

The mahjong-tiles Package

Typesetting Riichi Mahjong Hands, Flower Tiles, Discard Rivers, and Score Sticks

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Abstract

`mahjong-tiles` typesets Japanese/Riichi Mahjong tiles from compact MPSZF notation. It provides a document command, `\mahjong`, for hands and melds, and `\mahjongriver` for discard rivers, and `\stick` for score-stick images. It supports red fives, flower tiles, face-down and blank tiles, rotated and stacked tiles, concealed-kong shorthand, overlay notes, local and global size options, and recolouring of tile backs.

1 Loading the package

A minimal document looks like this.

```
\documentclass{article}
\usepackage{mahjong-tiles}
\begin{document}
\mahjong{111m456s111p11122z}
\end{document}
```

If you are working from the CTAN source archive, generate the runtime package file first:

```
latex mahjong-tiles.ins
```

The distributed user manual is `doc/mahjong-tiles-doc.pdf`, and its source is `doc/mahjong-tiles-doc.tex`. The documented implementation is split between the top-level driver `mahjong-tiles.dtx` and the fragments in `dtx/`; `mahjong-tiles.ins` extracts the runtime style file from those fragments.

With the default artwork paths, install these items together in the same TeX-searchable package directory:

```
mahjong-tiles.sty
tiles/
assets/stick/
```

2 Package options

Options can be supplied when loading the package or changed later with `\mahjongtilessetup`.

```
\usepackage[
  height=1.5\baselineskip,
  scale=0.75,
  color=blue!70!black,
  aka=1
]{mahjong-tiles}
```

```
\mahjongtilessetup{height=1.5\baselineskip,scale=0.75,color=teal!65!black,aka=1}
```

Option	Default	Description
height	\baselineskip	Height of one upright tile.
scale	0.75	Scale factor for the tile symbol relative to the tile face.
tile-dir	tiles	Directory containing the tile PDF files.
color	none	Recolour the tile back. Use any xcolor colour expression, or none for the embedded artwork.
aka	1	Red-five mode: 0 disables red fives and maps 0m, 0p, and 0s to regular fives; 1 renders them normally; 2 also makes 55555p show an extra red five pin in concealed-kong shorthand.
river-cols	6	Number of tiles per discard-river row.
river-row-gap	0pt	Vertical gap between discard-river rows.
overlay-style	TikZ node options	Style applied to overlay notes.
stick-dir	assets/stick	Directory containing the score-stick PDF files.
stick-height	\baselineskip	Height of one upright score-stick image.
stick-scale	.5	Scale factor applied to score-stick images.
stick-sep	.6em	Horizontal space between different score-stick groups.

3 The \mahjong command

```
\mahjong{<tiles>}
\mahjong[<height>][<scale>][<back-colour>][<local-keys>]{<tiles>}
\mahjong[<local-keys>]{<tiles>}
```

The first optional argument also accepts a key-value list. This allows compact local overrides such as:

```
\mahjong[height=1.5\baselineskip,scale=0.75,color=teal!65!black,aka=0]{x 0m0p0s}
```

4 MPSZF notation

A tile is written as one or more digits followed by a suit letter. The suits are **m** for manzu, **p** for pinzu, **s** for souzu, **z** for honors, and **f** for flower tiles.

Table 2: MPSZF notation reference. Each tile is identified by its column's number and its row's letter.

	0	1	2	3	4	5	6	7	8	9
s										
p										
m										
z										
f										

The table below shows some examples of combinations.

Input	Output
111m456s111p11122z	
1112345678999p	
19m19s19p1234567z	
012345678f	

4.1 Special tokens

Token	Meaning
0m, 0p, 0s	Red fives:
x	Face-down tile:
?	Unknown blank tile:
-	Full visual gap between groups.
N-	Proportional gap of N/7 of one tile width, for example 2-.

4.2 Rotated and stacked tiles

The marker * or an apostrophe rotates the preceding tile sideways. For ordinary tiles, the marker + or a double quote stacks two sideways copies of the preceding tile, which is useful for kan notation.

There is also red-five edge syntax for upgraded-kan notation. With **aka** enabled, 0m", 0p", and 0s" produce a mixed sideways stack with the red five at the bottom and the regular five at the top. Repeating the stack marker twice, as in 0p"" or 0p++, flips the red five to the top. Three markers, 0p""" or 0p+++, force two red fives and deliberately ignore **aka**. The same rule applies to m, p, and s.

Input	Output
111m111s111p22z2-3*333z	
123m-xx?4p'5p"0s	
0p" 0p"" 0p"""	
0p+ 0p++ 0p+++	
aka=0: 0p" 0p"" 0p"""	

4.3 Red fives and the aka option

Red fives are controlled by the integer **aka** option. The default **aka=1** renders 0m, 0p, and 0s as red fives. Set **aka=0** to suppress red fives and render those inputs as regular fives. Set **aka=2** to keep normal red fives and add one more red five pin in the 55555p concealed-kong shorthand.

Input	Output
0m0p0s55555m	
\mahjong [aka=0]{0m0p0s55555p}	
\mahjong [aka=2]{55555p}	

4.4 Concealed kongs

Five identical consecutive digits followed by a suit are rendered as a concealed kan: a face-down tile, two visible tiles, and a face-down tile. For suited fives, the visible pair is controlled by **aka**: **aka=0** gives two regular fives, **aka=1** gives a red five plus a regular five, and **aka=2** gives 55555p two red five-pin tiles.

