

# 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.

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# 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 \catcode123 1 % {
9 \catcode125 2 % }
10 \expandafter\let\expandafter\x\csname ver@pdfcol.sty\endcsname
11 \ifx\x\relax % plain-TeX, first loading
12 \else
13 \def\empty{}%
14 \ifx\x\empty % LaTeX, first loading,
15 % variable is initialized, but \ProvidesPackage not yet seen
16 \else
17 \catcode35 6 % #
18 \expandafter\ifx\csname PackageInfo\endcsname\relax
19 \def\x#1#2{%
20 \immediate\write-1{Package #1 Info: #2.}%
21 }%
22 \else
23 \def\x#1#2{\PackageInfo{#1}{#2, stopped}}%
24 \fi
25 \x{pdfcol}{The package is already loaded}%
26 \aftergroup\endinput
27 \fi
28 \fi
29 \endgroup
```

Package identification:

```
30 \begingroup
31 \catcode35 6 % #
32 \catcode40 12 % (
33 \catcode41 12 % )
34 \catcode44 12 % ,
35 \catcode45 12 % -
36 \catcode46 12 % .
37 \catcode47 12 % /
38 \catcode58 12 % :
```

```

39 \catcode64 11 % @
40 \catcode91 12 % [
41 \catcode93 12 % ]
42 \catcode123 1 % {
43 \catcode125 2 % }
44 \expandafter\ifx\csname ProvidesPackage\endcsname\relax
45 \def\x#1#2#3[#4]{\endgroup
46 \immediate\write-1{Package: #3 #4}%
47 \xdef#1{#4}%
48 }%
49 \else
50 \def\x#1#2[#3]{\endgroup
51 #2[#3]}%
52 \ifx#1\@undefined
53 \xdef#1{#3}%
54 \fi
55 \ifx#1\relax
56 \xdef#1{#3}%
57 \fi
58 }%
59 \fi
60 \expandafter\x\csname ver@pdfcol.sty\endcsname
61 \ProvidesPackage{pdfcol}%
62 [2007/12/12 v1.2 Maintaining additional color stacks for pdfTeX (H0)]

```

## 2.2 Catcodes

```

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

```

## 2.3 Check requirements

ifpdfcolAvailable

```

95 \newif\ifpdfcolAvailable
96 \pdfcolAvailabletrue

```

\PDFCOL@RequirePackage

```

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

```

### 2.3.1 Check package luacolor

```

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

```

### 2.3.2 Check PDF mode

```

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

```

### 2.3.3 Check version of pdfTeX

```

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

```

```

148     Required is version 1.40+ for \string\pdfcolorstackinit
149 }%
150 \fi
151 \fi

```

### 2.3.4 Check pdftex.def

```

152 \ifpdfcolAvailable
153   \begingroup\expandafter\expandafter\expandafter\endgroup
154   \expandafter\ifx\csname @pdfcolorstack\endcsname\relax
155     Try to load package color if it is not yet loaded (LATEX 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   \let\pdfcolAvailabletrue\relax
175   \let\pdfcolAvailablefalse\relax

```

## 2.4 Enabled interface macros

```

176 \ifpdfcolAvailable

\pdfcolErrorNoStacks

177   \let\pdfcolErrorNoStacks\relax

\pdfcol@Value

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

\pdfcol@LiteralModifier

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

\pdfcolInitStack

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

```

```

196     \fi
197 }%

\pdfcolIfStackExists

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

    \@firstoftwo

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

    \@secondoftwo

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

\pdfcolSwitchStack

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

\pdfcolSetCurrentColor

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

\pdfcolSetCurrent

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

\pdfcol@ErrorNoStack

233 \def\pdfcol@ErrorNoStack#1{%
234     \@PackageError{pdfcol}{Stack ‘#1’ does not exists}\@ehc
235 }%

```

## 2.5 Disabled interface macros

```

236 \else

\pdfcolErrorNoStacks

237 \def\pdfcolErrorNoStacks{%

```

```

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

```

\PDFCOL@Disabled

```

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

```

\pdfcolInitStack

```

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

```

\pdfcolIfStackExists

```

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

```

\pdfcolSwitchStack

```

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

```

\pdfcolSetCurrentColor

