Color system & Design Tokens

Color system

Create accessible, personal color schemes communicating your product's hierarchy, state, and brand

The Material color system includes:

- Built-in set of accessible color relationships
- 26+ color roles mapped to Material Components
- Static baseline color scheme with default colors assigned to each color role

Essential terms

1. Color role

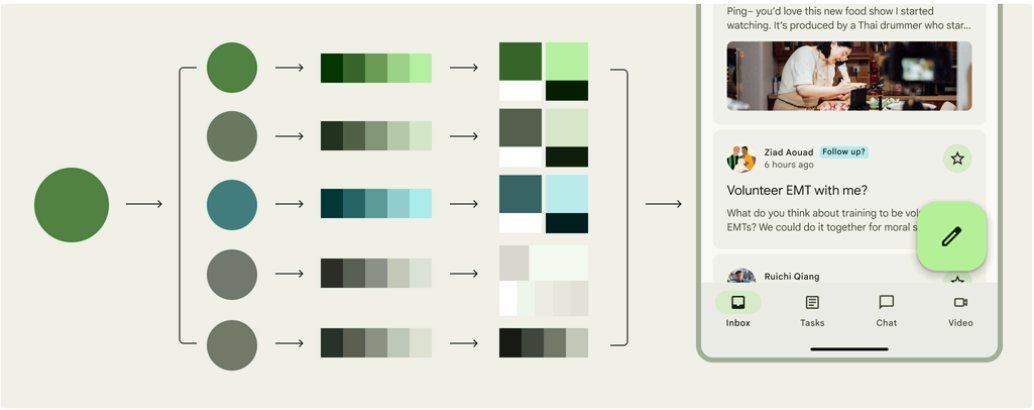
Like the "numbers" on a paint-by-number canvas, color roles are assigned to specific UI elements. They have semantic names like **primary**, **on primary**, and **primary container,** and matching color tokens.

2.Dynamic color

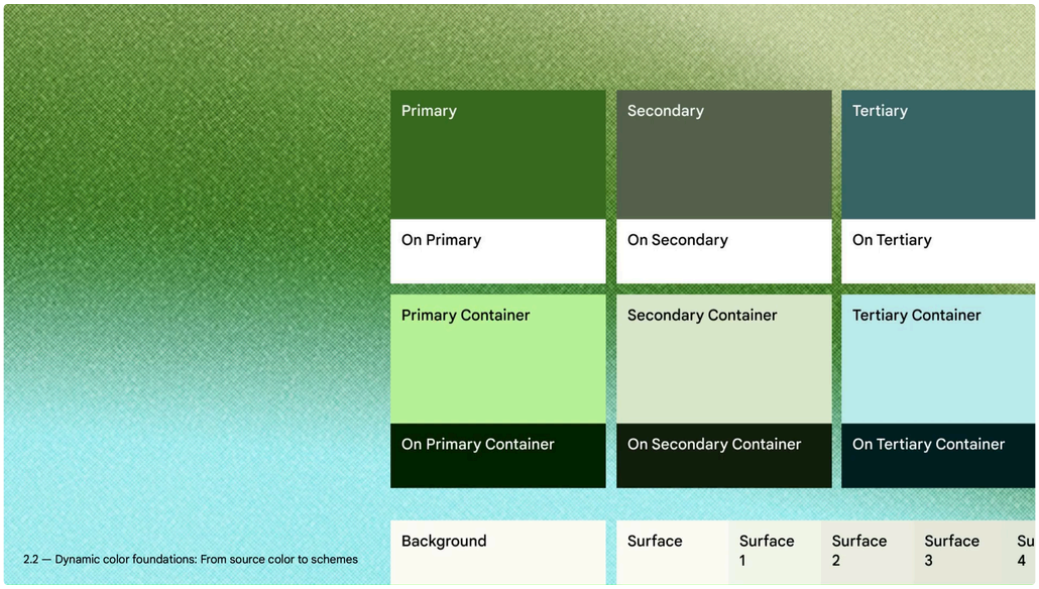
Dynamic color takes a single color from a user's wallpaper or in-app content and creates an accessible color scheme assigned to elements in the UI. If the user's wallpaper or in-app content changes, the colors in the UI will change to match.

