

Colors as Hue, Saturation, and Lightness

AH Formatter can use HSL colors by the `hsl()` and `hsla()` functions. Colors that are specified as hue, saturation, and lightness (HSL) values are more intuitive to use or to adjust than colors that are encoded by their red, green, and blue components. It is also easier to make sets of complementary or matching HSL colors by varying one of the hue, saturation, or lightness values to make the different colors. Use `hsl(<H>, <S>, <L>)` to specify a color, and use `hsla(<H>, <S>, <L>, <A>)` to specify a color with an additional alpha component representing its opacity. See also “[hsl\(\)](#)” and “[hsla\(\)](#)” in the Online Manual for details.

Hue is represented as the number of an angle of the color circle (i.e., the rainbow represented in a circle), where red is 0° (and 360°), green is 120°, and blue is 240°. Saturation, lightness, and opacity are represented either as 0% to 100% or 0.0 to 1.0. 100% saturation is full saturation, and 0% saturation is a shade of gray. 100% lightness is white, 50% lightness is “normal”, and 0% lightness is black. 100% opacity is solid color, and 0% opacity is transparent.

The following example for the “cornflowerblue” named color (`#6495ED`, equivalent to `hsl(219, 79%, 66%)`) shows how colors can be adjusted by altering the hue, saturation and lightness values.

cornflowerblue (<code>#6495ED</code>)	20% more saturated	Saturation	20% less saturated									
20% lighter	<code>hsl(219, 99%, 86%)</code>	<code>hsl(219, 79%, 86%)</code>	<code>hsl(219, 59%, 86%)</code>									
Lightness	<code>hsl(219, 99%, 66%)</code>	<code>hsl(219, 79%, 66%)</code>	<code>hsl(219, 59%, 66%)</code>									
20% darker	<code>hsl(219, 99%, 46%)</code>	<code>hsl(219, 79%, 46%)</code>	<code>hsl(219, 59%, 46%)</code>									
	219	249	279	309	339	9	39	69	99	129	159	189

This example is for the “red” named color (`#FF0000`, equivalent to `hsl(0, 100%, 50%)`). Note that as “red” is 100% saturated, it cannot be made more saturated, so 120% saturation is clipped to 100%.

red (<code>#FF0000</code>)	20% more saturated	Saturation	20% less saturated									
20% lighter	<code>hsl(0, 120%, 70%)</code>	<code>hsl(0, 100%, 70%)</code>	<code>hsl(0, 80%, 70%)</code>									
Lightness	<code>hsl(0, 120%, 50%)</code>	<code>hsl(0, 100%, 50%)</code>	<code>hsl(0, 80%, 50%)</code>									
20% darker	<code>hsl(0, 120%, 30%)</code>	<code>hsl(0, 100%, 30%)</code>	<code>hsl(0, 80%, 30%)</code>									
	0	30	60	90	120	150	180	210	240	270	300	330

There are numerous “color picker” Internet sites that support picking a color or a range of related colors by HSL values. For example, <http://www.workwithcolor.com/hsl-color-picker-01.htm> and <http://www.workwithcolor.com/mm-color-blender-01.htm>.

The following table⁽¹⁾ presents a range of saturation (S) and lightness (L) values for 12 hues (H). The hues are spaced at 30° intervals around the color circle, starting at 0°.

1. The table was made to fit on one page by specifying `axf.overflow-condense="font-size"` and AH Formatter automatically adjusting the font size. See “[axf.overflow-condense](#)” in the Online Manual for details.

