

# IBM Carbon Design System

|                 |                                                                                                                                             |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| ID              | DS-003                                                                                                                                      |
| Type            | Design System                                                                                                                               |
| Category        | C. Design Systems                                                                                                                           |
| Source          | <a href="https://carbondesignsystem.com/">https://carbondesignsystem.com/</a>                                                               |
| Licence         | Apache-2.0 (Carbon code, packages and website repo, © IBM Corp.); IBM Plex fonts SIL OFL 1.1; IBM and Carbon names/logos are IBM trademarks |
| Platforms       | Web, React, Web Components, Figma                                                                                                           |
| Themes          | White · Gray 10 · Gray 90 · Gray 100                                                                                                        |
| Commercial use  | Yes. Apache-2.0 allows commercial use of Carbon code; IBM Plex is OFL 1.1 (free, including commercial)                                      |
| Attribution     | Keep the Apache-2.0 licence and NOTICE with redistributed code; no UI credit required. Don't use IBM logos or imply IBM endorsement         |
| Redistribution  | Code yes under Apache-2.0; fonts yes under OFL (not sold on their own); IBM trademarks no                                                   |
| Delivery        | npm (@carbon/react, @carbon/web-components, @carbon/styles), Sass, Figma kits, GitHub                                                       |
| Added / updated | 2026-10-25                                                                                                                                  |

## Notes

IBM's open-source design system for enterprise products: four themes driven by role-based colour tokens and a layering model, IBM Plex type sets (productive 14 px / expressive 16 px base), the 8-px 2x Grid, a 2–160 px spacing scale, productive/expressive motion and React + Web Components libraries.

## Our analysis OURS

Carbon is IBM's answer to building hundreds of enterprise products that must look like one family. Its core idea is the layering model: four themes (White, Gray 10, Gray 90, Gray 100) assign values to role-based tokens such as \$background, \$layer-01 and \$border-subtle-01, and each nested container steps to the next layer, alternating White/Gray 10 in light themes and getting one step lighter per layer in dark themes. That replaces shadows with tone, which keeps dense dashboards calm and flat. Type is split into a productive set (14 px base, fixed headings, for task UIs) and an expressive set (16 px base, fluid headings, for web pages), all in IBM Plex. Everything snaps to the 8-px 2x Grid. Blue 60 (#0f62fe) is the only action colour; status colours are used sparingly. Lessons: name tokens by role not by value, make one primary button per screen, use tone rather than elevation for hierarchy in dense UIs, and separate 'productive' from 'expressive' moments in both type and motion.

## Components and states

- Buttons (primary, secondary, tertiary, ghost, danger; 7 sizes)
- UI Shell (header, side nav, panels)
- Data table
- Text input, text area, number input
- Dropdown, combo box, multiselect
- Checkbox, radio, toggle
- Date picker
- Modal
- Notifications (inline, toast, actionable)
- Tabs, content switcher
- Tile (clickable, selectable, expandable)
- Accordion
- Breadcrumb, pagination

- Progress indicator, loading, skeleton
- Tooltip, popover, toggletip
- Tag
- Tree view
- Slider
- File uploader
- AI label and AI presence (Carbon for AI)

## Design tokens OFFICIAL

OFFICIAL values from @carbon/themes 11.78.0 (Apache-2.0), which carbondesignsystem.com/building-blocks/foundations/color/tokens documents (page last updated Sep 25, 2026). Tokens are role-based and identical across themes; only the value changes. In CSS they are custom properties prefixed --cds- (e.g. var(--cds-layer-01)). RGB and HSL are converted by us from the official HEX (8-digit HEX = alpha; RGB/HSL shown for the opaque part).

