements

- pdfTeX 1.40 or greater.
- pdfTeX in PDF mode. (I don't know a DVI driver that support several color stacks.)
- `pdfTeX.def` 2007/01/02 v0.04b.

Package `pdfcol` checks the requirements and sets switch `\ifpdfcolAvailable` accordingly.

## 1.2 Interface

`\ifpdfcolAvailable`

If the requirements of section 1.1 are met the switch `\ifpdfcolAvailable` behaves as `\iftrue`. Otherwise the other interface macros in this section will be disabled with a message. Also the first use of such a macro will print a message. The messages are print to the `..log` file only if pdfTeX is not used in PDF mode.

`\pdfcolErrorNoStacks`

The first call of `\pdfcolErrorNoStacks` prints an error message, if color stacks are not available.

`\pdfcolInitStack`  $\langle name \rangle$

A new color stack is initialized by `\pdfcolInitStack`. The  $\langle name \rangle$  is used for indentifying the stack. It usually consists of letters and digits. (The name must survive a `\csname`.)

The intension of the macro is the definition of an additional color stack. Thus the stack is not page bounded like the main color stack. Black (`0 g 0 G`) is used as initial color value. And colors are written with modifier `direct` that means without setting the current transfer matrix and changing the current point (see documentation of pdfTeX for `\pdfliteral direct{...}`).

`\pdfcolIfStackExists`  $\langle name \rangle$   $\langle then \rangle$   $\langle else \rangle$

Macro `\pdfcolIfStackExists` checks whether color stack  $\langle name \rangle$  exists. In case of success argument  $\langle then \rangle$  is executed and  $\langle else \rangle$  otherwise.

`\pdfcolSwitchStack {⟨name⟩}`

Macro `\pdfcolSwitchStack` switches the color stack. The color macros of package `color` (or `xcolor`) now uses the new color stack with name `⟨name⟩`.

`\pdfcolSetCurrentColor`

Macro `\pdfcolSetCurrentColor` replaces the topmost entry of the stack by the current color (`\current@color`).

`\pdfcolSetCurrent {⟨name⟩}`

Macro `\pdfcolSetCurrent` sets the color that is read in the top-most entry of color stack `⟨name⟩`. If `⟨name⟩` is empty, the default color stack is used.

## 2 Implementation

1 `(*package)`

### 2.1 Reload check and package identification

Reload check, especially if the package is not used with L<sup>A</sup>T<sub>E</sub>X.

```
2 \begingroup
3 \catcode44 12 % ,
4 \catcode45 12 % -
5 \catcode46 12 % .
6 \catcode58 12 % :
7 \catcode64 11 % @
8 \expandafter\let\expandafter\x\csname ver@pdfcol.sty\endcsname
9 \ifcase 0%
10 \ifx\x\relax % plain
11 \else
12 \ifx\x\empty % LaTeX
13 \else
14 1%
15 \fi
16 \fi
17 \else
18 \catcode35 6 % #
19 \catcode123 1 % {
20 \catcode125 2 % }
21 \expandafter\ifx\csname PackageInfo\endcsname\relax
22 \def\x#1#2{%
23 \immediate\write-1{Package #1 Info: #2.}%
24 }%
25 \else
26 \def\x#1#2{\PackageInfo{#1}{#2, stopped}}%
27 \fi
28 \x{pdfcol}{The package is already loaded}%
29 \endgroup
30 \expandafter\endinput
31 \fi
32 \endgroup
```

Package identification:

```
33 \begingroup
34 \catcode35 6 % #
35 \catcode40 12 % (
36 \catcode41 12 % )
37 \catcode44 12 % ,
38 \catcode45 12 % -
```

```

39 \catcode46 12 % .
40 \catcode47 12 % /
41 \catcode58 12 % :
42 \catcode64 11 % @
43 \catcode123 1 % {
44 \catcode125 2 % }
45 \expandafter\ifx\csname ProvidesPackage\endcsname\relax
46 \def\x#1#2#3[#4]{\endgroup
47 \immediate\write-1{Package: #3 #4}%
48 \xdef#1{#4}%
49 }%
50 \else
51 \def\x#1#2[#3]{\endgroup
52 #2[#3]}%
53 \ifx#1\undefined
54 \xdef#1{#3}%
55 \fi
56 \ifx#1\relax
57 \xdef#1{#3}%
58 \fi
59 }%
60 \fi
61 \expandafter\x\csname ver@pdfcol.sty\endcsname
62 \ProvidesPackage{pdfcol}%
63 [2007/12/12 v1.2 Maintaining additional color stacks for pdfTeX (H0)]

