

# The chemarr package

Heiko Oberdiek  
<oberdiek@uni-freiburg.de>

2006/02/20 v1.2

## Abstract

Very often chemists need a longer version of reaction arrows (`\rightleftharpoons`) with the possibility to put text above and below. Analogous to `amsmath`'s `\xrightarrow` and `\xleftarrow` this package provides the macro `\xrightleftharpoons`.

## Contents

<b>1 Usage</b>	<b>1</b>
1.1 Example . . . . .	1
<b>2 Implementation</b>	<b>2</b>
<b>3 Installation</b>	<b>3</b>
3.1 Some details for the interested . . . . .	3
<b>4 History</b>	<b>4</b>
[2001/06/21 v1.0] . . . . .	4
[2001/06/22 v1.1] . . . . .	4
[2006/02/20 v1.2] . . . . .	4
<b>5 Index</b>	<b>4</b>

## 1 Usage

`\xrightleftharpoons` This `LATEX` package defines `\xrightleftharpoons`. It prints extensible arrows (harpoons), usually used in chemical reactions. It allows to put some text above and below the harpoons and can be used inside and outside of math mode.

The package is based on `amsmath`, thus it loads it, if necessary.

### 1.1 Example

```
1 \example
2 \documentclass{article}
3 \usepackage{chemarr}
4 \begin{document}
5 \begin{center}
6   left
7   \xrightleftharpoons[\text{below}]{\text{above}}
8   right
9 \end{center}
10 \[
11   A
12   \xrightleftharpoons[T \geq 400\,\mathrm{K}]{p > 10\,\mathrm{hPa}}
13   B
14 \]
```

```

15 \end{document}
16 \end{example}

```

The result:

$$\text{left} \begin{array}{c} \xrightarrow{\text{above}} \\ \xleftarrow{\text{below}} \end{array} \text{right}$$

$$A \begin{array}{c} \xrightarrow{p > 10 \text{ hPa}} \\ \xleftarrow{T \geq 400 \text{ K}} \end{array} B$$

## 2 Implementation

```

17 \begin{package}

```

Package identification.

```

18 \NeedsTeXFormat{LaTeX2e}
19 \ProvidesPackage{chemarr}%
20 [2006/02/20 v1.2 Chemical reaction arrows (H0)]
21 \RequirePackage{amsmath}

```

The package amsmath is needed for the following commands:

```

\ext@arrow, \@ifnotempty, \arrowfill@
\relbar, \std@minus
\@ifempty, \@xifempty, \@xp

```

`\xrightleftharpoons` In fontmath.ltx `\rightleftharpoons` is defined with a vertical space of 2pt.

```

22 \newcommand{\xrightleftharpoons}[2] [] {%
23   \ensuremath{%
24     \mathrel{%
25       \settoheight{\dimen@}{\raise 2pt\hbox{$\rightharpoonup$}}%
26       \setlength{\dimen@}{-\dimen@}%
27       \edef\CA@temp{\the\dimen@}%
28       \settoheight{\dimen@}{\rightleftharpoons}%
29       \addtolength{\dimen@}{\CA@temp}%
30       \raisebox{\dimen@}{%
31         \rlap{%
32           \raisebox{2pt}{%
33             $%
34             \ext@arrow 0359\rightharpoonupfill@{\hphantom{#1}}{#2}%
35             $%
36           }%
37         }%
38       \hbox{%
39         $%
40         \ext@arrow 3095\leftharpoondownfill@{#1}{\hphantom{#2}}%
41         $%
42       }%
43     }%
44   }%
45 }%
46 }

```

`\leftharpoondownfill@`

```

47 \newcommand*\leftharpoondownfill@{%
48   \arrowfill@\leftharpoondown\relbar\relbar
49 }

```

`\rightharpoonupfill@`

```

50 \newcommand*\rightharpoonupfill@{%
51   \arrowfill@\relbar\relbar\rightharpoonup
52 }

```

```

53 \end{package}

```

### 3 Installation

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

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

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

**Unpacking.** The `.dtx` file is a self-extracting `docstrip` archive. The files are extracted by running the `.dtx` through `plain-TeX`:

```
tex chemarr.dtx
```

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

```
chemarr.sty      → tex/latex/oberdiek/chemarr.sty
chemarr.pdf      → doc/latex/oberdiek/chemarr.pdf
chemarr-example.tex → doc/latex/oberdiek/chemarr-example.tex
chemarr.dtx      → source/latex/oberdiek/chemarr.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`.

**Refresh file databases.** If your `TeX` distribution (`teTeX`, `mikTeX`, ...) rely on file databases, you must refresh these. For example, `teTeX` users run `texhash` or `mktextlsr`.

#### 3.1 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 chemarr.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{chemarr.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 chemarr.dtx
makeindex -s gind.ist chemarr.idx
pdflatex chemarr.dtx
makeindex -s gind.ist chemarr.idx
pdflatex chemarr.dtx
```

---

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

## 4 History

[2001/06/21 v1.0]

- First public version.

[2001/06/22 v1.1]

- Documentation fixes.

[2006/02/20 v1.2]

- DTX framework.
- Example added.

## 5 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		M	
<code>\,</code>	12	<code>\mathrel</code>	24
<code>\[</code>	10	<code>\mathrm</code>	12
<code>\]</code>	14		
A		N	
<code>\addtolength</code>	29	<code>\NeedsTeXFormat</code>	18
<code>\arrowfill@</code>	48, 51	<code>\newcommand</code>	22, 47, 50
B		P	
<code>\begin</code>	4, 5	<code>\ProvidesPackage</code>	19
C		R	
<code>\CA@temp</code>	27, 29	<code>\raise</code>	25
D		<code>\raisebox</code>	30, 32
<code>\dimen@</code>	25, 26, 27, 28, 29, 30	<code>\relbar</code>	48, 51
<code>\documentclass</code>	2	<code>\RequirePackage</code>	21
E		<code>\rightharpoonup</code>	25, 51
<code>\end</code>	9, 15	<code>\rightharpoonupfill@</code>	34, 50
<code>\ensuremath</code>	23	<code>\rightleftharpoons</code>	28
<code>\ext@arrow</code>	34, 40	<code>\rlap</code>	31
G		S	
<code>\geq</code>	12	<code>\setlength</code>	26
H		<code>\settoheight</code>	25, 28
<code>\hbox</code>	25, 38	T	
<code>\hphantom</code>	34, 40	<code>\text</code>	7
L		<code>\the</code>	27
<code>\leftharpoondown</code>	48	U	
<code>\leftharpoondownfill@</code>	40, 47	<code>\usepackage</code>	3
		X	
		<code>\xrightleftharpoons</code>	1, 7, 12, 22