3.Static color

UI colors that don't change based on the user's wallpaper or in-app content. Static colors can be hand-picked or generated in design tools like the Material Theme Builder. Once assigned to their respective color roles and UX elements, the colors remain constant.



The dynamic color process is automatic. A single source color is used to generate five key colors, which are used to make tonal palettes. Tones from the palettes are then assigned to color roles, which are in turn assigned to elements of the UI.



[Material Theme builder website](#) (provides fast overview within one click)

[Color guidance example in Figma](#)

How dynamic color generates color schemes

1. It starts with a source color. Color - Material Design 3 - Create personal color schemes

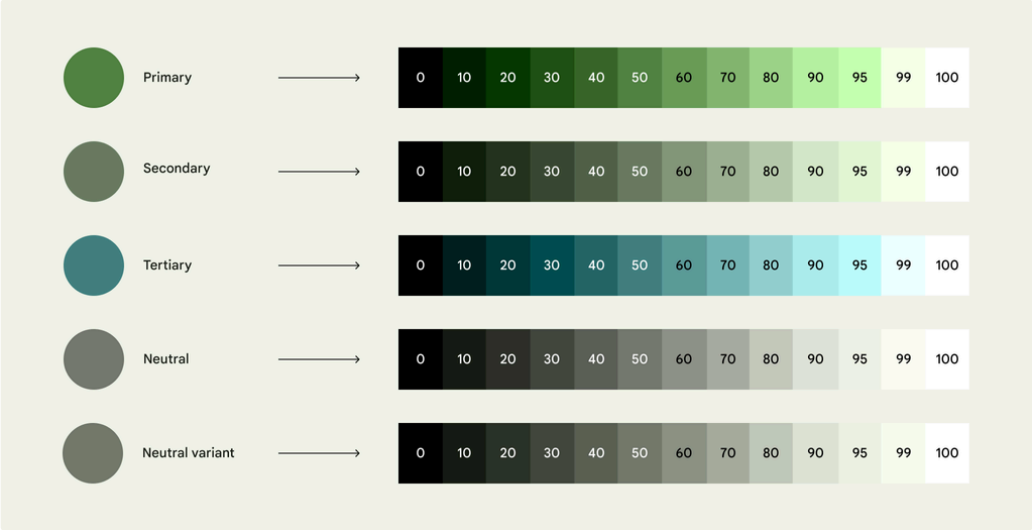
2. Feed the source color into an algorithm Color - Material Design 3 - Create personal color schemes

3. The algorithm generates key colors

Material's color algorithms manipulate the source color's hue and chroma to generate **five complimentary key colors**.

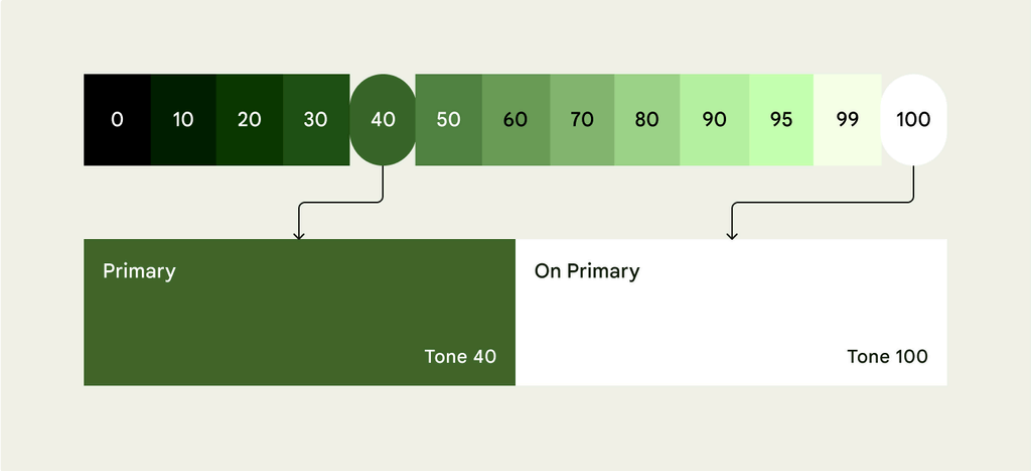
1. Primary
2. Secondary
3. Tertiary
4. Neutral
5. Neutral variant

4. The algorithm creates tonal palettes



5. The algorithm assigns tones to color roles

The algorithm uses accessible color relationships to **assign specific tones to the 26 color roles** in both light and dark theme.