## Colour: Core and button colour tokens across the four themes (White / Gray 10 / Gray 90 / Gray 100) OFFICIAL

| Token · role                                                 | White                                                                                                                               | Gray 10                                                                                                                             | Gray 90                                                                                                                                 | Gray 100                                                                                                                                |
|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| \$background · Default page background; UI Shell base        |  #FFFFFF<br>rgb(255,255,255)<br>hsl(0, 0%, 100%)   |  #F4F4F4<br>rgb(244,244,244)<br>hsl(0, 0%, 96%)    |  #262626<br>rgb(38,38,38)<br>hsl(0, 0%, 15%)         |  #161616<br>rgb(22,22,22)<br>hsl(0, 0%, 9%)          |
| \$layer-01 · Container colour on background                  |  #F4F4F4<br>rgb(244,244,244)<br>hsl(0, 0%, 96%)    |  #FFFFFF<br>rgb(255,255,255)<br>hsl(0, 0%, 100%)   |  #393939<br>rgb(57,57,57)<br>hsl(0, 0%, 22%)         |  #262626<br>rgb(38,38,38)<br>hsl(0, 0%, 15%)         |
| \$layer-02 · Container colour on layer-01                    |  #FFFFFF<br>rgb(255,255,255)<br>hsl(0, 0%, 100%) |  #F4F4F4<br>rgb(244,244,244)<br>hsl(0, 0%, 96%)  |  #525252<br>rgb(82,82,82)<br>hsl(0, 0%, 32%)       |  #393939<br>rgb(57,57,57)<br>hsl(0, 0%, 22%)       |
| \$layer-hover-01 · Hover colour for layer-01                 |  #E8E8E8<br>rgb(232,232,232)<br>hsl(0, 0%, 91%)  |  #E8E8E8<br>rgb(232,232,232)<br>hsl(0, 0%, 91%)  |  #474747<br>rgb(71,71,71)<br>hsl(0, 0%, 28%)       |  #333333<br>rgb(51,51,51)<br>hsl(0, 0%, 20%)       |
| \$layer-selected-01 · Selected layer-01                      |  #E0E0E0<br>rgb(224,224,224)<br>hsl(0, 0%, 88%)  |  #E0E0E0<br>rgb(224,224,224)<br>hsl(0, 0%, 88%)  |  #525252<br>rgb(82,82,82)<br>hsl(0, 0%, 32%)       |  #393939<br>rgb(57,57,57)<br>hsl(0, 0%, 22%)       |
| \$border-subtle-01 · Subtle borders on layer-01              |  #C6C6C6<br>rgb(198,198,198)<br>hsl(0, 0%, 78%)  |  #E0E0E0<br>rgb(224,224,224)<br>hsl(0, 0%, 88%)  |  #6F6F6F<br>rgb(111,111,111)<br>hsl(0, 0%, 44%)    |  #525252<br>rgb(82,82,82)<br>hsl(0, 0%, 32%)       |
| \$border-strong-01 · Field borders; operable element borders |  #8D8D8D<br>rgb(141,141,141)<br>hsl(0, 0%, 55%)  |  #8D8D8D<br>rgb(141,141,141)<br>hsl(0, 0%, 55%)  |  #8D8D8D<br>rgb(141,141,141)<br>hsl(0, 0%, 55%)    |  #6F6F6F<br>rgb(111,111,111)<br>hsl(0, 0%, 44%)    |
| \$border-interactive · Selected / active borders             |  #0F62FE<br>rgb(15,98,254)<br>hsl(219, 99%, 53%) |  #0F62FE<br>rgb(15,98,254)<br>hsl(219, 99%, 53%) |  #4589FF<br>rgb(69,137,255)<br>hsl(218, 100%, 64%) |  #4589FF<br>rgb(69,137,255)<br>hsl(218, 100%, 64%) |
| \$text-primary · Primary text; body copy, headers            |  #161616<br>rgb(22,22,22)<br>hsl(0, 0%, 9%)      |  #161616<br>rgb(22,22,22)<br>hsl(0, 0%, 9%)      |  #F4F4F4<br>rgb(244,244,244)<br>hsl(0, 0%, 96%)    |  #F4F4F4<br>rgb(244,244,244)<br>hsl(0, 0%, 96%)    |
| \$text-secondary · Secondary text; labels, helper text       |  #525252<br>rgb(82,82,82)<br>hsl(0, 0%, 32%)     |  #525252<br>rgb(82,82,82)<br>hsl(0, 0%, 32%)     |  #C6C6C6<br>rgb(198,198,198)<br>hsl(0, 0%, 78%)    |  #C6C6C6<br>rgb(198,198,198)<br>hsl(0, 0%, 78%)    |
| \$text-on-color · Text on interactive colours                |  #FFFFFF<br>rgb(255,255,255)<br>hsl(0, 0%, 100%) |  #FFFFFF<br>rgb(255,255,255)<br>hsl(0, 0%, 100%) |  #FFFFFF<br>rgb(255,255,255)<br>hsl(0, 0%, 100%)   |  #FFFFFF<br>rgb(255,255,255)<br>hsl(0, 0%, 100%)   |