```

## 2.2 Catcodes

```

64 \begingroup
65 \catcode123 1 % {
66 \catcode125 2 % }
67 \def\x{\endgroup
68 \expandafter\edef\csname PDFCOL@AtEnd\endcsname{%
69 \catcode35 \the\catcode35\relax
70 \catcode64 \the\catcode64\relax
71 \catcode123 \the\catcode123\relax
72 \catcode125 \the\catcode125\relax
73 }%
74 }%
75 \x
76 \catcode35 6 % #
77 \catcode64 11 % @
78 \catcode123 1 % {
79 \catcode125 2 % }
80 \def\TMP@EnsureCode#1#2{%
81 \edef\PDFCOL@AtEnd{%
82 \PDFCOL@AtEnd
83 \catcode#1 \the\catcode#1\relax
84 }%
85 \catcode#1 #2\relax
86 }
87 \TMP@EnsureCode{39}{12}% '
88 \TMP@EnsureCode{40}{12}% (
89 \TMP@EnsureCode{41}{12}% )
90 \TMP@EnsureCode{43}{12}% +
91 \TMP@EnsureCode{44}{12}% ,
92 \TMP@EnsureCode{46}{12}% .
93 \TMP@EnsureCode{47}{12}% /
94 \TMP@EnsureCode{61}{12}% =
95 \TMP@EnsureCode{96}{12}% '

```

## 2.3 Check requirements

ifpdfcolAvailable

```
96 \newif\ifpdfcolAvailable
97 \pdfcolAvailabletrue
```

\PDFCOL@RequirePackage

```
98 \begingroup\expandafter\expandafter\expandafter\endgroup
99 \expandafter\ifx\csname RequirePackage\endcsname\relax
100 \def\PDFCOL@RequirePackage#1[#2]{\input #1.sty\relax}%
101 \else
102 \def\PDFCOL@RequirePackage#1[#2]{%
103 \RequirePackage{#1}[#2]}%
104 }%
105 \fi
```

### 2.3.1 Check package luacolor

```
106 \newif\ifPDFCOL@luacolor
107 \begingroup\expandafter\expandafter\expandafter\endgroup
108 \expandafter\ifx\csname ver@luacolor.sty\endcsname\relax
109 \PDFCOL@luacolorfalse
110 \else
111 \PDFCOL@luacolortrue
112 \fi
```

### 2.3.2 Check PDF mode

```
113 \PDFCOL@RequirePackage{infwarerr}[2007/09/09]
114 \PDFCOL@RequirePackage{ifpdf}[2007/09/09]
115 \ifcase\ifpdf\ifPDFCOL@luacolor 1\fi\else 1\fi0 %
116 \def\PDFCOL@Message{%
117 \PackageWarningNoLine{pdfcol}%
118 }%
119 \else
120 \pdfcolAvailablefalse
121 \def\PDFCOL@Message{%
122 \PackageInfoNoLine{pdfcol}%
123 }%
124 \PDFCOL@Message{%
125 Interface disabled because of %
126 \ifPDFCOL@luacolor
127 package 'luacolor'%
128 \else
129 missing PDF mode of pdfTeX%
130 \fi
131 }%
132 \fi
```

### 2.3.3 Check version of pdfTeX

```
133 \ifpdfcolAvailable
134 \begingroup\expandafter\expandafter\expandafter\endgroup
135 \expandafter\ifx\csname pdfcolorstack\endcsname\relax
136 \pdfcolAvailablefalse
137 \PDFCOL@Message{%
138 Interface disabled because of too old pdfTeX.\MessageBreak
139 Required is version 1.40+ for \string\pdfcolorstack
140 }%
141 \fi
142 \fi
143 \ifpdfcolAvailable
144 \begingroup\expandafter\expandafter\expandafter\endgroup
145 \expandafter\ifx\csname pdfcolorstack\endcsname\relax
```

```

146 \pdfcolAvailablefalse
147 \PDFCOL@Message{%
148   Interface disabled because of too old pdfTeX.\MessageBreak
149   Required is version 1.40+ for \string\pdfcolorstackinit
150 }%
151 \fi
152 \fi