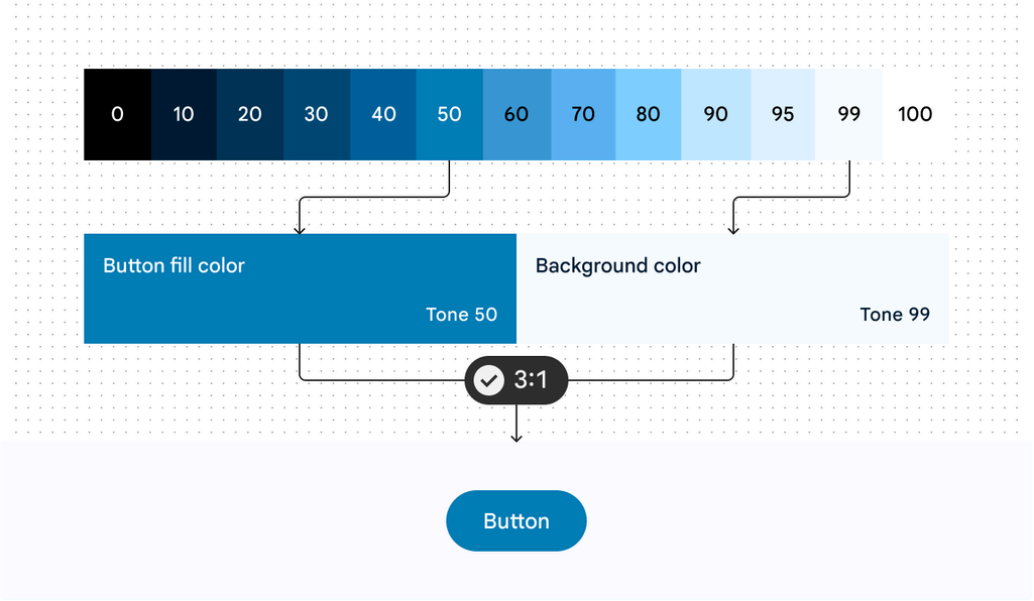


Colors from the five tonal palettes are assigned to color roles. For example, primary roles are picked from the primary tonal palette, while surface roles are picked from the neutral tonal palette.

6. The new colors are applied to the UI

The 26 standard color roles are already assigned to elements of the UI. When a new source color is picked, the UI dynamically changes color.

