

Chapter Topics

- Browser Safe Colors Defined
- When to Use Them, When Not To
- Hexadecimal Color
- Safe Color Picking
- Browser Safe Swatches
- Ensure Safe Colors
- JPEGs, Never Browser Safe!

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Browser-Safe Color *Introduction*

You might have heard of the browser-safe palette, Netscape palette, 216 palette, Web palette, and/or 6x6x6 color cube. All these terms refer to the same set of colors, which this chapter will describe in detail. I will outline techniques for working with browser-safe colors in a variety of software applications and situations in order to help you understand when to use the palette and when not to.

There's a strong irony in Web design in that most developers have more advanced computer systems than the end users for whom they are developing content. This is especially true of visual designers. Most of us have big monitors, lots of RAM, lots of colors, and big hard drives. The trouble with this is that it's easy to create artwork that works on your system, but not on a less advanced system.

Most people who view the Web are not visual designers or Web developers. Many of them have older systems and video cards that support only 256 colors. There are no statistics on this subject because there is no detection mechanism in place to query video card components. What this means is that you will never have any idea what percentage of your audience has a problem seeing all the colors your system can display.

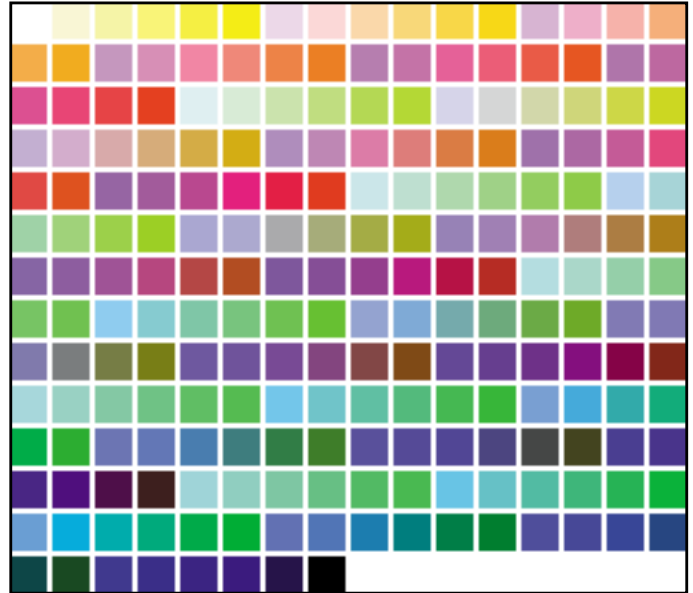
My goal in teaching this subject is to help you make informed decisions about when and when not to use this palette. Using the palette is covered in-depth, with examples showing detailed techniques in many software applications. If you decide to work with browser-safe color, as I suggest you do under certain conditions, this chapter should provide all the necessary reference material to help you produce good-looking compact images that won't dither or shift unexpectedly.

What Is the Browser-Safe Palette?

Let's say you've created images with millions of colors (JPEGs) or GIF images with custom colors of your choosing. What happens in a browser encounter on a system that is limited to 256 colors (8-bit)? It converts all your colors to its own fixed palette. On an 8-bit color system, even though your end user wants to see all the colors on your Web page, they can't. It's both a hardware limitation and a browser software limitation.

The hardware limitation is based on your end user's video card. An 8-bit video card cannot display any more than 256 colors. The question is, which 256 colors will the video card display when it encounters an image with thousands or millions of colors? That's where the software comes in. The browser software makes a decision about which colors to display. Instead of pooling colors from the Web image, it chooses colors from its own fixed palette. There is no way it can display a color outside of this fixed palette. Honest.

Fortunately, the three most popular browsers (Netscape, Mosaic, and Internet Explorer) all share the same fixed palette. It contains a core of 216 colors and allows 40 additional colors, which differ from platform to platform. Most prefer to work with these 216 common denominator colors when necessary. I refer to this palette as the browser-safe palette throughout this book. This means that if you stick to the 216 common colors, they will be honored universally across all browsers, operating systems, and computer platforms.



Browser-safe colors were picked by math, not beauty. Here is a version of the browser-safe palette, straight out of the computer.

Notice how these colors have no sense of organization? They are organized by math, not beauty.

On pages 126-129 you will find the same 216 colors, organized in a more useful way: by color (hue) and value (lights to medium tones to darks).

The browser-safe palette is composed of mathematical color combinations, and if you are math phobic like many people, you might think you have to memorize 216 different numeric combinations to understand it. You don't. There are really only six numbers to remember. In fact, this color system is sometimes referred to as the 6x6x6 color cube because it contains six possible values of red, green, and blue (RGB).



	R	G	B
white	255	255	255
black	0	0	0

255 is the value that is the highest intensity, and 0 is the value that is the lowest intensity. Pure white would contain the value of 255 across all three channels of R, G, and B. Pure black would contain the value of 0 across all three channels.



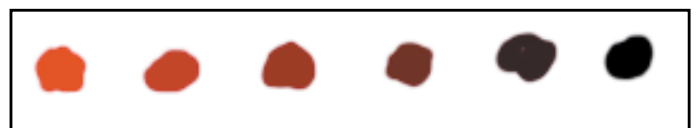
	R	G	B
red	255	0	0
green	0	255	0
blue	0	0	255

To form red, green, or blue, a single color would be turned on while the other two are turned off.



	R	G	B
yellow	255	0	255
cyan	0	255	255
magenta	255	255	0

Yellow, cyan, and magenta are formed by turning on different combinations of RGB.



R	G	B
0	0	0
51	0	0
102	0	0
153	0	0
204	0	0
255	0	0

The six RGB values are 0, 51, 102, 153, 204, and 255, from dark to light. Notice how they are separated by 51 numbers? To understand the principle behind achieving a ramp in color values, you can examine the math for one color. Here are the numbers for a value ramp using red.

Note: I realize this is an abstract way to look at color, but if you understand the principle of these colors, you will realize that browser safe colors follow mathematical logic. The following sections explain why the palette was developed and when and when not to use it.

