LUMATICLAB

Colour Picker

Version 2.10 - Complete Documentation

A lightweight, offline colour picker and identifier. This document is the authoritative PDF documentation for v2.10.

Document control	Value
Product	LumaticLAB Colour Picker
Release	v2.10
Status	Released
Format standard	PDF only
Scope	Single-colour picking, identification and exact database lookup
Out of scope	Palette/CSV interchange and stack handling

Purpose

The Colour Picker selects a single RGB colour, shows its hexadecimal value, returns a descriptive name, displays Rec. 601 luma, and can optionally resolve an exact name from a local colour-name database. It is not a converter and does not create, import, export, merge, or manage palettes or stacks.

1. Quick start

• Use the circular **Choose a colour** control to select a colour.

• Enter a three-digit or six-digit hexadecimal value in **Hex colour**. Values may be entered with or without #. Three-digit values are expanded, for example #ABC becomes #AABBCC.

• Select **Copy** to copy the current validated six-digit hexadecimal value.

• Optionally load a colour-name database using the file control or by dropping a CSV onto the marked database area.

The readout updates whenever the colour is valid. An invalid in-progress value does not change the selected colour, disables Copy, and is identified by a visible status message.

2. Interface and behaviour

Element	Behaviour
Colour selector	Native browser RGB colour control; sets the canonical hex value.
Hex colour	Accepts #RGB, RGB, #RRGGBB, or RRGGBB. The canonical display is uppercase #RRGGBB.
Copy	Copies only the canonical hex value. If clipboard access is unavailable, the control reports the fallback requirement.
Colour name	Uses an exact database match where available; otherwise uses the automatic descriptive algorithm.
Luma assessment	Reports gamma-encoded Rec. 601 luma to one decimal place on a 0-255 scale.
Database status	Reports successful load count, rejected rows, and failures without changing the current colour.

3. Accessibility and supported use

• Controls have visible labels and keyboard focus indicators.

• Status and copy feedback are announced through a live status region.

• The layout is responsive and permits scrolling at increased text size or on smaller screens.

• The picker is designed for current desktop and mobile browsers supporting HTML colour input. Browser-specific colour-dialog appearance is expected.

4. Technical architecture

The application is a single offline HTML file with no runtime network dependency. Application state comprises a canonical current hex value and an optional in-memory Map of exact hex-to-name database entries. The database is session-only and is not persisted.

Canonical colour validation

Only #RGB and #RRGGBB are accepted. #RGB is expanded to #RRGGBB. Invalid input is never sent to the colour control, automatic naming algorithm, luma calculation, or clipboard action.

Luma calculation

The displayed value is Rec. 601 luma, calculated from gamma-encoded RGB channel values, rounded to one decimal place:

```
luma = 0.299 x R + 0.587 x G + 0.114 x B
```

R, G and B are hexadecimal colour channels parsed as integers from 0 to 255. The result is appropriately described as *luma*, rather than linear luminance or generic brightness.

Automatic colour name

When no exact database match exists, the name comprises a tone, saturation descriptor, and hue. Near-neutral colours use tone plus Grey only.

Measure	Formula / mapping
Tone	lightness = (max(R,G,B) + min(R,G,B)) / 5.1; buckets: Deep, Dark, Medium, Light, Pale.
Saturation	saturation = (max(R,G,B) - min(R,G,B)) / 2.55; buckets: Grey, Muted, Soft, Vivid, Neon.
Neutral rule	Saturation below 10 returns tone plus Grey, with no hue word.
Hue	Standard hue angle (0-360 degrees) mapped in 45-degree sectors to Red, Orange, Yellow, Green, Cyan, Blue, Purple, Pink, Red.

The descriptive name is intentionally approximate. Tone is based on lightness and is not expected to mirror the luma result for strongly coloured pixels.

5. Colour-name database CSV

The CSV loader is solely an exact-name lookup convenience. It is not a palette interchange format, does not accept palette files as a defined format, and does not provide conversion or stack handling.

Required row layout

Column	Meaning	Requirement
1	Optional identifier / unused	May be blank.
2	Colour name	Required, non-empty text.
3	Hex value	Required: #RGB, RGB, #RRGGBB, or RRGGBB.
4+	Additional data	Ignored.

Example

```
id,name,hex
1,"Signal Blue",#38BDF8
2,"Warm Grey",7F7F7F
```

• CSV supports comma-separated fields, quoted fields, commas inside quoted names, escaped quote characters, CRLF or LF line endings, and a UTF-8 byte-order mark.

• A header row is permitted but is treated as an invalid data row unless it happens to meet the valid name-and-hex requirements. The status message reports rejected rows.

• Rows with fewer than three fields, missing names, or invalid hex values are rejected. A file with no valid rows is not loaded.

• For duplicate valid hex values, the last row wins. Matching is exact after hex normalization.

• The loaded database cannot change the selected colour or luma: it can only supply a display name.

6. Limitations

• Automatic names are descriptive rather than colour-science classifications.

• Database matching is exact only; no nearest-colour search is performed.

• Database contents are held only for the active page session.

• Native colour-input UI, clipboard permissions, and drag-and-drop behaviour vary by browser and platform.

• No alpha channel, colour-profile conversion, palette management, CSV interchange, or stack processing is included.

7. Operational checks

Use these checks before releasing an amended picker build.

Check	Expected result
Initial state	#7F7F7F, Medium Grey, and luma 127.0 are shown.
Hex normalization	#abc becomes #AABBCC; an invalid value does not alter the current colour and disables Copy.
Luma	#FFFFFF reports 255.0; #000000 reports 0.0; #FF0000 reports 76.2.
Automatic neutral	#7F7F7F reports Medium Grey without a hue word.
Database match	A valid matching row replaces only the automatic name.
CSV validation	Bad rows are counted and reported; a no-valid-row file does not replace a loaded database.
Copy	Copies canonical uppercase #RRGGBB only.
Keyboard	All controls are reachable and focus is visible.
Small viewport	Content remains usable with scrolling and no clipping.

8. Maintenance requirements

• Update this PDF before or with any release that changes visible wording, version, formulas, thresholds, accepted inputs, or database behaviour.

• Maintain the release name as **LumaticLAB Colour Picker**; do not refer to the product as Colour Identifier in release material.

• Keep documentation distributed as PDF only. Do not treat editable or web-page copies as controlled documentation.

• Keep source HTML and documentation release versions aligned. A code change that affects the algorithm requires updated examples and verification checks.

9. Release record

Version	Date	Summary
2.10	23 August 2026	Complete controlled PDF documentation. Covers corrected colour picker behaviour, validated CSV lookup, accessibility and release checks.

End of controlled documentation