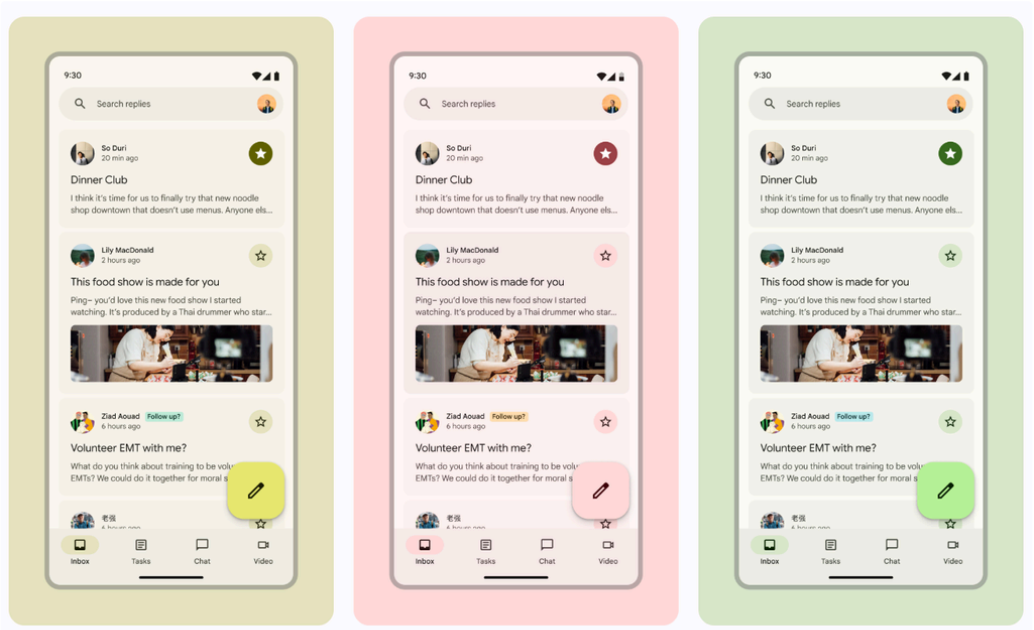
Pairing accessible tones



Using tones 50 and 99 for a button and its label creates an accessible 3:1 contrast

With a dynamic user-generated color scheme, end-users see

- Their apps and system UI change to a color pulled from their device wallpaper
- A product that looks personalized



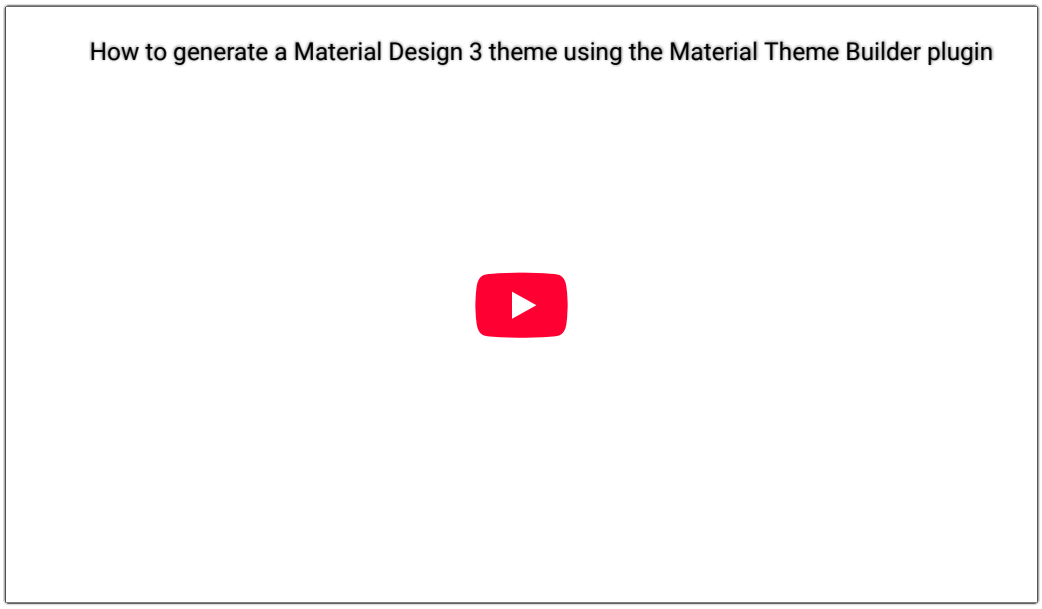
Dynamic color in a work app

Dynamic color in a work app

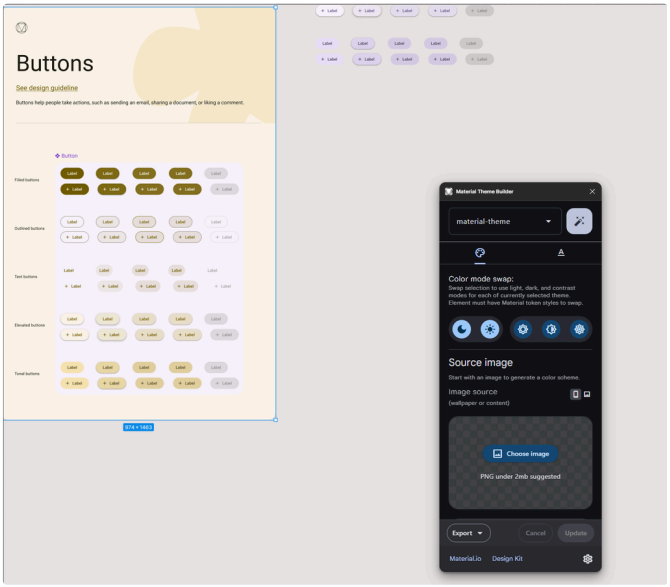
Dynamic color in a work app

[Implementing Material Color Themes: A Step-by-Step Guide]