|                                                     |                                                                                                                                      |                                                                                                                                      |                                                                                                                                         |                                                                                                                                         |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| \$link-primary · Primary links                      |  #0F62FE<br>rgb(15,98,254)<br>hsl(219, 99%, 53%)    |  #0F62FE<br>rgb(15,98,254)<br>hsl(219, 99%, 53%)    |  #78A9FF<br>rgb(120,169,255)<br>hsl(218, 100%, 74%)  |  #78A9FF<br>rgb(120,169,255)<br>hsl(218, 100%, 74%)  |
| \$interactive · Interactive elements, icons         |  #0F62FE<br>rgb(15,98,254)<br>hsl(219, 99%, 53%)    |  #0F62FE<br>rgb(15,98,254)<br>hsl(219, 99%, 53%)    |  #4589FF<br>rgb(69,137,255)<br>hsl(218, 100%, 64%)   |  #4589FF<br>rgb(69,137,255)<br>hsl(218, 100%, 64%)   |
| \$focus · Focus border; focus underline             |  #0F62FE<br>rgb(15,98,254)<br>hsl(219, 99%, 53%)    |  #0F62FE<br>rgb(15,98,254)<br>hsl(219, 99%, 53%)    |  #FFFFFF<br>rgb(255,255,255)<br>hsl(0, 0%, 100%)     |  #FFFFFF<br>rgb(255,255,255)<br>hsl(0, 0%, 100%)     |
| \$highlight · Highlight colour (e.g. selected row)  |  #D0E2FF<br>rgb(208,226,255)<br>hsl(217, 100%, 91%) |  #D0E2FF<br>rgb(208,226,255)<br>hsl(217, 100%, 91%) |  #002D9C<br>rgb(0,45,156)<br>hsl(223, 100%, 31%)     |  #001D6C<br>rgb(0,29,108)<br>hsl(224, 100%, 21%)     |
| \$support-error · Error                             |  #DA1E28<br>rgb(218,30,40)<br>hsl(357, 76%, 49%)    |  #DA1E28<br>rgb(218,30,40)<br>hsl(357, 76%, 49%)    |  #FF8389<br>rgb(255,131,137)<br>hsl(357, 100%, 76%)  |  #FA4D56<br>rgb(250,77,86)<br>hsl(357, 95%, 64%)     |
| \$support-success · Success                         |  #24A148<br>rgb(36,161,72)<br>hsl(137, 63%, 39%)    |  #24A148<br>rgb(36,161,72)<br>hsl(137, 63%, 39%)    |  #42BE65<br>rgb(66,190,101)<br>hsl(137, 49%, 50%)    |  #42BE65<br>rgb(66,190,101)<br>hsl(137, 49%, 50%)    |
| \$support-warning · Warning                         |  #F1C21B<br>rgb(241,194,27)<br>hsl(47, 88%, 53%)  |  #F1C21B<br>rgb(241,194,27)<br>hsl(47, 88%, 53%)  |  #F1C21B<br>rgb(241,194,27)<br>hsl(47, 88%, 53%)   |  #F1C21B<br>rgb(241,194,27)<br>hsl(47, 88%, 53%)   |
| \$support-info · Information                        |  #0043CE<br>rgb(0,67,206)<br>hsl(220, 100%, 40%)  |  #0043CE<br>rgb(0,67,206)<br>hsl(220, 100%, 40%)  |  #4589FF<br>rgb(69,137,255)<br>hsl(218, 100%, 64%) |  #4589FF<br>rgb(69,137,255)<br>hsl(218, 100%, 64%) |
| \$button-primary · Primary button (component token) |  #0F62FE<br>rgb(15,98,254)<br>hsl(219, 99%, 53%)  |  #0F62FE<br>rgb(15,98,254)<br>hsl(219, 99%, 53%)  |  #0F62FE<br>rgb(15,98,254)<br>hsl(219, 99%, 53%)   |  #0F62FE<br>rgb(15,98,254)<br>hsl(219, 99%, 53%)   |
| \$button-primary-hover · Primary button hover       |  #0050E6<br>rgb(0,80,230)<br>hsl(219, 100%, 45%)  |  #0050E6<br>rgb(0,80,230)<br>hsl(219, 100%, 45%)  |  #0050E6<br>rgb(0,80,230)<br>hsl(219, 100%, 45%)   |  #0050E6<br>rgb(0,80,230)<br>hsl(219, 100%, 45%)   |
| \$button-primary-active · Primary button active     |  #002D9C<br>rgb(0,45,156)<br>hsl(223, 100%, 31%)  |  #002D9C<br>rgb(0,45,156)<br>hsl(223, 100%, 31%)  |  #002D9C<br>rgb(0,45,156)<br>hsl(223, 100%, 31%)   |  #002D9C<br>rgb(0,45,156)<br>hsl(223, 100%, 31%)   |
| \$button-secondary · Secondary button               |  #393939<br>rgb(57,57,57)<br>hsl(0, 0%, 22%)      |  #393939<br>rgb(57,57,57)<br>hsl(0, 0%, 22%)      |  #6F6F6F<br>rgb(111,111,111)<br>hsl(0, 0%, 44%)    |  #6F6F6F<br>rgb(111,111,111)<br>hsl(0, 0%, 44%)    |
| \$button-danger-primary · Danger button             |  #DA1E28<br>rgb(218,30,40)<br>hsl(357, 76%, 49%)  |  #DA1E28<br>rgb(218,30,40)<br>hsl(357, 76%, 49%)  |  #DA1E28<br>rgb(218,30,40)<br>hsl(357, 76%, 49%)   |  #DA1E28<br>rgb(218,30,40)<br>hsl(357, 76%, 49%)   |

## Typography: Carbon type tokens (IBM Plex Sans unless noted; @carbon/type 11.70.0; productive set suffix -01, expressive -02) OFFICIAL

| Token                   | Weight   | Size             | Line height     | Tracking |
|-------------------------|----------|------------------|-----------------|----------|
| label-01                | Regular  | 12 px (0.75rem)  | 16 px (1.33333) | 0.32 px  |
| helper-text-01          | Regular  | 12 px (0.75rem)  | 16 px (1.33333) | 0.32 px  |
| body-compact-01         | Regular  | 14 px (0.875rem) | 18 px (1.28572) | 0.16 px  |
| body-01                 | Regular  | 14 px (0.875rem) | 20 px (1.42857) | 0.16 px  |
| body-compact-02         | Regular  | 16 px (1rem)     | 22 px (1.375)   | 0        |
| body-02                 | Regular  | 16 px (1rem)     | 24 px (1.5)     | 0        |
| code-01 (IBM Plex Mono) | Regular  | 12 px (0.75rem)  | 16 px (1.33333) | 0.32 px  |
| heading-compact-01      | Semibold | 14 px (0.875rem) | 18 px (1.28572) | 0.16 px  |
| heading-02              | Semibold | 16 px (1rem)     | 24 px (1.5)     | 0        |
| heading-03              | Regular  | 20 px (1.25rem)  | 28 px (1.4)     | 0        |
| heading-04              | Regular  | 28 px (1.75rem)  | 36 px (1.28572) | 0        |
| heading-05              | Regular  | 32 px (2rem)     | 40 px (1.25)    | 0        |
| heading-06              | Light    | 42 px (2.625rem) | ≈50 px (1.199)  | 0        |
| heading-07              | Light    | 54 px (3.375rem) | ≈65 px (1.199)  | 0        |

## Spacing, grid, radii, shadows, motion and icons OFFICIAL

|                                                 |                                                                                                                                                   |
|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Spacing scale (\$spacing-01...13)</b>        | 01: 2 · 02: 4 · 03: 8 · 04: 12 · 05: 16 · 06: 24 · 07: 32 · 08: 40 · 09: 48 · 10: 64 · 11: 80 · 12: 96 · 13: 160 px                               |
| <b>2x Grid</b>                                  | 8-px mini unit; values divide or multiply by two; 16 columns from lg                                                                              |
| <b>Breakpoints (@carbon/layout)</b>             | sm 320 px / 4 col · md 672 / 8 · lg 1056 / 16 · xlg 1312 / 16 · max 1584 / 16; margins 0 / 16 / 16 / 16 / 24 px                                   |
| <b>Component heights (@carbon/layout sizes)</b> | xs 24 · sm 32 · md 40 · lg 48 · xl 64 · 2xl 80 px; buttons come in seven sizes                                                                    |
| <b>Motion durations</b>                         | fast-01 70 · fast-02 110 · moderate-01 150 · moderate-02 240 · slow-01 400 · slow-02 700 ms                                                       |
| <b>Easing (productive / expressive)</b>         | standard (0.2,0,0.38,0.9) / (0.4,0.14,0.3,1) · entrance (0,0,0.38,0.9) / (0,0,0.3,1) · exit (0.2,0,1,0.9) / (0.4,0.14,1,1)                        |
| <b>Interaction overlays</b>                     | \$background-hover rgba(141,141,141,0.12) · \$background-active rgba(141,141,141,0.5) · \$background-selected rgba(141,141,141,0.2) (White theme) |
| <b>Type families</b>                            | IBM Plex Sans, IBM Plex Serif, IBM Plex Mono (SIL OFL 1.1); base 14 px productive, 16 px expressive                                               |