```

#### 2.3.4 Check pdftex.def

```

153 \ifpdfcolAvailable
154 \begingroup\expandafter\expandafter\expandafter\endgroup
155 \expandafter\ifx\csname @pdfcolorstack\endcsname\relax

```

Try to load package color if it is not yet loaded (L<sup>A</sup>T<sub>E</sub>X case).

```

156 \begingroup\expandafter\expandafter\expandafter\endgroup
157 \expandafter\ifx\csname ver@color.sty\endcsname\relax
158 \begingroup\expandafter\expandafter\expandafter\endgroup
159 \expandafter\ifx\csname documentclass\endcsname\relax
160 \else
161 \RequirePackage[pdftex]{color}\relax
162 \fi
163 \fi
164 \begingroup\expandafter\expandafter\expandafter\endgroup
165 \expandafter\ifx\csname @pdfcolorstack\endcsname\relax
166 \pdfcolAvailablefalse
167 \PDFCOL@Message{%
168   Interface disabled because 'pdftex.def'\MessageBreak
169   is not loaded or it is too old.\MessageBreak
170   Required is version 0.04b or greater%
171 }%
172 \fi
173 \fi
174 \fi
175 \let\pdfcolAvailabletrue\relax
176 \let\pdfcolAvailablefalse\relax

```

### 2.4 Enabled interface macros

```

177 \ifpdfcolAvailable

\pdfcolErrorNoStacks

178 \let\pdfcolErrorNoStacks\relax

\pdfcol@Value

179 \expandafter\ifx\csname pdfcol@Value\endcsname\relax
180 \def\pdfcol@Value{0 g 0 G}%
181 \fi

\pdfcol@LiteralModifier

182 \expandafter\ifx\csname pdfcol@LiteralModifier\endcsname\relax
183 \def\pdfcol@LiteralModifier{direct}%
184 \fi

\pdfcolInitStack

185 \def\pdfcolInitStack#1{%
186 \expandafter\ifx\csname pdfcol@Stack@#1\endcsname\relax
187 \global\expandafter\chardef\csname pdfcol@Stack@#1\endcsname=%
188 \pdfcolorstackinit\pdfcol@LiteralModifier{\pdfcol@Value}%
189 \relax
190 \@PackageInfo{pdfcol}{%
191   New color stack '#1' = \number\csname pdfcol@Stack@#1\endcsname
192 }%
193 \else

```

```

194     \@PackageError{pdfcol}{%
195         Stack '#1' is already defined%
196     }\@ehc
197     \fi
198 }%

\pdfcolIfStackExists

199 \def\pdfcolIfStackExists#1{%
200     \expandafter\ifx\csname pdfcol@Stack@#1\endcsname\relax
201     \expandafter\@secondoftwo
202     \else
203     \expandafter\@firstoftwo
204     \fi
205 }%

    \@firstoftwo

206 \expandafter\ifx\csname @firstoftwo\endcsname\relax
207     \long\def\@firstoftwo#1#2{#1}%
208 \fi

    \@secondoftwo

209 \expandafter\ifx\csname @secondoftwo\endcsname\relax
210     \long\def\@secondoftwo#1#2{#2}%
211 \fi

\pdfcolSwitchStack

212 \def\pdfcolSwitchStack#1{%
213     \pdfcolIfStackExists{#1}{%
214         \expandafter\let\expandafter\@pdfcolorstack
215             \csname pdfcol@Stack@#1\endcsname
216     }{%
217         \pdfcol@ErrorNoStack{#1}%
218     }%
219 }%

\pdfcolSetCurrentColor

220 \def\pdfcolSetCurrentColor{%
221     \pdfcolorstack\@pdfcolorstack set{\current@color}%
222 }%

\pdfcolSetCurrent

223 \def\pdfcolSetCurrent#1{%
224     \ifx\#1\%
225         \pdfcolorstack\@pdfcolorstack current\relax
226     \else
227         \pdfcolIfStackExists{#1}{%
228             \pdfcolorstack\csname pdfcol@Stack@#1\endcsname current\relax
229         }{%
230             \pdfcol@ErrorNoStack{#1}%
231         }%
232     \fi
233 }%

\pdfcol@ErrorNoStack

234 \def\pdfcol@ErrorNoStack#1{%
235     \@PackageError{pdfcol}{Stack '#1' does not exists}\@ehc
236 }%

