Understanding and Evaluating WCAG Contrast Requirements

Jonathan Whiting
WebAIM.org
“Democracy is the worst form of Government, except for all those other forms that have been tried.”
Overview

**WCAG Requirements**
- 1.4.3 – Text contrast
- 1.4.11 – Non-text contrast (WCAG 2.1)
- 1.4.1 – Use of Color

**Evaluate**
- WebAIM Contrast Checker
- WAVE
- Colorzilla color picker
- Chrome DevTools
- Colour Contrast Analyser
- WebAIM Link Checker
Color contrast
Color contrast
Color contrast
Color Luminance contrast
Relative luminance contrast
Relative Luminance

Pure red is hard to read
Pure green is even worse
Pure blue is pretty good
Relative Luminance

Pure red is hard to read
Pure green is even worse
Pure blue is pretty good
WCAG Contrast Formula

\[(L_1 + 0.05) / (L_2 + 0.05)\]

where

\[L = 0.2126 \times R + 0.7152 \times G + 0.0722 \times B\]

where

\[R, G, \text{ and } B = \]

\[R_{\text{RGB}} \leq 0.03928 \text{ then } R = R_{\text{RGB}}/12.92\]

\[\text{else } R = ((R_{\text{RGB}} + 0.055)/1.055)^2.4\]

where

\[R_{\text{RGB}} \leq R_{\text{8bit}}/255\]
Contrast ratio
21:1
Level AA Contrast Examples

4.5:1
Gray (#767676) on White

Purple (#CC21CC) on White

≥18pt (24px)

Red (#F30000) on Yellow (#FFFF00)

3:1 – “Large” text

BOLD: ≥14pt (18.67px)
WebAIM Contrast Checker

webaim.org/resources/contrastchecker/
“Images of text”

50 most played songs by genre
Exceptions
“Incidental”
"Inactive"
“Not visible to anyone”
“Logotypes”

WebAIM
web accessibility in mind
“Background color is the specified color of content over which the text is to be rendered in normal usage”
Gradients and background images
“For text displayed over gradients and background images, authors should ensure that sufficient contrast exists for each part of each character in the content.”
Gradients and background images
For text displayed over gradients and background images, authors should ensure that sufficient contrast exists for each part of each character in the content.
We have the same contrast ratio
We have the same contrast ratio

We have the same contrast ratio
Outline/Halo Together?
3:1 Outline/Background

Text
I AM TEXT I AM TEXT
1.4.11: Non-text Contrast (WCAG 2.1)

• Level AA
  • No Level AAA

• 3:1 contrast of:
  • User Interface Components
    • Including states (focus indicators, hover states, etc.)
  • Graphical Objects
UI “Boundaries”

☐ I have read and agree to the Terms of Use
...except when “determined by user agent”
UI “States”

I have read and agree to the Terms of Use
Follow your interests.
Chrome Developer Tools
“Graphical Objects”
“Against adjacent color(s)"
KELLY & KATIE
ASTIVIA PUMP

$39.99
Comp. value $60.00

COLOR: FUCHSIA FAUX PATENT LEATHER

Size: Select
Width: Medium
Qty: 1

What size should I buy?

Write a Review
KELLY & KATIE
ASTIVIA PUMP

$39.99
Comp. value $60.00
Write a Review

COLOR: FUCHSIA FAUX PATENT LEATHER

Size: Select
Width: Medium
Qty: 1

What size should I buy?
Exception: “Required to understand”
Icon with text?
Exception – “Essential”
Twitter logo in site?

See what’s happening in the world right now

Join Twitter today.

Sign Up

Log in
1. Set up workspace
   a. Tags Pane: View > Show/Hide >
   b. Accessibility Tools: Tools tab > S
2. Run accessibility “Full Check”
   a. Make easy repairs
3. Repair tag structure with “Reading Order”
   a. Hide Decorative images
   b. Improve tables
   c. Headers/Footer?
   d. Headings?
4. Verify/Repair content reading order in “Tags”
5. Verify tag structure and order in “Tags”
1. Download and install the Colour Contrast Analyser
2. Options > Show Colour sliders > check RGB and HSV
3. Use the Eyedropper to choose colors
4. Requirements
   1. 4.5:1 for most text
   2. Large text (14pt w/bold or larger, 18pt not bold or larger) - 3:1
Colour Contrast Analyser
1.4.1 Use of Color – Level A
“Conveying information”

• Amanita
• Chanterelle
• Porcini
• Shiitake
• Tylophilus
“Conveying information”

- Amanita
- Chanterelle
- Porcini
- Shiitake
- Tylopilus

- Amanita
- Chanterelle
- Porcini
- Shiitake
- Tylopilus
“Prompting a response”

Required fields marked in red

Name

Date of birth

Address
Name*  

Date of birth  

Address*
# Snake River - Classic Boats... Classic Adventure (8-Mile Whitewater)

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- **Green** = Available
- **Red** = Not Available
1. Ensure sufficient contrast
2. Do not rely on color alone
Requirements for color-reliant links

1. A 3:1 contrast ratio between link text and non-link text
2. An “additional visual cue” (typically underline) on mouse hover AND keyboard focus
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I have read, and I consent and agree to PayPal's User Agreement and Privacy Policy (including PayPal processing and disclosing my personal data). I understand I can change my communication preferences at any time.
I have read and agree to PayPal's **User Agreement**, **Privacy Policy** and **Electronic Communications Delivery Policy**. If you provide a mobile phone number, you agree that PayPal may contact you to service your account, investigate fraud, or collect a debt, using autodialed or prerecorded calls or texts. You may decline to receive autodialed or prerecorded calls or texts and still use PayPal by contacting **customer support**.
I have read and agree to PayPal's User Agreement, Privacy Policy and Electronic Communications Delivery Policy. If you provide a mobile phone number, you agree that PayPal may contact you to service your account, investigate fraud, or collect a debt, using autodialed or prerecorded calls or texts. You may decline to receive autodialed or prerecorded calls or texts and still use PayPal by contacting customer support.
WebAIM Link
Contrast Checker

webaim.org/resources/linkcontrastchecker/
Thank you!

Jonathan Whiting
@jonwhiting
Hex and RGB
RGB/RGBA & HSL/HSLA