## Gaps and estimates ESTIMATED / OURS

Carbon does not publish a general elevation/shadow scale (it uses the layering model instead) or a radius token scale. ESTIMATED: components render with square (0 px) corners on our captures.

## Best practices

- Pick one of the four themes per surface and use inline theming (e.g. a Gray 100 UI Shell over a White page) instead of inventing a fifth.
- Nest containers with the layering tokens (\$layer-01 → \$layer-02) instead of adding shadows; that is how Carbon keeps dense pages flat and readable.

- Use the productive type set (14 px base, fixed headings) inside products and the expressive set (16 px base, fluid headings) on marketing pages.
- Show one primary button per screen; Carbon's guidance says primary buttons should only appear once per screen.
- Snap every size to the 8-px mini unit of the 2x Grid and use spacing tokens (2–160 px), never ad-hoc pixel values.
- Use productive motion (fast-01 70 ms to moderate-02 240 ms, standard productive easing) for most interactions and save expressive motion for significant moments.
- Check contrast whenever you change \$interactive or a layer token; the four themes ship pre-tested pairs.

## At a glance

|                     |                                                                                                  |
|---------------------|--------------------------------------------------------------------------------------------------|
| <b>What it is</b>   | Design system (enterprise)                                                                       |
| <b>What you get</b> | Tokens, IBM Plex, React + Web Components, Figma kits, UI Shell                                   |
| <b>Licence</b>      | Apache-2.0 code; OFL fonts                                                                       |
| <b>Attribution</b>  | Keep the Apache NOTICE/licence in what you ship; IBM marks not included                          |
| <b>Commercial</b>   | Yes (Apache-2.0)                                                                                 |
| <b>How it ships</b> | npm packages / Sass                                                                              |
| <b>Tip</b>          | Use a Carbon theme as-is before customising; swapping \$interactive alone breaks contrast pairs. |

## How to use

```
npm install @carbon/react    # or @carbon/web-components
// styles.scss
@use '@carbon/react';        // White theme by default
@use '@carbon/react/scss/themes';
@use '@carbon/react/scss/theme' with ($theme: themes.$g100);
// tokens in CSS: var(--cds-background), var(--cds-layer-01), var(--cds-interactive)
```