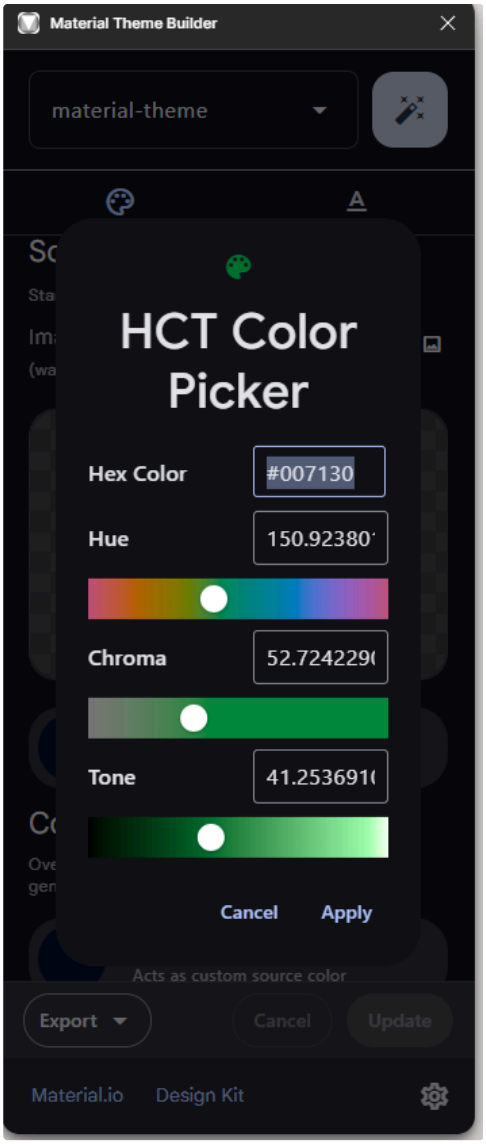
How to generate a Material Design 3 theme using the Material Theme Builder plugin



