

# Package ‘roloc’

October 14, 2022

**Type** Package

**Title** Convert Colour Specification to Colour Name

**Version** 0.1-1

**Author** Paul Murrell

**Maintainer** Paul Murrell <paul@stat.auckland.ac.nz>

**Description** Functions to convert an R colour specification to a colour name. The user can select and create different lists of colour names and different colour metrics for the conversion.

**License** GPL-2 | GPL-3

**Imports** grDevices, methods, parallel, colorspace

**Suggests** grid, ggplot2, testthat

**NeedsCompilation** no

**Repository** CRAN

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 roloc-package

*Convert Colour Specification to Colour Name*


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## Description

Functions to convert an R colour specification to a colour name. The user can select and create different lists of colour names and different colour metrics for the conversion.

## Details

The DESCRIPTION file:

```

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```

Index of help topics:

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NBScolours	ISCC-NBS colour dictionary
NgaTae	Simple Maori Colour Names
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ReseneColours	Resene colour dictionary
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euclideanLUV	Euclidean colour metrics
roloc-package	Convert Colour Specification to Colour Name
simpleColours	Simple Colour Names

The main function in this package is `colourName()`, which takes one or more colour specifications and returns a matching colour name.

## Author(s)

Paul Murrell

Maintainer: Paul Murrell <paul@stat.auckland.ac.nz>

**References**

~~ Literature or other references for background information ~~

**See Also**

~~ Optional links to other man pages, e.g. ~~

**Examples**

```
colourName("#FF0000")
```

---

colourList	<i>Define a list of colour names</i>
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**Description**

Define a list of colour names, which includes both colour names and a set of sRGB specifications corresponding to the names.

**Usage**

```
colourList(names, colours)  
colorList(names, colours)
```

**Arguments**

names	A character vector of colour names.
colours	An "sRGB" colour object (which provides the sRGB specifications corresponding to the colour names).

**Value**

A "colourList" object.

**Author(s)**

Paul Murrell

**Examples**

```
colourList("red", colorspace::RGB(1, 0, 0))
```

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`colourMatch`*Match Colour Specifications to Colour Names*

---

**Description**

Compare colour specifications to a list of colour names and return distance information for each comparison.

**Usage**

```
colourMatch(colour, colourList, colourMetric, ...)
```

**Arguments**

<code>colour</code>	An R colour specification
<code>colourList</code>	A list of colours
<code>colourMetric</code>	A colour metric function. See the Details Section.
<code>...</code>	Arguments passed to the colour metric function.

**Details**

The colour metric function must take at least two arguments, both of which are "RGB" colour objects (as created by functions in the **colorspace** package such as `RGB`): `colour`, which is the colour specification to find a match for; and `colourList`, which represents the list of colour names to find a match within. Any additional arguments must have default values (so that they do not HAVE to be specified in a call to `colourName`). The colour metric function must return either a vector or a list, the same length as the `colour` argument, containing integer indices into the colour list. NA means the colour could not be represented in the colour space used by the colour metric. "unknown" means that the colour

**Value**

A "colourMatch" object with components for the original colour specification, the original colour list object, and a matrix of distances between each colour specification and each colour name in the colour list.

**Author(s)**

Paul Murrell

**See Also**

This function underlies both [colourName](#) and [colourSwatch](#).

**Examples**

```
colourMatch("red", colourList=HTMLcolours)
```

---

colourName	<i>Convert a colour specification to a colour name</i>
------------	--

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## Description

Return a colour name from a colour specification.

## Usage

```
## S3 method for class 'colourMatch'  
colourNames(x,  
            ...)  
  
## Default S3 method:  
colourNames(x,  
            colourList=getOption("roloc.colourList"),  
            colourMetric=getOption("roloc.colourMetric"),  
            ...)  
  
colourName(...)
```

## Arguments

x	A "colourMatch" object or an R colour specification
colourList	A list of colours
colourMetric	A colour metric function. See <a href="#">colourMatch</a> for details.
...	For colourNames, arguments passed to the colour metric function. For colourName, arguments passed to colourNames

## Value

colourNames returns a list of colour names (possibly more than one per colour specification).  
colourName returns a vector of colour names (only the first match per colour specification).

## Author(s)

Paul Murrell

## Examples

```
# Some colours() are identical to each other  
newColours <- colourName(rgb(t(col2rgb(colours()))), maxColorValue=255)  
repeats <- newColours != colours()  
cbind(colours()[repeats], newColours[repeats])
```

**Description**

Draw a diagram of a colour conversion with four columns: original colour specification, plus swatch, matching colour name, plus swatch. `colourSwatches` can show multiple matches per colour specification.

**Usage**