Figures and reference captures

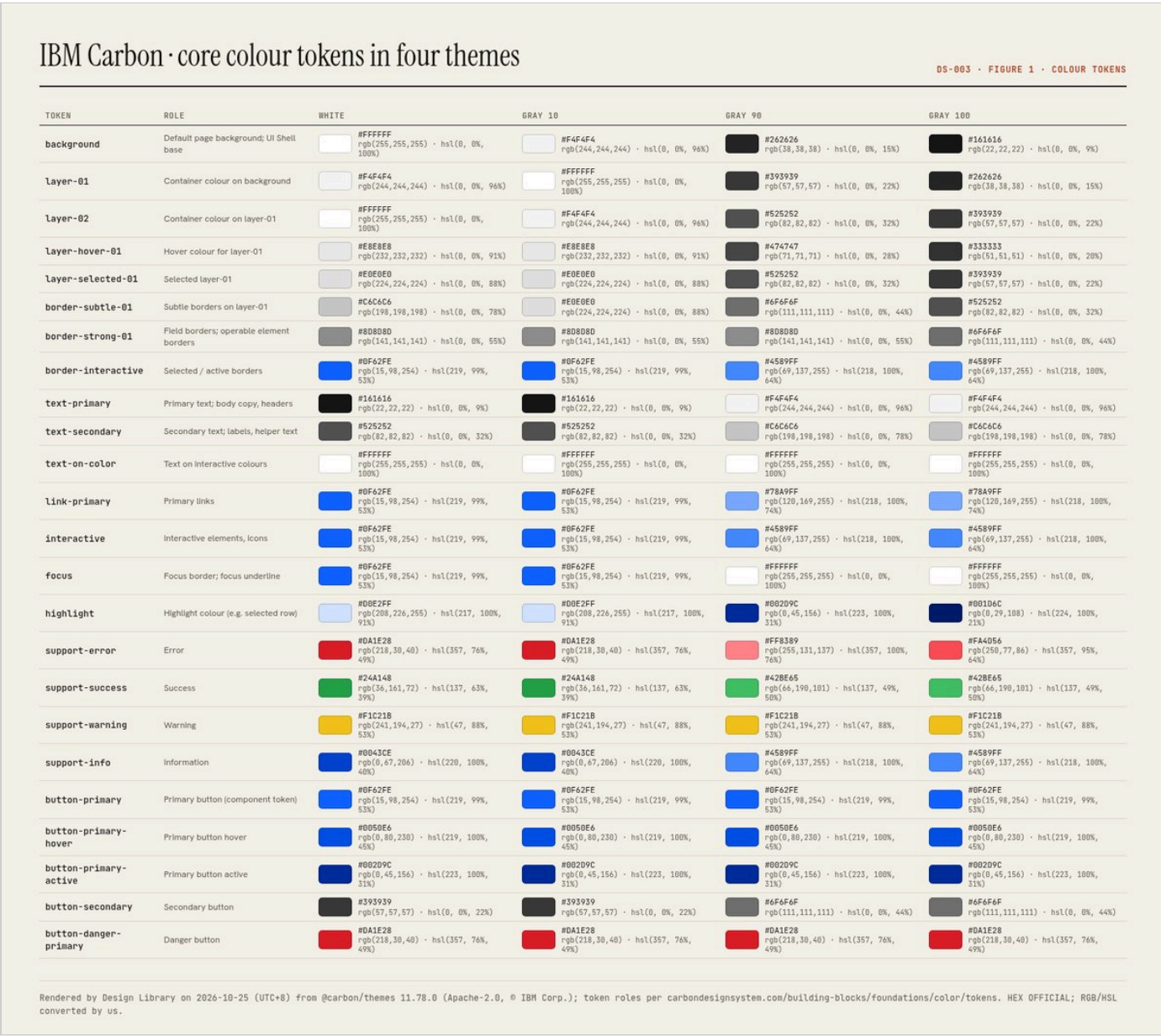


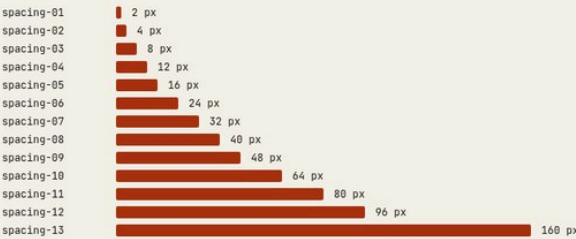
Figure 1. Carbon core colour tokens in the four themes (White, Gray 10, Gray 90, Gray 100), rendered by Design Library on 2026-10-25 (UTC+8) from @carbon/themes 11.78.0 (Apache-2.0, © IBM Corp.). HEX OFFICIAL; RGB/HSL converted by us. Source: <https://carbondesignsystem.com/>. Our render of Carbon token values (Apache-2.0, © IBM Corp.); IBM Plex under SIL OFL 1.1. Free to reuse with credit to IBM Carbon and Design Library.

# IBM Carbon · type tokens in IBM Plex Sans, spacing and grid

DS-003 · FIGURE 2 · TYPE AND LAYOUT

| STYLE                   | SPECIMEN                  | VALUES                                                                  |
|-------------------------|---------------------------|-------------------------------------------------------------------------|
| Label-01                | Ship the quarterly report | Regular 400 · 12 px (0.75rem) · LH 16 px (1.33333) · tracking 0.32 px   |
| helper-text-01          | Ship the quarterly report | Regular 400 · 12 px (0.75rem) · LH 16 px (1.33333) · tracking 0.32 px   |
| body-compact-01         | Ship the quarterly report | Regular 400 · 14 px (0.875rem) · LH 18 px (1.28572) · tracking 0.16 px  |
| body-01                 | Ship the quarterly report | Regular 400 · 14 px (0.875rem) · LH 20 px (1.42857) · tracking 0.16 px  |
| body-compact-02         | Ship the quarterly report | Regular 400 · 16 px (1rem) · LH 22 px (1.375) · tracking 0              |
| body-02                 | Ship the quarterly report | Regular 400 · 16 px (1rem) · LH 24 px (1.5) · tracking 0                |
| code-01 (IBM Plex Mono) | Ship the quarterly report | Regular 400 · 12 px (0.75rem) · LH 16 px (1.33333) · tracking 0.32 px   |
| heading-compact-01      | Ship the quarterly report | Semibold 600 · 14 px (0.875rem) · LH 18 px (1.28572) · tracking 0.16 px |
| heading-02              | Ship the quarterly report | Semibold 600 · 16 px (1rem) · LH 24 px (1.5) · tracking 0               |
| heading-03              | Ship the quarterly report | Regular 400 · 20 px (1.25rem) · LH 28 px (1.4) · tracking 0             |
| heading-04              | Ship the quarterly report | Regular 400 · 28 px (1.75rem) · LH 36 px (1.28572) · tracking 0         |
| heading-05              | Ship the quarterly report | Regular 400 · 32 px (2rem) · LH 40 px (1.25) · tracking 0               |
| heading-06              | Ship the quarterly report | Light 300 · 42 px (2.625rem) · LH 50 px (1.199) · tracking 0            |
| heading-07              | Ship the quarterly report | Light 300 · 54 px (3.375rem) · LH 65 px (1.199) · tracking 0            |

## Spacing scale (\$spacing-01...13)



## 2x Grid and breakpoints



## Motion durations



Rendered by Design Library on 2026-10-25 (UTC+8) from @carbon/type 11.70.0, @carbon/layout 11.62.0 and @carbon/motion 11.55.0 (Apache-2.0, © IBM Corp.). Specimens set in IBM Plex Sans (SIL OFL 1.1) via Google Fonts. Values OFFICIAL.

Figure 2. Carbon productive type tokens set in IBM Plex Sans (SIL OFL 1.1) with the \$spacing-01...13 scale, 2x Grid breakpoints and motion durations, rendered by Design Library from @carbon/type 11.70.0, @carbon/layout 11.62.0 and @carbon/motion 11.55.0 (Apache-2.0, © IBM Corp.). Source: <https://carbondesignsystem.com/>. Our render of Carbon token values (Apache-2.0, © IBM Corp.); IBM Plex under SIL OFL 1.1. Free to reuse with credit to IBM Carbon and Design Library.