```

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

```

\pdfcolSetCurrent

```

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

```

```

271 \fi
272 \PDFCOL@AtEnd
273 \end{package}

```

## 3 Test

### 3.1 Catcode checks for loading

```

274 \test1
275 \catcode'\{=1 %
276 \catcode'\}=2 %
277 \catcode'\#=6 %
278 \catcode'\@=11 %

```



```

279 \expandafter\ifx\csname count@\endcsname\relax
280 \countdef\count@=255 %
281 \fi
282 \expandafter\ifx\csname @gobble\endcsname\relax
283 \long\def\@gobble#1{}%
284 \fi
285 \expandafter\ifx\csname @firstofone\endcsname\relax
286 \long\def\@firstofone#1{#1}%
287 \fi
288 \expandafter\ifx\csname loop\endcsname\relax
289 \expandafter\@firstofone
290 \else
291 \expandafter\@gobble
292 \fi
293 {%
294 \def\loop#1\repeat{%
295 \def\body{#1}%
296 \iterate
297 }%
298 \def\iterate{%
299 \body
300 \let\next\iterate
301 \else
302 \let\next\relax
303 \fi
304 \next
305 }%
306 \let\repeat=\fi
307 }%
308 \def\RestoreCatcodes{}
309 \count@=0 %
310 \loop
311 \edef\RestoreCatcodes{%
312 \RestoreCatcodes
313 \catcode\the\count@=\the\catcode\count@\relax
314 }%
315 \ifnum\count@<255 %
316 \advance\count@ 1 %
317 \repeat
318
319 \def\RangeCatcodeInvalid#1#2{%
320 \count@=#1\relax
321 \loop
322 \catcode\count@=15 %
323 \ifnum\count@<#2\relax
324 \advance\count@ 1 %
325 \repeat
326 }
327 \expandafter\ifx\csname LoadCommand\endcsname\relax
328 \def\LoadCommand{\input pdfcol.sty\relax}%
329 \fi
330 \def\Test{%
331 \RangeCatcodeInvalid{0}{47}%
332 \RangeCatcodeInvalid{58}{64}%
333 \RangeCatcodeInvalid{91}{96}%
334 \RangeCatcodeInvalid{123}{255}%
335 \catcode'\@=12 %
336 \catcode'\=0 %
337 \catcode'\{=1 %
338 \catcode'\}=2 %
339 \catcode'\#=6 %
340 \catcode'\[=12 %

```

```

341 \catcode'\]=12 %
342 \catcode'\%=14 %
343 \catcode'\ =10 %
344 \catcode13=5 %
345 \LoadCommand
346 \RestoreCatcodes
347 }
348 \Test
349 \csname @@end\endcsname
350 \end
351 </test1>

```

### 3.2 Very simple test

```

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

```

### 3.3 Detection of package luacolor

```

393 <*test4>
394 \NeedsTeXFormat{LaTeX2e}
395 \documentclass{article}
396 \usepackage{luacolor}
397 \usepackage{pdfcol}
398 \makeatletter

```

```

399 \ifpdfcolAvailable
400 \latex@error{Detection of package luacolor failed}%
401 \fi
402 \csname @@end\endcsname
403 \end{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
```

**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.

---

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

## 4.4 Refresh file name databases

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

## 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  $\text{\LaTeX}$ .** The `.dtx` chooses its action depending on the format:

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

**$\text{\LaTeX}$ :** Generate the documentation.

If you insist on using  $\text{\LaTeX}$  for `docstrip` (really, `docstrip` does not need  $\text{\LaTeX}$ ), 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 $\text{\LaTeX}$ :

```
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

`\#` ..... 277, 339<sub>12</sub>

<code>\%</code> .....	342		<b>H</b>	
<code>\@</code> .....	278, 335		<code>\hbox</code> .....	370
<code>\@PackageError</code> .....	193, 234, 238			
<code>\@PackageInfo</code> .....	189		<b>I</b>	
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