Browser-Safe Color Charts Organized by Value

	FFFFFF R=255 G=255 B=255		FFFFCC R=255 G=255 B=204		FFFF99 R=255 G=255 B=153		CCFFFF R=204 G=255 B=255		FFFF66 R=255 G=255 B=102		CCFFCC R=204 G=255 B=204		FFFF33 R=255 G=255 B=051		CCFF99 R=204 G=255 B=153
	99FF99 R=153 G=255 B=153		CCFF00 R=204 G=255 B=000		CCCCFF R=204 G=204 B=255		66FFFF R=102 G=255 B=255		FFCC66 R=255 G=204 B=102		99FF66 R=153 G=255 B=102		CCCCCC R=204 G=204 B=204		66FFCC R=102 G=255 B=204
	33FFFF R=051 G=255 B=255		CCCC66 R=204 G=204 B=102		66FF66 R=102 G=255 B=102		FF99CC R=255 G=153 B=204		99CCCC R=153 G=204 B=204		33FFCC R=051 G=255 B=204		CCCC33 R=204 G=204 B=051		66FF33 R=102 G=255 B=051
	FF9966 R=255 G=153 B=102		99CC66 R=153 G=204 B=102		33FF66 R=051 G=255 B=102		CC99CC R=204 G=153 B=204		66CCCC R=102 G=204 B=204		00FFCC R=000 G=255 B=204		FF9933 R=255 G=153 B=051		99CC33 R=153 G=204 B=051
	9999FF R=153 G=153 B=255		33CCFF R=051 G=204 B=255		CC9966 R=204 G=153 B=102		66CC66 R=102 G=204 B=102		00FF66 R=000 G=255 B=102		FF66CC R=255 G=102 B=204		9999CC R=153 G=153 B=204		33CCCC R=051 G=204 B=204
	00FF00 R=000 G=255 B=000		CC66FF R=204 G=102 B=255		6699FF R=102 G=153 B=255		00CCFF R=000 G=204 B=255		FF6666 R=255 G=102 B=102		999966 R=153 G=153 B=102		33CC66 R=051 G=204 B=102		CC66CC R=204 G=102 B=204
	FF6600 R=255 G=102 B=000		999900 R=153 G=153 B=000		33CC00 R=051 G=204 B=000		FF33FF R=255 G=051 B=255		9966FF R=153 G=102 B=255		3399FF R=051 G=153 B=255		CC6666 R=204 G=102 B=102		669966 R=102 G=153 B=102
	996699 R=153 G=102 B=153		339999 R=051 G=153 B=153		CC6600 R=204 G=102 B=000		669900 R=102 G=153 B=000		00CC00 R=000 G=204 B=000		CC33FF R=204 G=051 B=255		6666FF R=102 G=102 B=255		0099FF R=000 G=153 B=255
	339933 R=051 G=153 B=051		CC3399 R=204 G=051 B=153		666699 R=102 G=102 B=153		009999 R=000 G=153 B=153		FF3300 R=255 G=051 B=000		996600 R=153 G=102 B=000		339900 R=051 G=153 B=000		FF00FF R=255 G=000 B=255
	CC3333 R=204 G=051 B=051		666633 R=102 G=102 B=051		009933 R=000 G=153 B=051		FF0099 R=255 G=000 B=153		993399 R=153 G=051 B=153		336699 R=051 G=102 B=153		CC3300 R=204 G=051 B=000		666600 R=102 G=102 B=000
	6633CC R=102 G=051 B=204		0066CC R=000 G=102 B=204		FF0033 R=255 G=000 B=051		993333 R=153 G=051 B=051		336633 R=051 G=102 B=051		CC0099 R=204 G=000 B=153		663399 R=102 G=051 B=153		006699 R=000 G=102 B=153
	9900CC R=153 G=000 B=204		3333CC R=051 G=051 B=204		CC0033 R=204 G=000 B=051		663333 R=102 G=051 B=051		006633 R=000 G=102 B=051		990099 R=153 G=000 B=153		333399 R=051 G=051 B=153		CC0000 R=204 G=000 B=000
	990033 R=153 G=000 B=051		333333 R=051 G=051 B=051		660099 R=102 G=000 B=153		003399 R=000 G=051 B=153		990000 R=153 G=000 B=000		333300 R=051 G=051 B=000		3300FF R=051 G=000 B=255		660066 R=102 G=000 B=102
	330066 R=051 G=000 B=102		0000CC R=000 G=000 B=204		330033 R=051 G=000 B=051		000099 R=000 G=000 B=153		330000 R=051 G=000 B=000		000066 R=000 G=000 B=102		000033 R=000 G=000 B=051		000000 R=000 G=000 B=000

 FFFF00 R=255 G=255 B=000	 FFC0FF R=255 G=204 B=255	 99FFFF R=153 G=255 B=255	 CCFF00 R=204 G=255 B=102	 FFCCCC R=255 G=204 B=204	 99FFCC R=153 G=255 B=204	 CCFF33 R=204 G=255 B=051	 FFCC99 R=255 G=204 B=153
 FFCC33 R=255 G=204 B=051	 99FF33 R=153 G=255 B=051	 CCCC99 R=204 G=204 B=153	 66FF99 R=102 G=255 B=153	 FFCC00 R=255 G=204 B=000	 99FF00 R=153 G=255 B=000	 FF99FF R=255 G=153 B=255	 99CCFF R=153 G=204 B=255
 FF9999 R=255 G=153 B=153	 99CC99 R=153 G=204 B=153	 33FF99 R=051 G=255 B=153	 CCCC00 R=204 G=204 B=000	 66FF00 R=102 G=255 B=000	 CC99FF R=204 G=153 B=255	 66CCFF R=102 G=204 B=255	 00FFFF R=000 G=255 B=255
 33FF33 R=051 G=255 B=051	 CC9999 R=204 G=153 B=153	 66CC99 R=102 G=204 B=153	 00FF99 R=000 G=255 B=153	 FF9900 R=255 G=153 B=000	 99CC00 R=153 G=204 B=000	 33FF00 R=153 G=255 B=000	 FF66FF R=255 G=102 B=255
 CC9933 R=204 G=153 B=051	 66CC33 R=102 G=204 B=051	 00FF33 R=000 G=255 B=051	 FF6699 R=255 G=102 B=153	 999999 R=153 G=153 B=153	 33CC99 R=051 G=204 B=153	 CC9900 R=204 G=153 B=000	 66CC00 R=102 G=204 B=000
 6699CC R=102 G=153 B=204	 00CCCC R=000 G=204 B=204	 FF6633 R=255 G=102 B=051	 999933 R=153 G=153 B=051	 33CC33 R=051 G=204 B=051	 CC6699 R=204 G=102 B=153	 669999 R=102 G=153 B=153	 00CC99 R=000 G=204 B=153
 00CC66 R=000 G=204 B=102	 FF33CC R=255 G=051 B=204	 9966CC R=153 G=102 B=204	 3399CC R=051 G=153 B=204	 CC6633 R=204 G=102 B=051	 669933 R=102 G=153 B=051	 00CC33 R=000 G=204 B=051	 FF3399 R=255 G=051 B=153
 FF3366 R=255 G=051 B=102	 996666 R=153 G=102 B=102	 339966 R=051 G=153 B=102	 CC33CC R=204 G=051 B=204	 6666CC R=102 G=102 B=204	 0099CC R=000 G=153 B=204	 FF3333 R=255 G=051 B=051	 996633 R=153 G=102 B=051
 9933FF R=153 G=051 B=255	 3366FF R=051 G=102 B=255	 CC3366 R=204 G=051 B=102	 666666 R=102 G=102 B=102	 009966 R=000 G=153 B=102	 FF00CC R=255 G=000 B=204	 9933CC R=153 G=051 B=204	 3366CC R=051 G=102 B=204
 009900 R=000 G=153 B=000	 CC00FF R=204 G=000 B=255	 6633FF R=102 G=051 B=255	 0066FF R=000 G=102 B=255	 FF0066 R=255 G=000 B=102	 993366 R=153 G=051 B=102	 336666 R=051 G=102 B=102	 CC00CC R=204 G=000 B=204
 FF0000 R=255 G=000 B=000	 993300 R=153 G=051 B=000	 336600 R=051 G=102 B=000	 9900FF R=153 G=000 B=255	 3333FF R=051 G=051 B=255	 CC0066 R=204 G=000 B=102	 663366 R=102 G=051 B=102	 006666 R=000 G=102 B=102
 663300 R=102 G=051 B=000	 006600 R=000 G=102 B=000	 6600FF R=102 G=000 B=255	 0033FF R=000 G=051 B=255	 990066 R=153 G=000 B=102	 333366 R=051 G=051 B=102	 6600CC R=102 G=000 B=204	 0033CC R=000 G=051 B=204
 003366 R=000 G=051 B=102	 3300CC R=051 G=000 B=204	 660033 R=102 G=000 B=051	 003333 R=000 G=051 B=051	 330099 R=051 G=000 B=153	 660000 R=102 G=000 B=000	 003300 R=000 G=051 B=000	 0000FF R=000 G=000 B=255