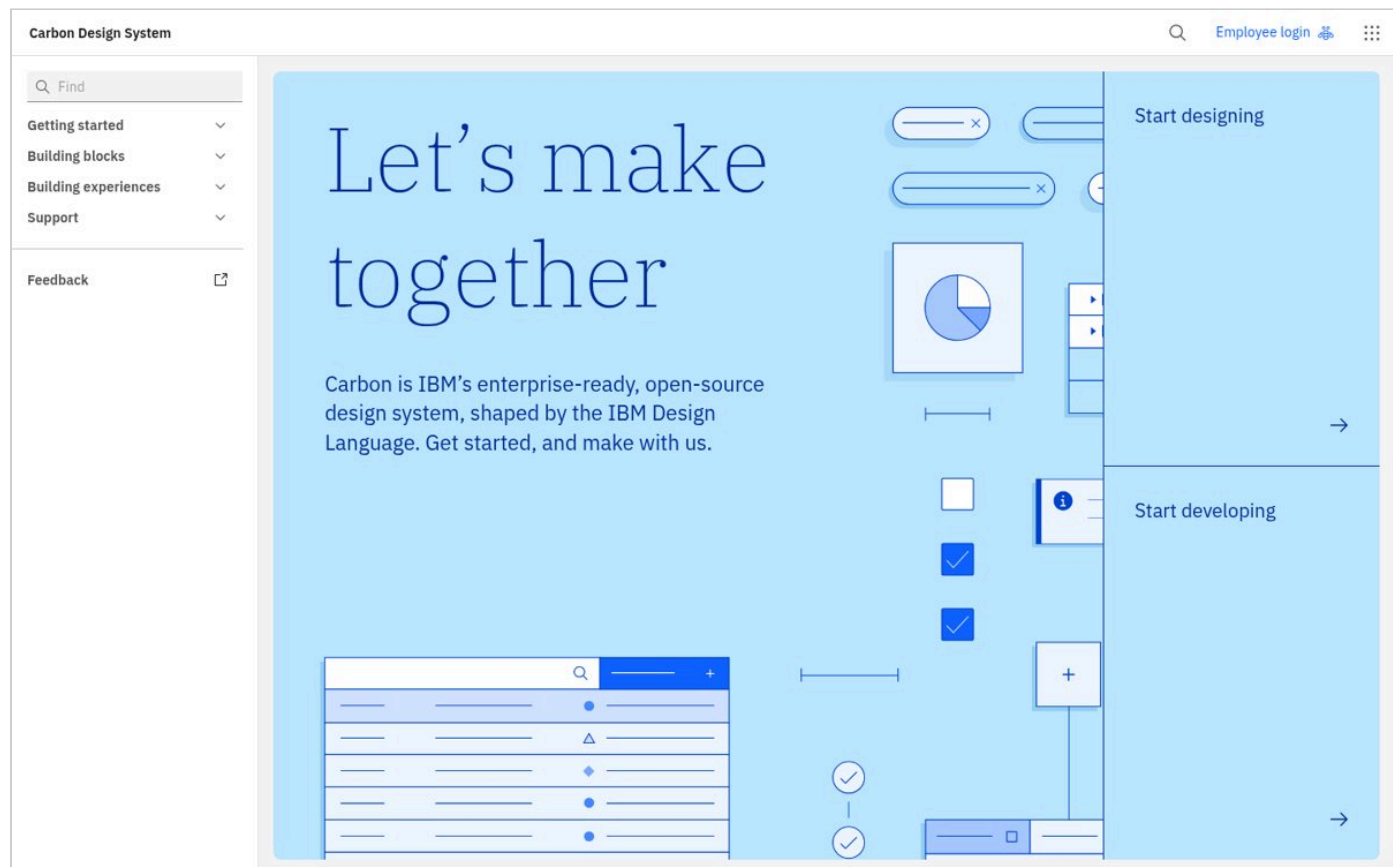
## IBM Carbon · button states and layering model

DS-003 · FIGURE 3 · COMPONENT STATES



Built by Design Library on 2026-10-25 (UTC+8) as a token illustration, not Carbon's own components: colours from @carbon/themes 11.78.0 button, link and layer tokens (Apache-2.0, © IBM Corp.); 40 px height = Carbon md size; square corners as observed on carbon.designsystem.com. Set in IBM Plex Sans (OFL).

Figure 3. Our token illustration of Carbon button states (rest, hover, active, focus; secondary, tertiary, ghost, danger) and the layering model in White and Gray 100, using @carbon/themes 11.78.0 values (Apache-2.0, © IBM Corp.). Not Carbon's own component code. Source: <https://carbondesignsystem.com/>. Our render of Carbon token values (Apache-2.0, © IBM Corp.); IBM Plex under SIL OFL 1.1. Free to reuse with credit to IBM Carbon and Design Library.



Reference capture of <https://www.carbondesignsystem.com/>, taken 2026-10-25 10:10 (UTC+8) by this library with a headless browser at 1440×900 (logged out), reduced to 1200px. Fair-use reference for design analysis only; the page, its content and marks belong to IBM Corp. (Carbon Design System). Source: <https://carbondesignsystem.com/>. Fair-use reference capture; content © IBM Corp. (Carbon Design System). Entry license: Apache-2.0 (Carbon code, packages and website repo, © IBM Corp.); IBM Plex fonts SIL OFL 1.1; IBM and Carbon names/logos are IBM trademarks

Carbon Design System

Find

Getting started

Building blocks

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Building experiences

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# Color

Last updated Sep 25, 2026

IBM Carbon color guidance helps teams create consistent, engaging, and accessible user interfaces across digital products and experiences.

Overview

Guidelines

Tokens

Code

## Core Tokens

Core tokens are global colors that are used across components. They are named and grouped by the common UI element that they are applied to.