```

## 2.5 Disabled interface macros

```
237 \else

\pdfcolErrorNoStacks

238 \def\pdfcolErrorNoStacks{%
239   \@PackageError{pdfcol}{%
240     Color stacks are not available%
241   }{%
242     Update pdfTeX (1.40) and 'pdftex.def' (0.04b) %
243     if necessary.\MessageBreak
244     Ensure that 'pdftex.def' is loaded %
245     (package 'color' or 'xcolor').\MessageBreak
246     Further messages can be found in TeX's %
247     protocol file '\jobname.log'.\MessageBreak
248     \MessageBreak
249     \@ehc
250   }%
251   \global\let\pdfcolErrorNoStacks\relax
252 }%

\PDFCOL@Disabled

253 \def\PDFCOL@Disabled{%
254   \PDFCOL@Message{%
255     pdfTeX's color stacks are not available%
256   }%
257   \global\let\PDFCOL@Disabled\relax
258 }%

\pdfcolInitStack

259 \def\pdfcolInitStack#1{%
260   \PDFCOL@Disabled
261 }%

\pdfcolIfStackExists

262 \long\def\pdfcolIfStackExists#1#2#3{#3}%

\pdfcolSwitchStack

263 \def\pdfcolSwitchStack#1{%
264   \PDFCOL@Disabled
265 }%

\pdfcolSetCurrentColor

266 \def\pdfcolSetCurrentColor{%
267   \PDFCOL@Disabled
268 }%

\pdfcolSetCurrent

269 \def\pdfcolSetCurrent#1{%
270   \PDFCOL@Disabled
271 }%

272 \fi
273 \PDFCOL@AtEnd
274 \end{package}
```



## 3 Test

### 3.1 Catcode checks for loading

```
275 <*test1>
276 \catcode'\{=1 %
277 \catcode'\}=2 %
278 \catcode'\#=6 %
279 \catcode'\@=11 %
280 \expandafter\ifx\csname count@\endcsname\relax
281   \countdef\count@=255 %
282 \fi
283 \expandafter\ifx\csname @gobble\endcsname\relax
284   \long\def\@gobble#1{}%
285 \fi
286 \expandafter\ifx\csname @firstofone\endcsname\relax
287   \long\def\@firstofone#1{#1}%
288 \fi
289 \expandafter\ifx\csname loop\endcsname\relax
290   \expandafter\@firstofone
291 \else
292   \expandafter\@gobble
293 \fi
294 {%
295   \def\loop#1\repeat{%
296     \def\body{#1}%
297     \iterate
298   }%
299   \def\iterate{%
300     \body
301     \let\next\iterate
302   \else
303     \let\next\relax
304   \fi
305   \next
306 }%
307 \let\repeat=\fi
308 }%
309 \def\RestoreCatcodes{}
310 \count@=0 %
311 \loop
312   \edef\RestoreCatcodes{%
313     \RestoreCatcodes
314     \catcode\the\count@=\the\catcode\count@\relax
315   }%
316   \ifnum\count@<255 %
317     \advance\count@ 1 %
318   \repeat
319
320 \def\RangeCatcodeInvalid#1#2{%
321   \count@=#1\relax
322   \loop
323     \catcode\count@=15 %
324     \ifnum\count@<#2\relax
325       \advance\count@ 1 %
326     \repeat
327 }
328 \expandafter\ifx\csname LoadCommand\endcsname\relax
329   \def\LoadCommand{\input pdfcol.sty\relax}%
330 \fi
331 \def\Test{%
332   \RangeCatcodeInvalid{0}{47}%
```

```

333 \RangeCatcodeInvalid{58}{64}%
334 \RangeCatcodeInvalid{91}{96}%
335 \RangeCatcodeInvalid{123}{255}%
336 \catcode'\@=12 %
337 \catcode'\=0 %
338 \catcode'\{=1 %
339 \catcode'\}=2 %
340 \catcode'\#=6 %
341 \catcode'\[=12 %
342 \catcode'\]=12 %
343 \catcode'\%=14 %
344 \catcode'\ =10 %
345 \catcode13=5 %
346 \LoadCommand
347 \RestoreCatcodes
348 }
349 \Test
350 \csname @@end\endcsname
351 \end
352 </test1>