Browser-Safe Color Charts Organized by Hue

 330000 R=051 G=000 B=000	 660000 R=102 G=000 B=000	 990000 R=153 G=000 B=000	 CC0000 R=204 G=000 B=000	 FF0000 R=255 G=000 B=000	 663333 R=102 G=051 B=051	 993333 R=153 G=051 B=051	 CC3333 R=204 G=051 B=051
 CC0033 R=204 G=000 B=051	 FF3366 R=255 G=051 B=102	 990033 R=153 G=000 B=051	 CC3366 R=204 G=051 B=102	 FF6699 R=255 G=102 B=153	 FF0066 R=255 G=000 B=102	 660033 R=102 G=000 B=051	 CC0066 R=204 G=000 B=102
 CC0099 R=204 G=000 B=153	 FF33CC R=255 G=51 B=204	 FF00CC R=255 G=000 B=204	 330033 R=051 G=000 B=051	 660066 R=102 G=000 B=102	 990099 R=153 G=000 B=153	 CC00CC R=204 G=000 B=204	 FF00FF R=255 G=000 B=255
 FF99FF R=255 G=153 B=255	 FFCCFF R=255 G=204 B=255	 CC00FF R=204 G=000 B=255	 9900CC R=153 G=000 B=204	 CC33FF R=204 G=051 B=255	 660099 R=102 G=000 B=153	 9933CC R=153 G=051 B=204	 CC66FF R=204 G=102 B=255
 330099 R=051 G=000 B=153	 6633CC R=102 G=051 B=204	 9966FF R=153 G=102 B=255	 3300CC R=051 G=000 B=204	 6633FF R=102 G=051 B=255	 3300FF R=051 G=000 B=255	 000000 R=000 G=000 B=000	 000033 R=000 G=000 B=051
 666699 R=102 G=102 B=153	 6666CC R=102 G=102 B=204	 6666FF R=102 G=102 B=255	 9999CC R=153 G=153 B=204	 9999FF R=153 G=153 B=255	 CCCCFF R=204 G=204 B=255	 0033FF R=000 G=051 B=255	 0033CC R=000 G=051 B=204
 3399FF R=051 G=153 B=255	 6699CC R=102 G=153 B=204	 99CCFF R=153 G=204 B=255	 0099FF R=000 G=153 B=255	 006699 R=000 G=102 B=153	 3399CC R=051 G=153 B=204	 66CCFF R=102 G=204 B=255	 0099CC R=000 G=153 B=204
 00CCCC R=000 G=204 B=204	 33CCCC R=051 G=204 B=204	 66CCCC R=102 G=204 B=204	 99CCCC R=153 G=204 B=204	 00FFFF R=000 G=255 B=255	 33FFFF R=051 G=255 B=255	 66FFFF R=102 G=255 B=255	 99FFFF R=153 G=255 B=255
 006633 R=000 G=102 B=051	 339966 R=051 G=153 B=102	 00CC66 R=000 G=204 B=102	 66CC99 R=102 G=204 B=153	 33FF99 R=051 G=255 B=153	 99FFCC R=153 G=255 B=204	 00FF66 R=000 G=255 B=102	 009933 R=000 G=153 B=051
 009900 R=000 G=153 B=000	 339933 R=051 G=153 B=051	 669966 R=102 G=153 B=102	 00CC00 R=000 G=204 B=000	 33CC33 R=051 G=204 B=051	 66CC66 R=102 G=204 B=102	 99CC99 R=153 G=204 B=153	 00FF00 R=000 G=255 B=000
 66CC33 R=102 G=204 B=051	 99FF66 R=153 G=255 B=102	 66FF00 R=102 G=255 B=000	 336600 R=051 G=102 B=000	 669933 R=102 G=153 B=051	 66CC00 R=102 G=204 B=000	 99CC66 R=153 G=204 B=102	 99FF33 R=153 G=255 B=051
 333300 R=051 G=051 B=000	 666600 R=102 G=102 B=000	 666633 R=102 G=102 B=051	 999900 R=153 G=153 B=000	 999933 R=153 G=153 B=051	 999966 R=153 G=153 B=102	 CCCC00 R=204 G=204 B=000	 CCCC33 R=204 G=204 B=051
 CC9900 R=204 G=153 B=000	 FFCC33 R=255 G=204 B=051	 996600 R=153 G=102 B=000	 CC9933 R=204 G=153 B=051	 FFCC66 R=255 G=204 B=102	 FF9900 R=255 G=153 B=000	 663300 R=102 G=051 B=000	 996633 R=153 G=102 B=051
 CC3300 R=204 G=051 B=000	 FF6633 R=255 G=102 B=051	 FF3300 R=255 G=051 B=000	 333333 R=051 G=051 B=051	 666666 R=102 G=102 B=102	 999999 R=153 G=153 B=153	 CCCCCC R=204 G=204 B=204	 FFFFFFF R=255 G=255 B=255