White

Gray 10

Gray 90

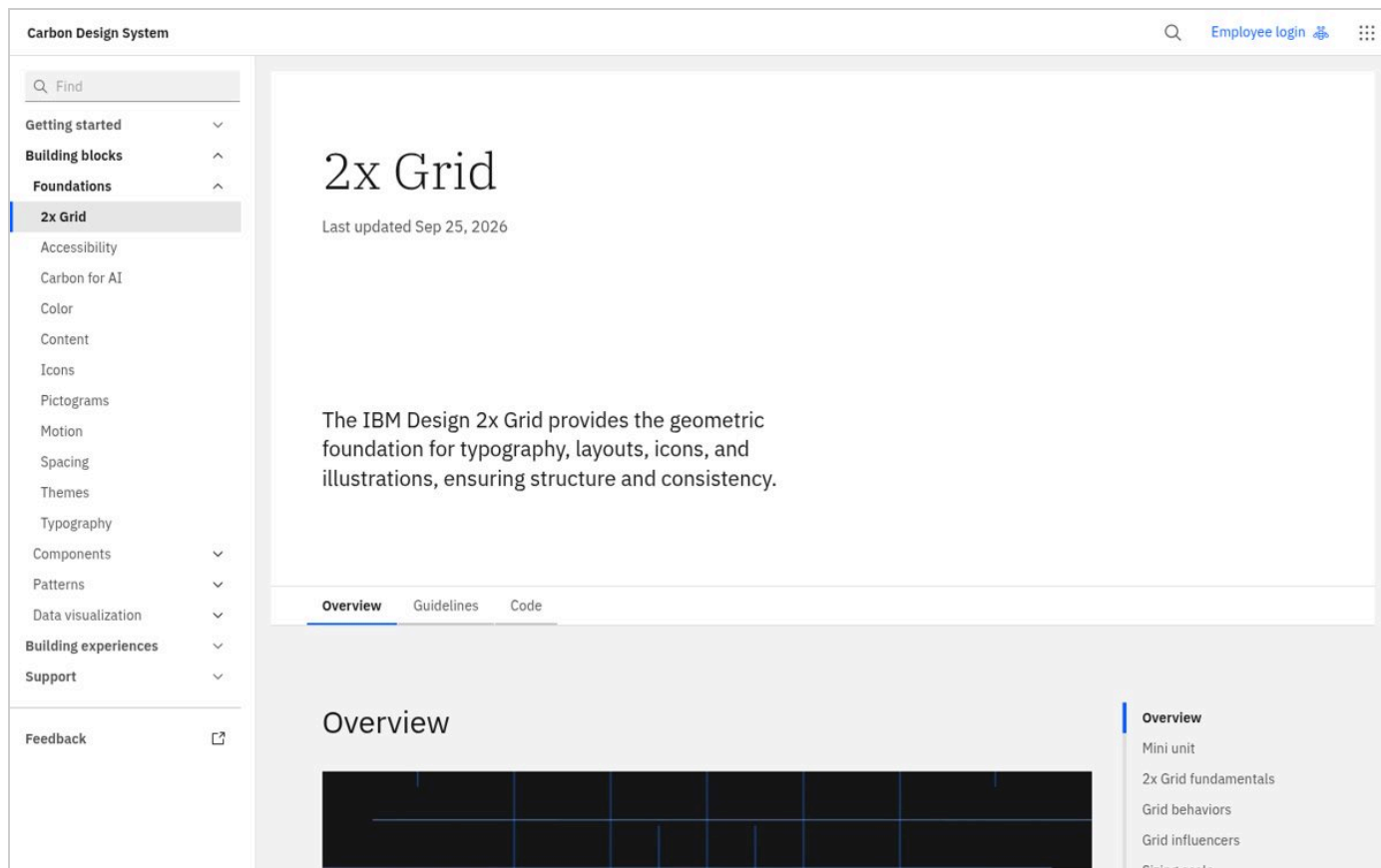
Gray 100

Core Tokens

Component Tokens

AI Tokens

Reference capture of <https://www.carbondesignsystem.com/building-blocks/foundations/color/tokens>, taken 2026-10-25 10:10 (UTC+8) by this library with a headless browser at 1440×900 (logged out), reduced to 1200px. Fair-use reference for design analysis only; the page, its content and marks belong to IBM Corp. (Carbon Design System). Source: <https://carbondesignsystem.com/>. Fair-use reference capture; content © IBM Corp. (Carbon Design System). Entry license: Apache-2.0 (Carbon code, packages and website repo, © IBM Corp.); IBM Plex fonts SIL OFL 1.1; IBM and Carbon names/logos are IBM trademarks



Reference capture of <https://www.carbondesignsystem.com/building-blocks/foundations/2x-grid/overview>, taken 2026-10-25 10:10 (UTC+8) by this library with a headless browser at 1440×900 (logged out), reduced to 1200px. Fair-use reference for design analysis only; the page, its content and marks belong to IBM Corp. (Carbon Design System). Source: <https://carbondesignsystem.com/>. Fair-use reference capture; content © IBM Corp. (Carbon Design System). Entry license: Apache-2.0 (Carbon code, packages and website repo, © IBM Corp.); IBM Plex fonts SIL OFL 1.1; IBM and Carbon names/logos are IBM trademarks

Value labels: OFFICIAL = stated on the cited official page or read from the official npm package (installed 2026-10-25, UTC+8); ESTIMATED = measured by us; OURS = our interpretation. Reference captures are fair-use screenshots for design analysis, credited to their source. Licence summaries are not legal advice.

# IBM Carbon Design System: deep dive

Structured read of the official docs and the official npm token packages, checked 2026-10-25 (UTC+8). OFFICIAL = stated on the cited page or read from the installed package; ESTIMATED = computed or observed by Design Library (WCAG 2 contrast ratios, our captures); OURS = our interpretation. Earlier pages hold the full colour (HEX/RGB/HSL), type and token tables and captioned figures.