```

### 3.2 Very simple test

```

353 <*test2 | test3>
354 \NeedsTeXFormat{LaTeX2e}
355 \nofiles
356 \documentclass{article}
357 \usepackage{pdfcol}[2007/12/12]
358 \usepackage{qstest}
359 \IncludeTests{*}
360 \LogTests{log}{*}{*}
361 \begin{document}
362   \begin{qstest}{pdfcol}{}%
363     \makeatletter
364 <*test2>
365     \Expect*{\ifpdfcolAvailable true\else false\fi}{false}%
366 </test2>
367 <*test3>
368     \Expect*{\ifpdfcolAvailable true\else false\fi}{true}%
369     \Expect*{\number\@pdfcolorstack}{0}%
370 </test3>
371     \setbox0=\hbox{%
372       \pdfcolInitStack{test}%
373 <*test3>
374       \Expect*{\number\pdfcol@Stack@test}{1}%
375       \Expect*{\number\@pdfcolorstack}{0}%
376 </test3>
377       \pdfcolSwitchStack{test}%
378 <*test3>
379       \Expect*{\number\@pdfcolorstack}{1}%
380 </test3>
381       \pdfcolSetCurrent{test}%
382       \pdfcolSetCurrent{}%
383     }%
384     \Expect*{\the\wd0}{0.0pt}%
385 <*test3>
386     \Expect*{\number\@pdfcolorstack}{0}%
387     \Expect*{\number\pdfcol@Stack@test}{1}%
388     \Expect*{\pdfcolIfStackExists{test}{true}{false}}{true}%
389 </test3>
390     \Expect*{\pdfcolIfStackExists{dummy}{true}{false}}{false}%
391   \end{qstest}%
392 \end{document}

```

```
393 </test2 | test3>
```

### 3.3 Detection of package `luacolor`

```
394 <*test4>
395 \NeedsTeXFormat{LaTeX2e}
396 \documentclass{article}
397 \usepackage{luacolor}
398 \usepackage{pdfcol}
399 \makeatletter
400 \ifpdfcolAvailable
401   \@latex@error{Detection of package luacolor failed}%
402 \fi
403 \csname @@end\endcsname
404 </test4>
```

## 4 Installation

### 4.1 Download

**Package.** This package is available on CTAN<sup>1</sup>:

[CTAN:macros/latex/contrib/oberdiek/pdfcol.dtx](#) The source file.

[CTAN:macros/latex/contrib/oberdiek/pdfcol.pdf](#) Documentation.

**Bundle.** All the packages of the bundle ‘oberdiek’ are also available in a TDS compliant ZIP archive. There the packages are already unpacked and the documentation files are generated. The files and directories obey the TDS standard.

[CTAN:install/macros/latex/contrib/oberdiek.tds.zip](#)

*TDS* refers to the standard “A Directory Structure for T<sub>E</sub>X Files” ([CTAN:tds/tds.pdf](#)). Directories with `texmf` in their name are usually organized this way.

### 4.2 Bundle installation

**Unpacking.** Unpack the `oberdiek.tds.zip` in the TDS tree (also known as `texmf` tree) of your choice. Example (linux):

```
unzip oberdiek.tds.zip -d ~/texmf
```

**Script installation.** Check the directory `TDS:scripts/oberdiek/` for scripts that need further installation steps. Package `attachfile2` comes with the Perl script `pdfatfi.pl` that should be installed in such a way that it can be called as `pdfatfi`. Example (linux):

```
chmod +x scripts/oberdiek/pdfatfi.pl
cp scripts/oberdiek/pdfatfi.pl /usr/local/bin/
```

### 4.3 Package installation

**Unpacking.** The `.dtx` file is a self-extracting docstrip archive. The files are extracted by running the `.dtx` through plain-T<sub>E</sub>X:

```
tex pdfcol.dtx
```