 FF3333 R=255 G=051 B=051	 996666 R=153 G=102 B=102	 CC6666 R=204 G=102 B=102	 FF6666 R=255 G=102 B=102	 CC9999 R=204 G=153 B=153	 FF9999 R=255 G=153 B=153	 FFCCCC R=255 G=204 B=204	 FF0033 R=255 G=000 B=051
 993366 R=153 G=051 B=102	 FF3399 R=255 G=051 B=153	 CC6699 R=204 G=102 B=153	 FF99CC R=255 G=153 B=204	 FF0099 R=255 G=000 B=153	 990066 R=153 G=000 B=102	 CC3399 R=204 G=051 B=153	 FF66CC R=255 G=102 B=204
 663366 R=102 G=051 B=102	 993399 R=153 G=051 B=153	 CC33CC R=204 G=051 B=204	 FF33FF R=255 G=051 B=255	 996699 R=153 G=102 B=153	 CC66CC R=204 G=102 B=204	 FF66FF R=255 G=102 B=255	 CC99CC R=204 G=153 B=204
 9900FF R=153 G=000 B=255	 330066 R=051 G=000 B=102	 6600CC R=102 G=000 B=204	 663399 R=102 G=051 B=153	 9933FF R=153 G=051 B=255	 9966CC R=153 G=102 B=204	 CC99FF R=204 G=153 B=255	 6600FF R=102 G=000 B=255
 000066 R=000 G=000 B=102	 000099 R=000 G=000 B=153	 0000CC R=000 G=000 B=204	 0000FF R=000 G=000 B=255	 333366 R=051 G=102 B=102	 333399 R=051 G=051 B=153	 3333CC R=051 G=051 B=204	 3333FF R=051 G=051 B=255
 3366FF R=051 G=102 B=255	 003399 R=000 G=051 B=153	 3366CC R=051 G=102 B=204	 6699FF R=102 G=153 B=255	 0066FF R=000 G=102 B=255	 003366 R=000 G=051 B=102	 0066CC R=000 G=102 B=204	 336699 R=051 G=102 B=153
 33CCFF R=051 G=204 B=255	 00CCFF R=000 G=204 B=255	 003333 R=000 G=051 B=051	 006666 R=000 G=102 B=102	 336666 R=051 G=102 B=102	 009999 R=000 G=153 B=153	 339999 R=051 G=153 B=153	 669999 R=102 G=153 B=153
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 33CC66 R=051 G=204 B=102	 66FF99 R=102 G=255 B=153	 00CC33 R=000 G=204 B=051	 33FF66 R=051 G=255 B=102	 00FF33 R=000 G=255 B=051	 003300 R=000 G=051 B=000	 006600 R=000 G=102 B=000	 336633 R=051 G=102 B=051
 33FF33 R=051 G=255 B=051	 66FF66 R=102 G=255 B=102	 99FF99 R=153 G=255 B=153	 CCFFCC R=204 G=255 B=204	 33FF00 R=051 G=255 B=000	 33CC00 R=051 G=204 B=000	 66FF33 R=102 G=255 B=051	 339900 R=051 G=153 B=000
 CCFF99 R=204 G=255 B=153	 99FF00 R=153 G=255 B=000	 669900 R=102 G=153 B=000	 99CC33 R=153 G=204 B=051	 CCFF66 R=204 G=255 B=102	 99CC00 R=153 G=204 B=000	 CCFF33 R=204 G=255 B=051	 CCFF00 R=204 G=255 B=000
 CCCC66 R=204 G=204 B=102	 CCCC99 R=204 G=204 B=153	 FFFF00 R=255 G=255 B=000	 FFFF33 R=255 G=255 B=051	 FFFF66 R=255 G=255 B=102	 FFFF99 R=255 G=255 B=153	 FFFFCC R=255 G=255 B=204	 FFCC00 R=255 G=204 B=000
 CC6600 R=204 G=102 B=000	 CC9966 R=204 G=153 B=102	 FF9933 R=255 G=153 B=051	 FFCC99 R=255 G=204 B=153	 FF6600 R=255 G=102 B=000	 993300 R=153 G=051 B=000	 CC6633 R=204 G=102 B=051	 FF9966 R=255 G=153 B=102

Why Does the Browser-Safe Palette Exist?

Why was the browser-safe palette developed by browser software manufacturers? Because the easiest solution to the 8-bit hardware limitation is for the browser software to impose a fixed palette.

Those of you who have authored multimedia using Macromedia Director before have been able to assign custom palettes to specific pieces of artwork using palette channels. HTML has no means with which to do this. There is no “change palette” tag, and color lookup tables (CLUTs) are not of a MIME type recognized by browsers. Because of this, the browser has to deal with the issue instead of depending on your input.

If a browser created 256 color palettes based on the colors within images, it would quickly run out of colors anyway. Then it would have to map all the rest of the images to whatever palette it established based on the first few images. It’s actually better that the browser use a fixed palette, because at least you can identify it and work within its constraints.



Do Browser-Safe Colors Really Matter?

You may think that all this hubbub over browser-safe colors does not apply to you. If you think your site will be viewed only from millions-of-color monitors (24-bit), you might be right. It’s always important to decide who your audience is before you design a site and create artwork that is appropriate for your viewers.

The most common tasks performed on personal computers are word processing, spreadsheet calculations, database work, and games. None of these activities requires more than 256 colors, hence many people who own computers for these purposes have no reason to set their monitors to higher color depths or even have video cards capable of displaying more colors.

My recommendation is that if you are going to pick colors for backgrounds, type, text, links, or illustrations, you should choose cross-platform compatible colors. There may come a day years from now when everyone has video cards that support more than 256 colors, but most systems today do not.

When To Use the Browser-Safe Color Palette

You might think that I advocate using the browser-safe palette at all times. I do not, and I am alarmed when I see the palette misused. To explain when to use this palette, I will define the four possible scenarios that relate to browser-safe colors:

- › **Hexadecimal-Based Color:** Within the HTML code, when you specify colors for your background, text, links, visited links, or active links, you must use hexadecimal code.
- › **Line Art:** Graphics that contain solid colors or lines.
- › **Continuous Tone Art:** Graphics or photographs that contain blends, gradients, tones, and soft focus.
- › **Hybrid Art:** Art that combines continuous tone and line art.

The following sections go into greater depth about when and how to the browser-safe colors.

When To Use Browser-Safe Colors?	
Hexadecimal Colors	Yes, always.
Line Art Images	Only for areas of solid color.
Continuous Tone Images	No, never.
Hybrid Images	Only for areas of solid color.

Hexadecimal-Based Colors

If you want to add colors on your site—such as colored text, colored links, colored backgrounds, and colored borders—describing them by their hexadecimal values is the only way HTML lets you do it.

#	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
HEX	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

What on earth are hexadecimal values, you may well wonder? Hexadecimal values are based on base-16 mathematics. Here's a little table that shows how hexadecimal numbers translate from our standard base-ten counting system.

RGB	0	51	102	153	204	255
HEX	00	33	66	99	CC	FF

Here's a very handy chart that shows how to convert browser-safe RGB values to hexadecimal values. Notice that the hex values never exceed two digits, unlike the RGB values, some of which are three digits long. This makes hexadecimal code a more uniform system than RGB numerics.