```
colourSwatch(x, ..., newpage = TRUE)
## S3 method for class 'colourMatch'
colourSwatch(x, ..., newpage = TRUE)
## Default S3 method:
colourSwatch(x,
              colourList=getOption("roloc.colourList"),
              colourMetric=getOption("roloc.colourMetric"),
              ..., newpage = TRUE)
colourSwatches(x, ..., newpage = TRUE)
## S3 method for class 'colourMatch'
colourSwatches(x, ..., newpage = TRUE)
## Default S3 method:
colourSwatches(x,
               colourList=getOption("roloc.colourList"),
               colourMetric=getOption("roloc.colourMetric"),
               ..., newpage = TRUE)
```

**Arguments**

<code>x</code>	A "colourMatch" object or an R colour specification
<code>colourList</code>	A list of colours
<code>colourMetric</code>	A colour metric function. See <a href="#">colourMatch</a> for details.
<code>...</code>	Arguments passed to the colour metric function.
<code>newpage</code>	Whether to start a new page on the current graphics device.

**Value**

These functions are used for their side-effect (a colour match diagram).

**Author(s)**

Paul Murrell

**Examples**

```
colourSwatch("red")
```

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euclideanLUV	<i>Euclidean colour metrics</i>
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**Description**

Colour metrics that calculate euclidean distance between colours in different colour spaces.

**Usage**

```
euclideanLUV(colour, colourList, tolerance = Inf)
euclideanRGB(colour, colourList, tolerance = Inf)
euclideanDistance(spec, list, tolerance)
```

**Arguments**

colour	An "sRGB" colour object representing colours to find a match for.
colourList	An "sRGB" colour object representing a list of colours to find a match within.
tolerance	A numeric value indicating a range beyond which matches will not be accepted.
spec	A single colour specification, as an RGB vector of three values.
list	A list of colours, as an RGB matrix with three columns.

**Details**

euclideanLUV() calculates euclidean distance in the CIE Luv colour space.

euclideanRGB() calculates euclidean distance in the sRGB colour space.

euclideanDistance() is provided as a helper for defining euclidean metrics in other colour spaces.

**Value**

The colour metrics return a matrix of distances, with one row per colour specification and one column per colour name.

**Author(s)**

Paul Murrell

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HTMLcolours

*HTML colour names*

---

**Description**

The list of HTML colour names

**Usage**

HTMLcolours

**Format**

A "colourList" object.

**References**

<https://www.w3.org/TR/2011/REC-css3-color-20110607/#html4>

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NBScolours

*ISCC-NBS colour dictionary*

---

**Description**

The ISCC-NBS list of colour names

**Usage**

NBScolours

**Format**

A "colourList" object.

**Warning**

Some of the sRGB centroids are approximations because some ISCC-NBS colours cannot be represented within the sRGB gamut. This means that some ISCC-NBS colour names will not "round trip"; the sRGB centroid will not return the ISCC-NBS colour name.

**Source**

<http://people.csail.mit.edu/jaffer/Color/NBS-ISCC-rgb.txt>

**References**

<http://tx4.us/nbs-iscc.htm> <http://www.munsellcolourscienceforpainters.com/ColourSciencePapers/sRGBCentroidsForTheISCC.htm>



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NgaTae

*Simple Maori Colour Names*

---

**Description**

A small set of Maori colour names.

**Usage**

NgaTae

**Format**

A "colourList" object.

**References**

<http://www.maori.org.nz/kotereo/default.php?pid=sp148&parent=115>

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Rcolours

*The standard R colour names*

---

**Description**

The list of colour names that R recognises as colour specifications. This list can also be referred to as X11colours or CSScolours or SVGcolours.

**Usage**

Rcolours

**Format**

A "colourList" object.

**References**

Jaffer, A. (2018). Color-name dictionaries. <http://people.csail.mit.edu/jaffer/Color/Dictionaries#X11>. Accessed: 2018-01-24.

ReseneColours

*Resene colour dictionary*

---

**Description**

The Resene list of colour names

**Usage**

ReseneColours

**Format**

A "colourList" object.

**Source**

<http://people.csail.mit.edu/jaffer/Color/Resene-X11>

**References**

Jaffer, A. (2018). Color-name dictionaries. <http://people.csail.mit.edu/jaffer/Color/Dictionaries#X11>. Accessed: 2018-01-24.

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simpleColours

*Simple Colour Names*

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**Description**

A set of colour names with descriptive labels that are evenly spaced throughout CIE LUV space.

**Usage**

simpleColours

**Format**

A "colourList" object.

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