Input	Output
55555p	

33333z

`\mahjong [aka=0]{55555s}`

`\mahjong [aka=2]{55555p}`



For compatibility with older documents, the deprecated option `no-aka` is still accepted and emits a package warning. `no-aka=1` is equivalent to `aka=0`; `no-aka=0` is equivalent to `aka=1`. New documents should use `aka` directly.

`\mahjong[aka=0]{0m0p0s}`

% Deprecated:

`\mahjong[no-aka=1]{0m0p0s}`

5 Tile-back recolouring

The tile-back colour can be set globally or locally. The colour value is passed to `xcolor`. The special value `none` restores the embedded back tile.

`\mahjongtilessetup{color=purple!70!black}`

`\mahjong{x x x}`

`\mahjong[color=teal!65!black]{x x x}`

`\mahjong[color=none]{x x x}`



6 Discard rivers

The `\mahjongriver` command uses the same notation as `\mahjong`, but it breaks tiles into rows. The row length is controlled by `river-cols`.

`\mahjongriver{1m9m2z5z3s6s1s1m8p4z87m}`

`\mahjongriver[river-cols=6]{1m9m2z5z3s6s1s*1m8p4z87m}`



7 Score sticks

The `\stick` command typesets Japanese Mahjong score sticks. The argument may be a three-digit shorthand amount, or a manual specification of stick counts.

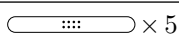
A three-digit input is interpreted as hundreds of points. For example, 305 represents 30500 points. The package decomposes the value into an optimal combination of 10k, 5k, 1k, and 100 sticks.

The default artwork directory is `assets/stick/`. It should contain `10k.pdf`, `5k.pdf`, `1k.pdf`, and `100.pdf`.

Input

`\stick {305}`

Output

 $\times 3$  $\times 5$

<code>\stick {089}</code>	 × 1	 × 3	 × 9
<code>\stick {250}</code>	 × 2	 × 1	

For 305, the automatic decomposition is:

```
10k \ctimes 3
100 \ctimes 5
```

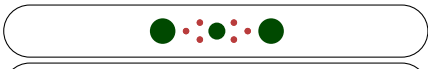
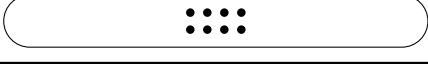
Manual input is also supported. The key-value form names each stick type explicitly.

Input	Output
<code>\stick {10k=3,100=5}</code>	 × 3  × 5
<code>\stick {5k=1,1k=2,100=4}</code>	 × 1  × 2  × 4

The compact comma-list form gives the counts in the order 10k, 5k, 1k, 100.

Input	Output
<code>\stick {3,0,0,5}</code>	 $\times 3$  $\times 5$
<code>\stick [manual]{0,1,2,4}</code>	 $\times 1$  $\times 2$  $\times 4$

The command accepts local options. These options affect only the current `\stick` call.

Input	Output
<code>\stick [height=2em,scale=1]{305}</code>	 × 3
	 × 5

The score-stick defaults can also be changed globally:

```
\mahjongtilessetup{
  stick-dir=assets/stick,
  stick-height=1.2em,
  stick-scale=1,
  stick-sep=.6em
}
```

If the artwork is installed somewhere else, set `stick-dir` accordingly:

```
\mahjongtilessetup{stick-dir=path/to/assets/stick}
```

8 Overlay notes

The `\mahjong` command supports text annotations. Use `[]` in `\mahjong` to attach a note above the previous tile.

Annotations may contain ordinary $\text{\TeX}$ material. Mahjong tiles inside an annotation are rendered only when they are explicitly wrapped in `\mj`. For example, `[waiting \mj {3m}]` prints the text "waiting" followed by a small mahjong tile in the annotation. The `\mj` command is parsed only one level deep inside annotations.

The `\mj` command may also be used directly inside `\mahjong`. In that case, its argument must contain exactly one tile. The tile is typeset as a normal-size rotated tile above the hand, which is useful for showing a drawn tile.

Input	Output
<code>111m111s111p2z2-3*333z7-2z[waiting]</code>	 waiting
<code>123m456p789s\mj {2z}11z</code>	
<code>111m113s111p2z2-3*333z7-2z[discard \mj {3s},\\ waiting \mj {1s2-2z}]</code>	 discard waiting
<code>333z[note]</code>	 note

When a note is added to the fifth tile of a concealed kong shorthand, a warning `Overlay text '<overlay text>'` is attached to the final back tile of a concealed kong. will be triggered. Since a concealed kong is rendered as four tiles, the note is moved to the fourth rendered tile, namely the final back tile.

9 Expl3 interface

For package authors who prefer an expl3-style interface, `mahjong-tiles` also exposes:

```

\ExplSyntaxOn
\mahjongtiles_typeset_hand:n {111m456s111p11122z}
\mahjongtiles:n {111m456s111p11122z}
\mahjongtiles_typeset_river:n {1m2m3m4m5m6m7m8m9m}
\mahjongtilesriver:n {1m2m3m4m5m6m7m8m9m}
\ExplSyntaxOff

```

10 Attribution and licence

The LaTeX package code is distributed under the MIT Licence. Portions are based on Daniel Schmitz's `mahjong` package, copyright 2021 Daniel Schmitz, also under the MIT Licence.

The tile artwork in `tiles/` is derived from FluffyStuff's `riichi-mahjong-tiles` project. The upstream licence file places that work in the public domain/CC0. Attribution is retained here and in the README.

Additional flower-tile artwork in `tiles-tmp/` and score-stick assets in `assets/` were created by Lilia Chen May Wither and are also used under public domain/CC0 terms.