Let's say, you want to describe a pure browser-safe red in hexadecimal code. The RGB value would be 255, 0, 0. According to the chart to the left, this setting would translate into hexadecimal code FF0000.

More information on how to select and convert RGB to HEX follows later in this chapter. For the moment, let's stick to the question at hand: Why should you use browser-safe colors for hexadecimal colors in your HTML?

If a browser on an 8-bit system encounters a Web page with color codes that are not browser safe, it converts the colors to browser-safe values for you. This sounds polite and all, but the problem is, you can't control which color the browser will shift. I have received letters from people complaining that when they uploaded their site, their client couldn't see any of the text. Why? Because the client had an 8-bit system, and the browser shifted their text color to match their background color.

There is no reason for you to risk such a disaster on your site. Simply follow the rule to always use browser-safe colors for your hex values, and this will never happen to you. Instructions for picking and implementing these colors follows later in this chapter.

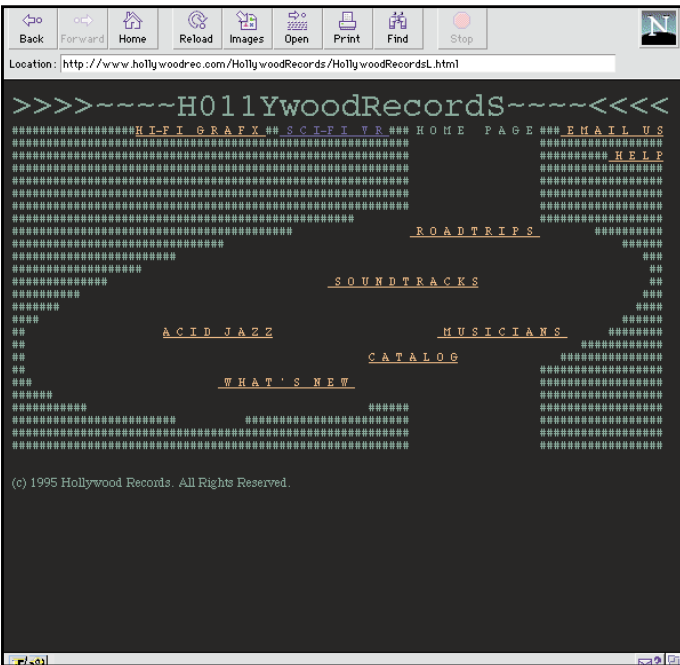
Non-Safe Colors Shift!

Here's an example of what can go wrong if you don't use browser-safe colors in your HTML code. The following code will shift on 8-bit color systems:

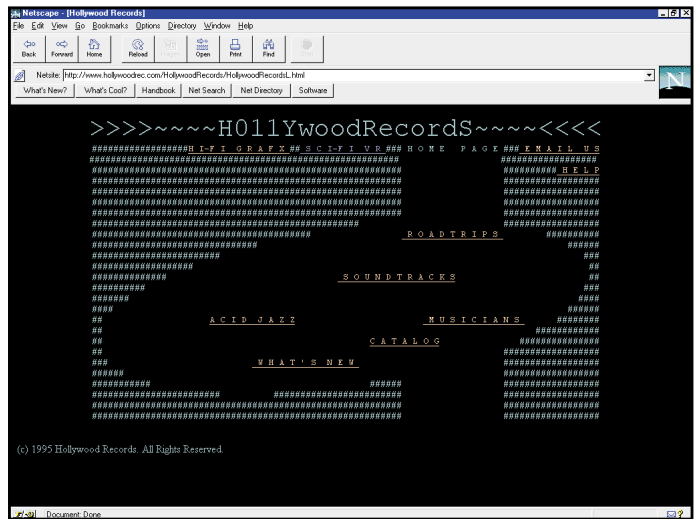
```
<BODY BGCOLOR="#090301" TEXT="#436E58" LINK="#CF7B42" VLINK="#323172" ALINK="#FFFFFF">
```

You should be able to tell just by looking that these colors are not browser safe! Remember, browser-safe hex combinations are always formed from variations of 00, 33, 66, 99, CC, and FF.

Mac 8-bit display



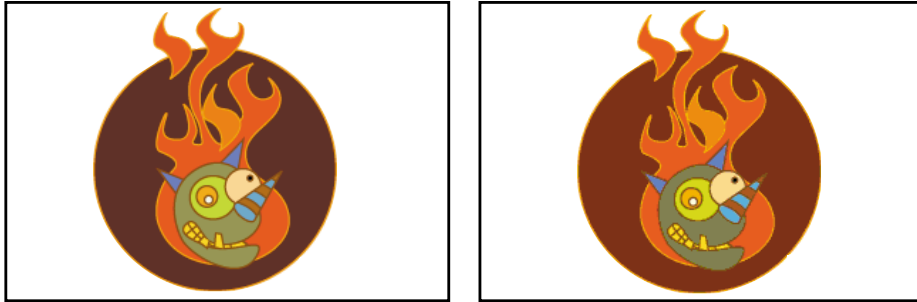
PC 8-bit display



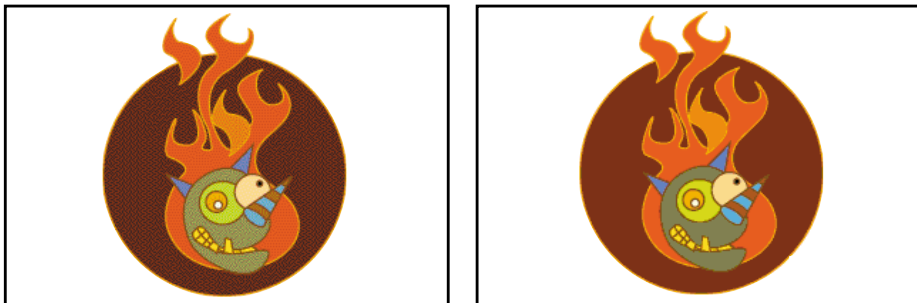
This comparison demonstrates the kind of color shifting that occurs with hexadecimal-based artwork on 8-bit systems if the colors used are not browser safe.

Illustration-Based Artwork

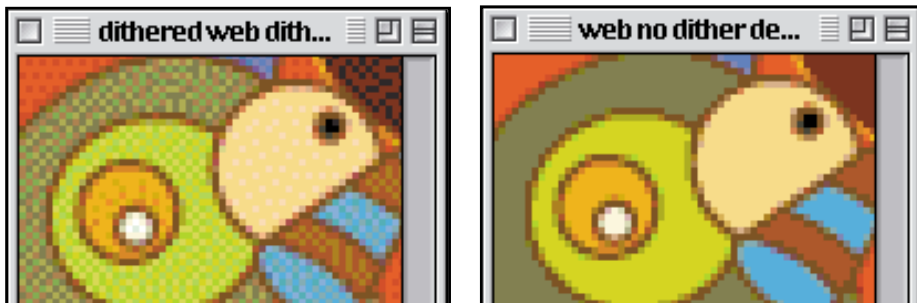
With illustration-based artwork, if you create logos, cartoons, or drawings in colors outside of the 216, the browser converts your colors. Instead of shifting the color, which is what happens with hexadecimal-based color, it dithers the artwork. Here are some examples of the unwanted effects of dithering.