Apply color roles to existing file components



1.Select elements

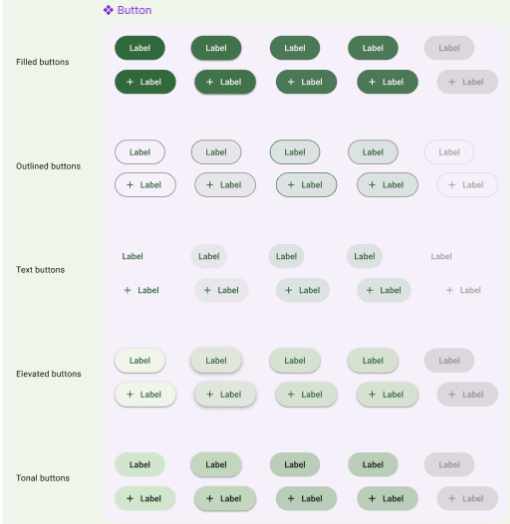


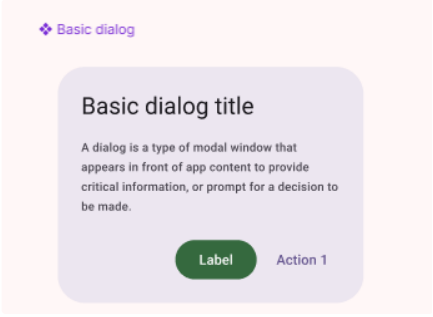
2. Add hex color

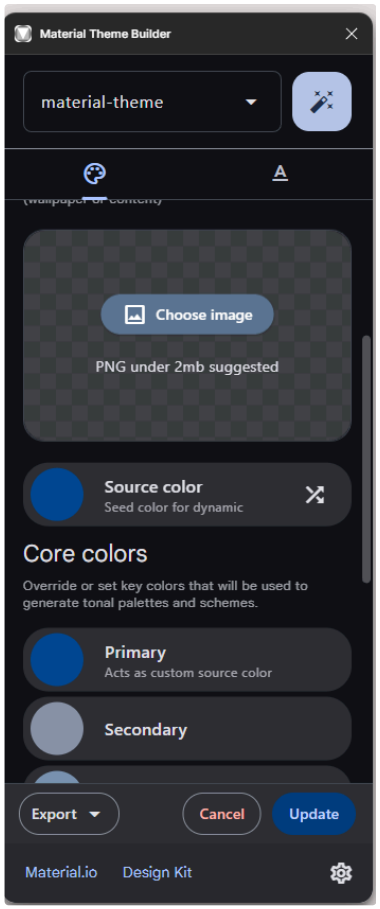
Buttons

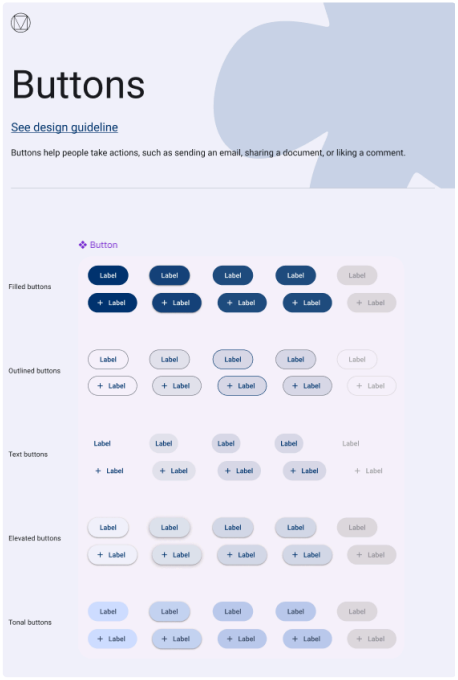
See design guideline

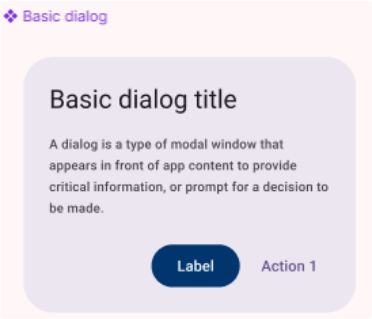
Buttons help people take actions, such as sending an email, sharing a document, or liking a comment.






Material Theme Builder
material-theme
Choose image
PNG under 2mb suggested
Source color
Seed color for dynamic
Core colors
Override or set key colors that will be used to generate tonal palettes and schemes.
Primary
Acts as custom source color
Secondary
Export
Cancel
Update
Material.io
Design Kit


Buttons
See design guideline
Buttons help people take actions, such as sending an email, sharing a document, or liking a comment.
Button
Filled buttons
Outlined buttons
Text buttons
Elevated buttons
Tonal buttons
Label



Button colors will be updated automatically in other pages

Design Tokens

Design tokens are the building blocks of all UI elements. The same tokens are used in designs, tools, and code.

- Each token is named for how or where it's used (for example, **md.fab.container.color** sets the container color for a FAB)