---

<sup>1</sup><http://ftp.ctan.org/tex-archive/>

**TDS.** Now the different files must be moved into the different directories in your installation TDS tree (also known as `texmf` tree):

```
pdfcol.sty          → tex/generic/oberdiek/pdfcol.sty
pdfcol.pdf          → doc/latex/oberdiek/pdfcol.pdf
test/pdfcol-test1.tex → doc/latex/oberdiek/test/pdfcol-test1.tex
test/pdfcol-test2.tex → doc/latex/oberdiek/test/pdfcol-test2.tex
test/pdfcol-test3.tex → doc/latex/oberdiek/test/pdfcol-test3.tex
test/pdfcol-test4.tex → doc/latex/oberdiek/test/pdfcol-test4.tex
pdfcol.dtx          → source/latex/oberdiek/pdfcol.dtx
```

If you have a `docstrip.cfg` that configures and enables `docstrip`'s TDS installing feature, then some files can already be in the right place, see the documentation of `docstrip`.

## 4.4 Refresh file name databases

If your  $\TeX$  distribution (`te $\TeX$` , `mik $\TeX$` , ...) relies on file name databases, you must refresh these. For example, `te $\TeX$`  users run `texhash` or `mktextlsr`.

## 4.5 Some details for the interested

**Attached source.** The PDF documentation on CTAN also includes the `.dtx` source file. It can be extracted by AcrobatReader 6 or higher. Another option is `pdftk`, e.g. unpack the file into the current directory:

```
pdftk pdfcol.pdf unpack_files output .
```

**Unpacking with  $\LaTeX$ .** The `.dtx` chooses its action depending on the format:

**plain- $\TeX$ :** Run `docstrip` and extract the files.

**$\LaTeX$ :** Generate the documentation.

If you insist on using  $\LaTeX$  for `docstrip` (really, `docstrip` does not need  $\LaTeX$ ), then inform the autodetect routine about your intention:

```
latex \let\install=y\input{pdfcol.dtx}
```

Do not forget to quote the argument according to the demands of your shell.

**Generating the documentation.** You can use both the `.dtx` or the `.drv` to generate the documentation. The process can be configured by the configuration file `ltxdoc.cfg`. For instance, put this line into this file, if you want to have A4 as paper format:

```
\PassOptionsToClass{a4paper}{article}
```

An example follows how to generate the documentation with `pdf $\LaTeX$` :

```
pdflatex pdfcol.dtx
makeindex -s gind.ist pdfcol.idx
pdflatex pdfcol.dtx
makeindex -s gind.ist pdfcol.idx
pdflatex pdfcol.dtx
```

# 5 History

[2007/09/09 v1.0]

- First version.

[2007/12/09 v1.1]

- `\pdfcolSetCurrentColor` added.

[2007/12/12 v1.2]

- Detection for package `luacolor` added.

## 6 Index

Numbers written in *italic* refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in roman refer to the code lines where the entry is used.