On a millions-of-color display, you might not notice any differences between these two illustrations. The one on the left was created using non-safe colors and the one on the right was created using browser safe colors.



On an 8-bit display, look at what happens to the left version. It is filled with unwanted dots caused by dithering. Why? The colors in the right logo are browser safe, and the colors in the left are not.



Here's a close-up of the dithering that occurs in the nonbrowser-safe version of this illustration when viewed on an 8-bit (256-color) system.







The close-up of the version created with browser-safe colors will not dither, regardless of which bit depth the end-viewer's system supports. The moral of the story: Always create this type of artwork using browser-safe colors.

Photograph-Based Artwork

Continuous tone artwork (photographs) is the one type of image that really does not benefit from using browser-safe colors. The reason is that the browsers convert photographs, but do a great job of it, unlike the terrible job they do with hexadecimal-based color and illustration-based artwork.

It is not necessary to convert photographic-based images to the browser-safe palette or even an 8-bit palette. The browser does its dithering dirty work, regardless of how you prepare the image. It's best to leave the image in an adaptive palette or 24-bit file format because photographs look better in 24-bit browser environments. JPEGs will always produce the smallest file size for photographs, and JPEG is a 24-bit file format, unlike GIF, which cannot save images at higher bit-depths than 8-bit (256 colors). More information on how to save JPEG and GIF images with adaptive and Web-safe palettes follows later.

Here are some comparisons:

Viewed in 24-bit	Viewed in 8-bit
 <p data-bbox="836 703 893 735">JPEG</p>	
 <p data-bbox="836 1050 974 1081">Adaptive GIF</p>	
 <p data-bbox="836 1396 974 1428">Web-safe GIF</p>	

Notice how every image in the 24-bit column looks better than the 8-bit column? People with better video cards see the Web in better color. Look carefully however, and notice that all the 8-bit images look the same, while the JPEG and adaptive GIF look much better. This shows that the browsers convert 8-bit images no better than you could convert them yourself. So why not let your more fortunate audience see your images with better fidelity? The moral of the story—don't use browser-safe colors on photographs!

How to Use Browser-Safe Colors

Okay, now that you know when to use browser-safe colors, the bigger question becomes “How?” The following sections share my favorite tips and techniques for applying browser-safe color to hexadecimal color choices and to images. We’ve identified three possible scenarios for using browser-safe color: hexadecimal color, line art images, and hybrid images. Let’s start with hexadecimal color first.

Browser-Safe Hex Color Picking

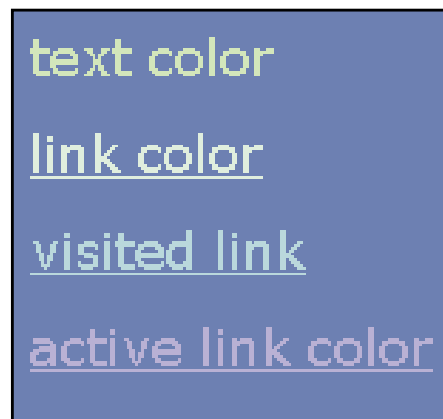
Picking a color scheme for your site’s background color, text, link, active link, and visited link settings can be done using a variety of tools. Many HTML editors include color pickers and browser-safe color palettes. Imaging tools also include browser-safe color pickers. Rather than focus on any particular tools at this point, let’s look at the principle.

Step 1: Pick the colors you want to use. (More information on aesthetic concerns and choices follows later in this chapter.) You can choose the colors off the chart printed on pages 126-129 or by downloading the **nhue.gif** or **nvalue.gif** from my Web site: <http://www.lynda.com/files/>. The electronic files will be more accurate, since the chart is printed with CMYK inks and cannot accurately portray the colors.

Step 2: If necessary, convert the RGB values to hexadecimal values. Some imaging and HTML programs use percentages instead of RGB. Here’s the translation:

RGB	PERCENTAGES	HEX
0	0%	00
51	20%	33
102	40%	66
153	60%	99
204	80%	CC
255	100%	FF

Step 3: Write the HTML for the **BODY** tag of your document. The **BODY** tag is where the color information for your Web page is stored. Let’s say I picked the following color scheme:



This is what my HTML code for the background, text, link, visited link, and active link colors would look like:

```
<BODY BGCOLOR="#336699"
TEXT="#CCFF99" LINK="#CCFFCC"
VLINK="#99CCCC" ALINK="#9999CC">
```

Note: The hash mark (#) is not required, but it is part of the formal HTML 4.0 specification. At this point in time, browsers do not require it. But if future browsers become more strict, this mark may be required. Try to get in the habit of using it, to protect your site from potential problems in the future. The trend of HTML is leaning towards more strict syntax.

Other Conversion Methods

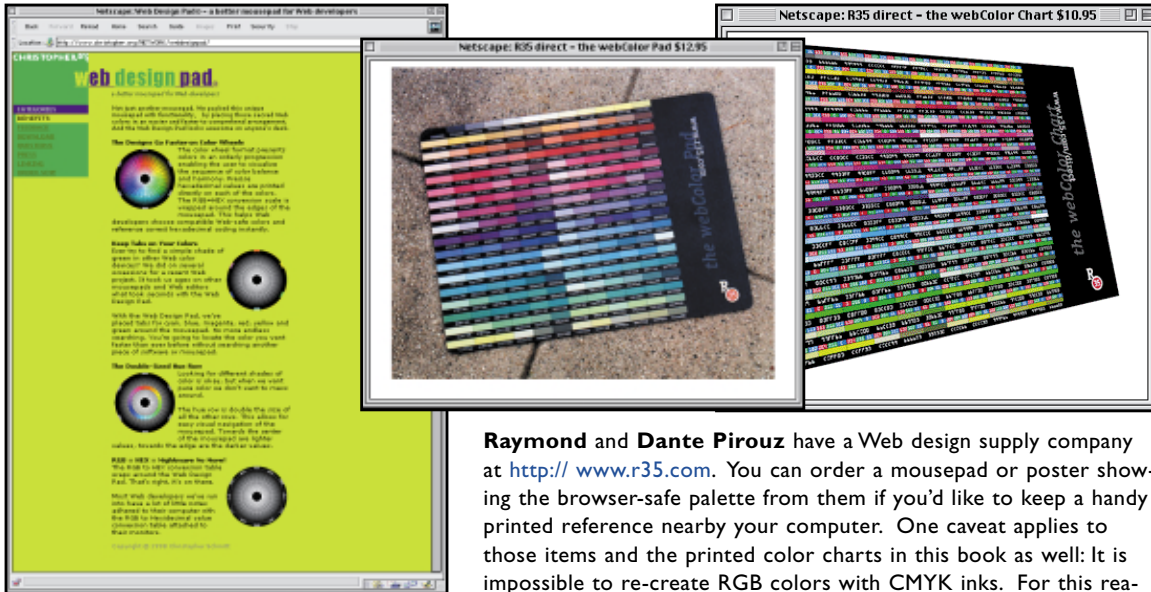
Here is a chart for dealing with the conversion from RGB (0—255) to hex. The browser-safe colors are highlighted.