Resources

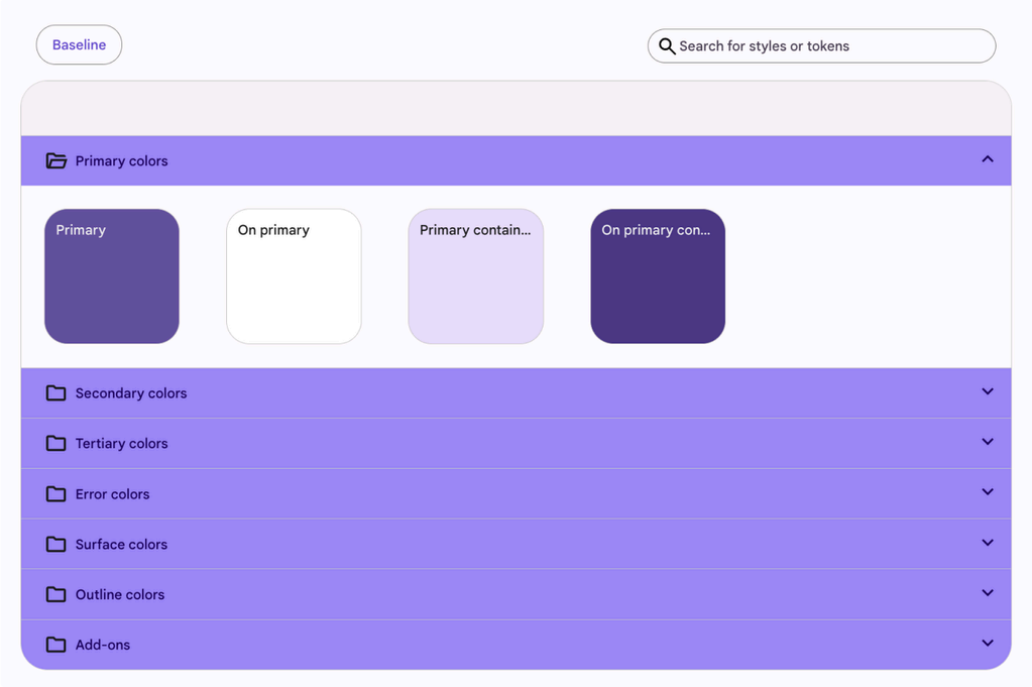
Type	Link	Status
Design	Design kit (Figma)	Available
	Material Theme Builder Figma plugin	Available
Implementation	Material baseline theme and tokens (DSP)	Available

Tokens replace static values with self-explanatory names.

A design token consists of 2 things:

1. A code-like name, such as **md.ref.palette.secondary90**
2. An associated value, such as **#E8DEF8**

The token's value can be one of several things: A color, typeface, measurement, or even another token.



Example of a token module

Tokens are first grouped by **state** (enabled, disabled, hover, etc) and then by **element**, which is the part of the component that a token or value applies to, such as the container or label text.

Columns include:

- **Name** – The component style aspect that the token applies to, such as color or font
- **Token ID** – The token defining the component style aspect
- **Description** – Optional descriptive info
- **Context/value** – The value stored in the token for a given context

Unlocking the power of tokens

How to use token modules

Let's say you need to verify the color role for a filled button's label text.

Navigate to Common buttons > Specs, find the token module for filled buttons, and search for the "label text" tokens under elements. Buttons – Material Design 3

Copy the color token and paste it in code, or compare it to the color role in Figma.

Parts of a token name

1. All token names in a design system start with the system name (such as “md” for Material Design)
2. An abbreviation for the token class: “ref” for reference tokens, “sys” for system tokens, and “comp” for component tokens
3. The token ends with descriptive words communicating the token’s role

Classes of tokens

Material Design has three classes of tokens: reference, system, and component

1. Reference tokens
   All available tokens with associated values.
2. System tokens
   Decisions and roles that give the design system its character, from color and typography, to elevation and shape.
3. Component tokens
   The design properties assigned to elements in a component, such as the color of a button icon.

Use tokens in Figma

To begin, install the Material Theme Builder Figma plugin from the community page.

Generate tokens

1. Open Figma and navigate to: Plugins > Material Theme Builder > Open Plugin
2. Select Get started, this will create material-theme with baseline values by default. Color and text styles will begin populating the right hand design panel. When your tokens are fully generated, your artboard will contain tonal palettes for light and dark color schemes, as well as a default type scale.
3. Your tokens are now represented as Figma styles that can be used throughout your designs

Update token values

Using the Material Theme Builder Figma plugin (updates colors only)

1. Open Figma and navigate to: **Plugins** > **Material Theme Builder** > **Open Plugin**
2. Choose the colors. Updated color and text styles will begin populating the right hand design panel.
3. Your updated tokens are now represented as Figma styles that can be used throughout your designs