Symbols		191, 200, 206, 209, 215, 228, 280, 283, 286, 289, 328, 350, 403
<code>\#</code> .....	278, 340	
<code>\%</code> .....	343	<code>\current@color</code> ..... 221
<code>\@</code> .....	279, 336	
<code>\@PackageError</code> .....	194, 235, 239	
<code>\@PackageInfo</code> .....	190	
<code>\@PackageInfoNoLine</code> .....	122	
<code>\@PackageWarningNoLine</code> .....	117	
<code>\@ehc</code> .....	196, 235, 249	
<code>\@firstofone</code> .....	287, 290	
<code>\@firstoftwo</code> .....	203, <u>206</u>	
<code>\@gobble</code> .....	284, 292	
<code>\@latex@error</code> .....	401	
<code>\@pdfcolorstack</code> .....		
	214, 221, 225, 369, 375, 379, 386	
<code>\@secondoftwo</code> .....	201, <u>209</u>	
<code>\@undefined</code> .....	53	
<code>\[</code> .....	341	
<code>\]</code> .....	224, 337	
<code>\{</code> .....	276, 338	
<code>\}</code> .....	277, 339	
<code>\]</code> .....	342	
<code>\_</code> .....	344	
A		
<code>\advance</code> .....	317, 325	
B		
<code>\begin</code> .....	361, 362	
<code>\body</code> .....	296, 300	
C		
<code>\catcode</code> ...	3, 4, 5, 6, 7, 18, 19, 20, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 65, 66, 69, 70, 71, 72, 76, 77, 78, 79, 83, 85, 276, 277, 278, 279, 314, 323, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345	
<code>\chardef</code> .....	187	
<code>\count@</code> .....	281, 310, 314, 316, 317, 321, 323, 324, 325	
<code>\countdef</code> .....	281	
<code>\csname</code> .....	8, 21, 45, 61, 68, 99, 108, 135, 145, 155, 157, 159, 165, 179, 182, 186, 187,	
		191, 200, 206, 209, 215, 228, 280, 283, 286, 289, 328, 350, 403
D		
<code>\documentclass</code> .....	356, 396	
E		
<code>\empty</code> .....	12	
<code>\end</code> .....	351, 391, 392	
<code>\endcsname</code> .....	8, 21, 45, 61, 68, 99, 108, 135, 145, 155, 157, 159, 165, 179, 182, 186, 187, 191, 200, 206, 209, 215, 228, 280, 283, 286, 289, 328, 350, 403	
<code>\endinput</code> .....	30	
<code>\Expect</code> .....	365, 368, 369, 374, 375, 379, 384, 386, 387, 388, 390	
H		
<code>\hbox</code> .....	371	
I		
<code>\ifcase</code> .....	9, 115	
<code>\ifnum</code> .....	316, 324	
<code>\ifpdf</code> .....	115	
<code>\ifPDFCOL@luacolor</code> ....	106, 115, 126	
<code>\ifpdfcolAvailable</code> .....	2, <u>96</u> , 96, 133, 143, 153, 177, 365, 368, 400	
<code>\ifx</code> .....	10, 12, 21, 45, 53, 56, 99, 108, 135, 145, 155, 157, 159, 165, 179, 182, 186, 200, 206, 209, 224, 280, 283, 286, 289, 328	
<code>\immediate</code> .....	23, 47	
<code>\IncludeTests</code> .....	359	
<code>\input</code> .....	100, 329	
<code>\iterate</code> .....	297, 299, 301	
J		
<code>\jobname</code> .....	247	
L		
<code>\LoadCommand</code> .....	329, 346	
<code>\LogTests</code> .....	360	
<code>\loop</code> .....	295, 311, 322	
M		
<code>\makeatletter</code> .....	363, 399	
<code>\MessageBreak</code> .....	138, 148, 168, 169, 243, 245, 247, 248	

<b>N</b>		
\NeedsTeXFormat	354, 395	\pdfcolSetCurrent 3, 223, 269, 381, 382
\newif	96, 106	\pdfcolSetCurrentColor 3, 220, 266
\next	301, 303, 305	\pdfcolSwitchStack 3, 212, 263, 377
\nofiles	355	\ProvidesPackage 62
\number	191, 369, 374, 375, 379, 386, 387	
<b>P</b>		<b>R</b>
\PackageInfo	26	\RangeCatcodeInvalid 320, 332, 333, 334, 335
\PDFCOL@AtEnd	81, 82, 273	\repeat 295, 307, 318, 326
\PDFCOL@Disabled	253, 260, 264, 267, 270	\RequirePackage 103, 161
\pdfcol@ErrorNoStack	217, 230, 234	\RestoreCatcodes 309, 312, 313, 347
\pdfcol@LiteralModifier	182, 188	
\PDFCOL@luacolorfalse	109	<b>S</b>
\PDFCOL@luacolortrue	111	\setbox 371
\PDFCOL@Message	116, 121, 124, 137, 147, 167, 254	
\PDFCOL@RequirePackage	98, 113, 114	<b>T</b>
\pdfcol@Stack@test	374, 387	\Test 331, 349
\pdfcol@Value	179, 188	\the 69, 70, 71, 72, 83, 314, 384
\pdfcol@Availablefalse	120, 136, 146, 166, 176	\TMP@EnsureCode 80, 87, 88, 89, 90, 91, 92, 93, 94, 95
\pdfcol@Availabletrue	97, 175	
\pdfcolErrorNoStacks	2, 178, 238	<b>U</b>
\pdfcolIfStackExists	2, 199, 213, 227, 262, 388, 390	\usepackage 357, 358, 397, 398
\pdfcolInitStack	2, 185, 259, 372	
\pdfcolorstack	139, 221, 225, 228	<b>W</b>
\pdfcolorstackinit	149, 188	\wd 384
		\write 23, 47
		<b>X</b>
		\x 8, 10, 12, 22, 26, 28, 46, 51, 61, 67, 75