00=00	01=01	02=02	03=03	04=04	05=05	06=06	07=07	08=08
09=09	10=0A	11=0B	12=0C	13=0D	14=0E	15=0F	16=10	17=11
18=12	19=13	20=14	21=15	22=16	23=17	24=18	25=19	26=1A
27=1B	28=1C	29=1D	30=1E	31=1F	32=20	33=21	34=22	35=23
36=24	37=25	38=26	39=27	40=28	41=29	42=2A	43=2B	44=2C
45=2D	46=2E	47=2F	48=30	49=31	50=32	51=33	52=34	53=35
54=36	55=37	56=38	57=39	58=3A	59=3B	60=3C	61=3D	62=3E
63=3F	64=40	65=41	66=42	67=43	68=44	69=45	70=46	71=47
72=48	73=49	74=4A	75=4B	76=4C	77=4D	78=4E	79=4F	80=50
81=51	82=52	83=53	84=54	85=55	86=56	87=57	88=58	89=59
90=5A	91=5B	92=5C	93=5D	94=5E	95=5F	96=60	97=61	98=62
99=63	100=64	101=65	102=66	103=67	104=68	105=69	106=6A	107=6B
108=6C	109=6D	110=6E	111=6F	112=70	113=71	114=72	115=73	116=74
117=75	118=76	119=77	120=78	121=79	122=7A	123=7B	124=7C	125=7D
126=7E	127=7F	128=80	129=81	130=82	131=83	132=84	133=85	134=86
135=87	136=88	137=89	138=8A	139=8B	140=8C	141=8D	142=8E	143=8F
144=90	145=91	146=92	147=93	148=94	149=95	150=96	151=97	152=98
153=99	154=9A	155=9B	156=9C	157=9D	158=9E	159=9F	160=A0	161=A1
162=A2	163=A3	164=A4	165=A5	166=A6	167=A7	168=A8	169=A9	170=AA
171=AB	172=AC	173=AD	17=AE	175=AF	176=B0	177=B1	178=B2	179=B3
180=B4	181=B5	182=B6	183=B7	184=B8	185=B9	186=BA	187=BB	188=BC
189=BD	190=BE	191=BF	192=C0	193=C1	194=C2	195=C3	196=C4	197=C5
198=C6	199=C7	200=C8	201=C9	202=CA	203=CB	204=CC	205=CD	206=CE
207=CF	208=D0	209=D1	210=D2	211=D3	212=D4	213=D5	214=D6	215=D7
216=D8	217=D9	218=DA	219=DB	220=DC	221=DD	222=DE	223=DF	224=E0
225=E1	226=E2	227=E3	228=E4	229=E5	230=E6	231=E7	232=E8	233=E9
234=EA	235=EB	236=EC	237=ED	238=EE	239=EF	240=F0	241=F1	242=F2
243=F3	244=F4	245=F5	246=F6	247=F7	248=F8	249=F9	250=FA	251=FB
252=FC	253=FD	254=FE	255=FF					

This chart shows how RGB values, which range from 0–255, convert to hexadecimal mathematics.

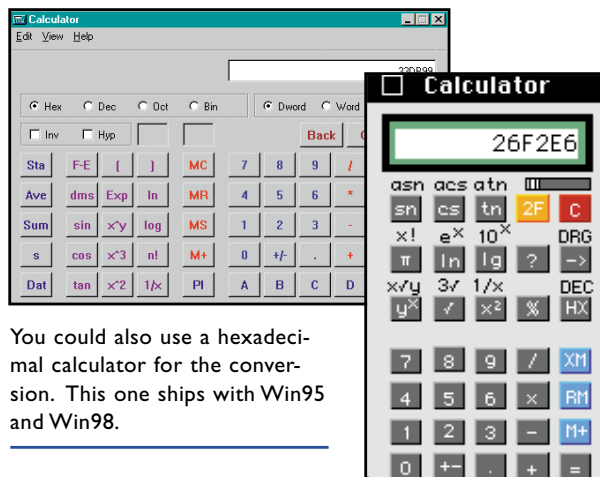
Hex Color Aides

A variety of hexadecimal color aides are available, from mousepads to hexadecimal calculators:



Christopher Shmitt of christopher.org created a Web-safe color mousepad in the round. You can easily order yours from <http://www.christopher.org/NETWORK/webdesignpad.com/>.

Raymond and Dante Pirouz have a Web design supply company at <http://www.r35.com>. You can order a mousepad or poster showing the browser-safe palette from them if you'd like to keep a handy printed reference nearby your computer. One caveat applies to those items and the printed color charts in this book as well: It is impossible to re-create RGB colors with CMYK inks. For this reason, the truest color guides are found in electronic form instead of printed form (such as those found at <http://www.lynda.com/files/>). Nevertheless, having the chart in print can save a lot of time, even if the chart isn't 100% accurate.

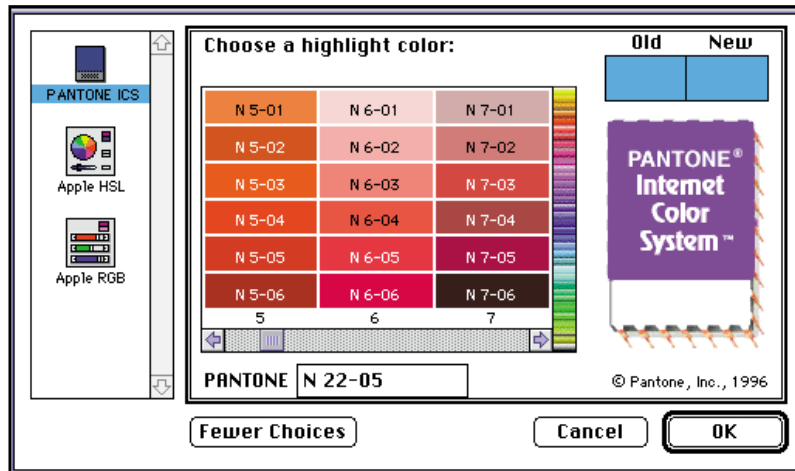


You could also use a hexadecimal calculator for the conversion. This one ships with Win95 and Win98.

