COLOR CONTRAST AND LEGIBILITY

How much Contrast?

Legibility and color are interconnected; appropriate contrast between background color(s) and typographical color(s) is arguably the highest consideration. The American Disabilities Act (ADA) for signage recommends that characters and symbols have a minimum 70% contrast with their background. After considering screen and light properties, this recommendation can likewise be applied for web and mobile devices.

Contrast and Value

Appropriate contrast begins by achieving a balance between the triadic properties of color: hue, value, and saturation. Value, the lightness and darkness of a color, affects legibility most significantly. Fine-tuning the value of either the typeface or the background by selecting a tint or shade of the hue will greatly increase contrast and thus legibility *(look at A3, C3, C4, D2 and D4 examples)*.

Contrast and Saturation

Saturation deals with the intensity or brightness of a color. Highly saturated, complementary colors offer maximum hue contrast, but should NOT be used in application of type and backgrounds, as the effect is one of vibration that quickly drains the eye *(look at B1 and B2 examples)*. Remember that you never want your colors to fight for attention. On the end highly saturated analogous colors, hues that lie adjacent on the color wheel, should be evaluated on a case-by-case basis. Generally though, lightening the color of one or the other will improve legibility *(look at C2 example)*.

CONTRAST ANALYZERS

Online Contrast Analyzers

Below are two recommended websites that have web contrast analyzers to help you make accurate legibility decisions. Calculations of visibility are based on web content accessibility guidelines using suggested algorithms from the World Wide Web Consortium (w3).

http://www.colorsontheweb.com/colorcontrast.asp

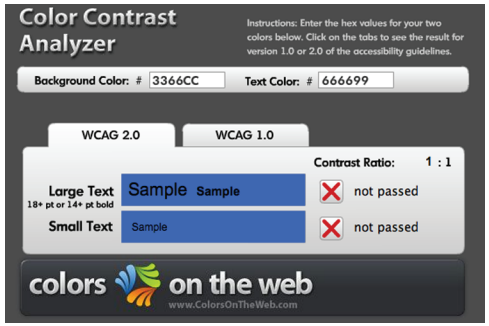
http://www.hgrebdes.com/colour/spectrum/colourvisibility.html

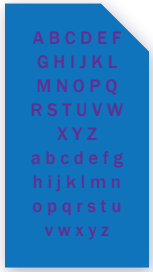
Consider the two examples pictured right:

a) blue background and purple type: failed for both large and small text

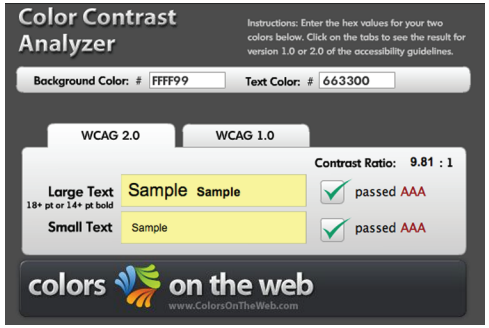
b) pale yellow background and brown type: passed for both large and small text

a





b



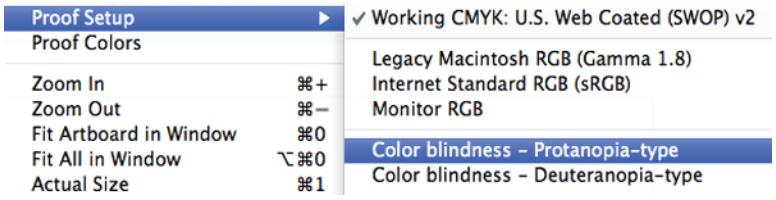
COLOR BLINDNESS

Contrast for Color Blindness

Some general stats:

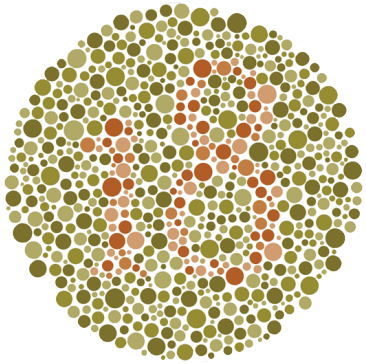
- Dogs are not colorblind.
- 7% of the U.S. population and 14% of population in Japan are colorblind.
- Color blindness is more prevalent among males than females, because the most common form of color vision deficiency is encoded on the X sex chromosome.
- The term color blindness is somewhat misleading though, as 99% of all colorblind people are really just color deficient.
- There are three main types of color vision deficiency: protan, deutan, and tritan defects
- Strongly colorblind people might only be able to tell about 20 hues apart from each other, with normal color vision this number raises to more than 100 different hues.
- 99% of all colorblind people are suffering from red-green color blindness known as *protanopia-type;* the next most common form is blue-yellow color blindness known as *deuteranopia-type*.
- In certain countries you need normal color vision to get a drivers license.
- There is no treatment or cure for color blindness.

http://www.colblindor.com/2009/01/06/50-facts-about-color-blindness/



In Illustrator, go to View> Proof Setup and select the form of colorblindness you want to see. Once you set up your preference you can check and uncheck Proof Colors.

a



a) protanopia-type: red-green

circle contains the number 18

b

b) protanopia-type: red-green

first row normal, second row shows condition