## Our analysis

Carbon is IBM's answer to building hundreds of enterprise products that must look like one family. Its core idea is the layering model: four themes (White, Gray 10, Gray 90, Gray 100) assign values to role-based tokens such as \$background, \$layer-01 and \$border-subtle-01, and each nested container steps to the next layer, alternating White/Gray 10 in light themes and getting one step lighter per layer in dark themes. That replaces shadows with tone, which keeps dense dashboards calm and flat. Type is split into a productive set (14 px base, fixed headings, for task UIs) and an expressive set (16 px base, fluid headings, for web pages), all in IBM Plex. Everything snaps to the 8-px 2x Grid. Blue 60 (#0f62fe) is the only action colour; status colours are used sparingly. Lessons: name tokens by role not by value, make one primary button per screen, use tone rather than elevation for hierarchy in dense UIs, and separate 'productive' from 'expressive' moments in both type and motion.

## Best practices

- Pick one of the four themes per surface and use inline theming (e.g. a Gray 100 UI Shell over a White page) instead of inventing a fifth.
- Nest containers with the layering tokens (\$layer-01 → \$layer-02) instead of adding shadows; that is how Carbon keeps dense pages flat and readable.
- Use the productive type set (14 px base, fixed headings) inside products and the expressive set (16 px base, fluid headings) on marketing pages.
- Show one primary button per screen; Carbon's guidance says primary buttons should only appear once per screen.
- Snap every size to the 8-px mini unit of the 2x Grid and use spacing tokens (2–160 px), never ad-hoc pixel values.
- Use productive motion (fast-01 70 ms to moderate-02 240 ms, standard productive easing) for most interactions and save expressive motion for significant moments.
- Check contrast whenever you change \$interactive or a layer token; the four themes ship pre-tested pairs.

## Purpose and audience **OFFICIAL**

- “Carbon is IBM's enterprise-ready, open-source design system, shaped by the IBM Design Language” (carbondesignsystem.com home, 2026-10-25).
- Audience: designers and developers building IBM products and other dense enterprise software (data tables, consoles, dashboards); open to anyone under Apache-2.0.
- Delivery: React (@carbon/react) and Web Components (@carbon/web-components) libraries, Sass packages, Figma kits; the home page also promotes a Carbon MCP server and Carbon for AI guidance.

Source: <https://carbondesignsystem.com/>

## Colour model: themes, tokens, layering OFFICIAL

- Four default themes named after their background: White and Gray 10 (light), Gray 90 and Gray 100 (dark). @carbon/react defaults to White.
- Terms: a theme assigns values; a token is a role-based identifier that never changes across themes; a role cannot change between themes; a value is the hex/rgba.
- Layering model: in light themes layers alternate White / Gray 10 with each nested layer; in dark themes each layer is one step lighter.
- Core blue (#0f62fe, Blue 60) is the primary action colour across IBM products; “additional colors are used sparingly and purposefully”.
- Five interaction states per token (hover, active, selected...) are separate tokens, e.g. \$background-hover.

Source: <https://carbondesignsystem.com/building-blocks/foundations/color/overview>

## Typography and grid OFFICIAL

- IBM Plex Sans/Serif/Mono (OFL). Two type sets: productive (14 px base, fixed headings, for dense product pages) and expressive (16 px base, fluid headings that change at breakpoints, for web pages).
- Productive styles end in -01, expressive in -02; utility styles cover code, labels/helper text and legal copy.
- 2x Grid: “The basic unit ... is the 8-pixel square mini unit”; values divide or multiply by two; 16 columns at lg (1056 px) and above.
- Spacing scale \$spacing-01...13 = 2 to 160 px, complementing the grid and type scale with multiples of 2, 4 and 8.

Source: <https://carbondesignsystem.com/building-blocks/foundations/typography/type-sets>

## Components and states OFFICIAL

- Button variants: primary, secondary, tertiary, ghost and danger; “Primary buttons should only appear once per screen”. Seven sizes from extra small to 2XL (component heights 24–80 px in @carbon/layout).
- Don’t use buttons for navigation; use links when the action takes the user to a new page.
- States are tokenised: \$button-primary #0f62fe, hover #0050e6, active #002d9c; focus uses the \$focus token (#0f62fe in White/Gray 10, #ffffff in Gray 90/100).
- Notifications, tags and support colours use \$support-error #da1e28, \$support-success #24a148, \$support-warning #f1c21b, \$support-info #0043ce (White theme).

Source: <https://carbondesignsystem.com/components/button/usage>

## Contrast checks we ran ESTIMATED

- \$text-primary on \$background, White theme: 18.1:1; Gray 100: 16.45:1.
- \$text-secondary on \$background, White: 7.81:1; Gray 100: 10.59:1.
- \$text-on-color on \$button-primary: 5.0:1 (passes AA for normal text).
- \$support-warning #f1c21b on White: 1.68:1, which is why Carbon pairs warning icons with dark glyphs rather than using the yellow for text.

Source: <https://carbondesignsystem.com/building-blocks/foundations/color/tokens>

## Documentation site UX OURS

- Top navigation (Getting started, Building blocks, Building experiences, Support) over a left sidebar tree, with Usage / Style / Code / Accessibility tabs on component pages; the 2026 site groups Foundations, Components, Patterns and Data visualization under 'Building blocks' and redirects old /elements/ URLs.
- Pages state their 'Last updated' date at the top (e.g. Color tokens: Sep 25, 2026), which helps judge freshness.
- Token tables show every theme side by side with copy buttons; good model for our own token docs.

Source: <https://carbondesignsystem.com/>

## Lessons to take OURS

- Name tokens by role and keep the role fixed; only the values change between themes.
- In dense UIs, express hierarchy with tone (layers) instead of shadows.
- Split 'productive' and 'expressive' registers for type and motion rather than one compromise scale.
- Publish interaction states as tokens so hover/active colours don't drift between teams.

Source: <https://carbondesignsystem.com/>