

# The chemarr package

Heiko Oberdiek\*

2016/05/16 v1.3

## 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</b>	<b>Usage</b>	<b>1</b>
1.1	Example . . . . .	1
<b>2</b>	<b>Implementation</b>	<b>2</b>
<b>3</b>	<b>Installation</b>	<b>3</b>
3.1	Download . . . . .	3
3.2	Bundle installation . . . . .	3
3.3	Package installation . . . . .	3
3.4	Refresh file name databases . . . . .	4
3.5	Some details for the interested . . . . .	4
<b>4</b>	<b>History</b>	<b>4</b>
	[2001/06/21 v1.0] . . . . .	4
	[2001/06/22 v1.1] . . . . .	4
	[2006/02/20 v1.2] . . . . .	4
	[2016/05/16 v1.3] . . . . .	4
<b>5</b>	<b>Index</b>	<b>5</b>

## 1 Usage

`\xrightleftharpoons` This L<sup>A</sup>T<sub>E</sub>X 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.

---

\*Please report any issues at <https://github.com/ho-tex/oberdiek/issues>

## 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 </example>

```

The result:

$$\text{left} \xrightleftharpoons[\text{below}]{\text{above}} \text{right}$$

$$A \xrightleftharpoons[T \geq 400 \text{ K}]{p > 10 \text{ hPa}} B$$

## 2 Implementation

```

17 <*package>
Package identification.
18 \NeedsTeXFormat{LaTeX2e}
19 \ProvidesPackage{chemarr}%
20   [2016/05/16 v1.3 Arrows for chemical reactions (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 </package>

```

## 3 Installation

### 3.1 Download

**Package.** 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.

**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:pkg/tds](#)). Directories with `texmf` in their name are usually organized this way.

### 3.2 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
```

### 3.3 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 chemarr.dtx
```

---

<sup>1</sup>[CTAN:pkg/chemarr](#)

**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`.

### 3.4 Refresh file name databases

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

### 3.5 Some details for the interested

**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{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 $\text{\LaTeX}$` :

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

## 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.

[2016/05/16 v1.3]

- Documentation updates.

## 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; plain numbers 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, <u>50</u>
<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, <u>47</u>	<code>\usepackage</code>	3
		X	
		<code>\xrightleftharpoons</code>	1, 7, 12, <u>22</u>