If you use a Macintosh, you need to download a hexadecimal calculator. My favorite is available at <ftp://ftp.amug.org/pub/mirrors/info-mac/sci/calc/calculator-ii-15.hqx>.

Pantone's Browser-Safe Solution

Pantone has come to the browser-safe rescue with a Mac-only product called ColorWeb and ColorWeb Pro (<http://www.pantone.com>). Both products include an Internet-safe color picking system that consists of a printed swatch set and a System Color Picker that displays the 216 safe colors in the Apple Color Picker dialog box.



The Pantone Internet Color Guide looks like a typical Pantone color swatch book, except that it has a Web-color spin. It profiles and organizes the 216 browser-safe colors in chromatic order and lists the values for RGB, CMYK, Hexadecimal, and Hexachrome (their proprietary color format for picking printing ink colors).

If you install Pantone's ColorWeb software, it will add another entry, called Pantone ICS, into the Apple Color Picker choices. Pantone ICS will enable you to pick from the 216 browser-safe colors.

warning CMYK Is Not Browser Safe

It should be noted that there is no perfectly accurate way to convert CMYK values to RGB. The numbers that the Pantone Internet Color Guide cites for CMYK Internet-safe values are ballpark approximations and do not yield browser-safe colors when converted to RGB. The two color spaces—RGB and CMYK—do not share common colors consistently. Some RGB colors are outside of the CMYK color gamut, and nothing can be adjusted to create a reliable conversion method.

ColorWeb Pro adds an additional color picker that displays 1,024 Pantone colors and allows you to locate the closest browser-safe color to it. It also ships with a printed fan book that contains all 1,024 colors. This book is a beautiful and useful tool, even if you aren't a print designer! Pricing and order information for ColorWeb Pro is available at the Pantone Web site.

Browser-Safe Color Picking

In order to create artwork with browser-safe colors, you must learn to select the correct colors, paint and fill with them, and shift existing documents to contain them. The first step is learning how to load the palette into your image editor, and the next step is learning to paint, fill, and shift to it.

Unfortunately, there are so many image editors on the market that I don't have space to include all of them. Of all the tools, I favor ImageReady because it has the best color management features of any Web graphics product I know. You can download a demo version of ImageReady (Mac or PC) from <http://www.imageready.com/> to try these techniques yourself. As space allows, I will cover other tools as well.

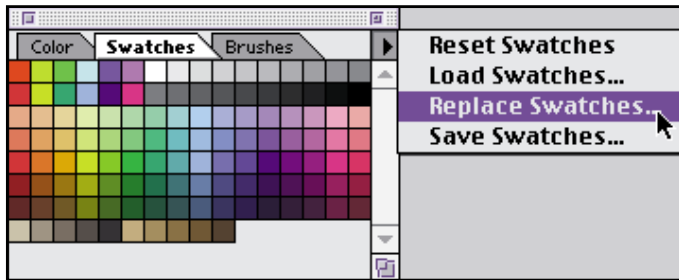


What Is a CLUT and What Do You Do with One?

CLUT is an acronym for **C**olor **L**ook**U**p **T**able. A color lookup table is the file that assigns the specific colors to any 8-bit or lower bit-depth computer image. Photoshop and ImageReady use CLUT files in two different ways. You can load a CLUT into the swatches palette for color picking, or you can assign colors to an image using a CLUT. In Photoshop, a CLUT file is also called a swatch, a palette, or a color table. Other imaging programs use CLUT files, too, but sometimes they have no way of viewing them or accessing them. Anyway, now you know what CLUT means, so you can continue reading with more terminology comfort than before...

How to Load a Browser-Safe Swatch Palette into Photoshop

The method to reset, load, replace, and save swatches in Photoshop 5.0 and 4.0 is to go to the Swatch palette and hold down the triangle in the upper-right corner to access the menu selections, which are described next.

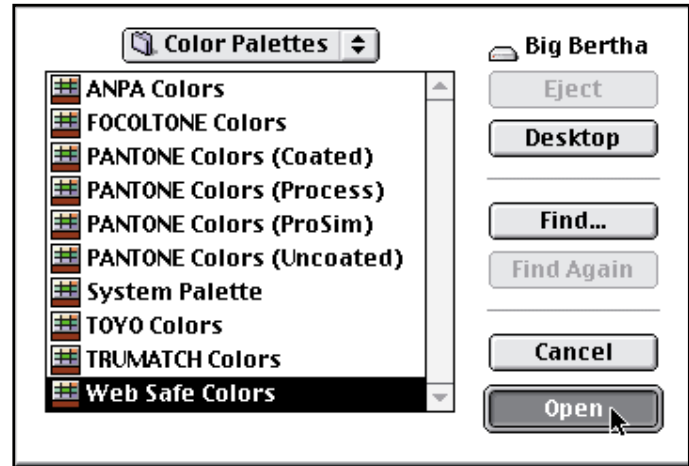


Reset Swatches: Choose this if you've loaded other swatches and want to return to the default swatch set.

Load Swatches: Choose this setting if you wish to load other swatches to the current swatch set. It will append the display and you can load many swatches at once with this feature.

Replace Swatches: Choose this setting if you want to replace the existing swatch with a new one. I recommend this setting most often for working with browser-safe colors. That way, you know that you don't have any non-safe colors in your Swatch palette display.

Save Swatches: Choose this setting if you've created your own swatch set (instructions follow later) and want to save it so you can load it later or distribute it to other Photoshop users (such as a Web design production team working on your site!).

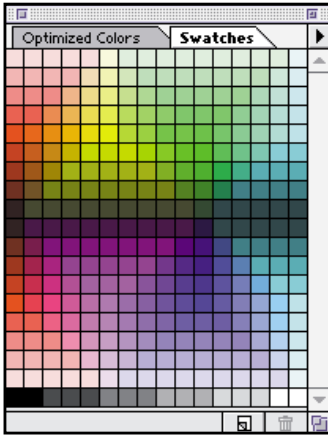


Photoshop 5.0 ships with a Web Safe Colors palette. You can load this palette by choosing **Replace Swatches** in the **Swatch palette** menu. You can locate the palette in your Photoshop 5.0 folder or directory by choosing **Photoshop:Goodies:Color Palettes** and then selecting **Web Color**.

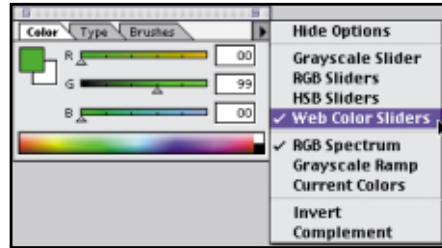
For earlier versions of Photoshop, you can download the file **bclut2.aco** from my Web site—<http://www.lynda.com/files/>. You can load it into the Photoshop Swatch palette by using the upper-right triangle in the Swatch palette and choosing **Replace Swatches** from the pull-down menu.

How to Load the Browser-Safe Palette into ImageReady

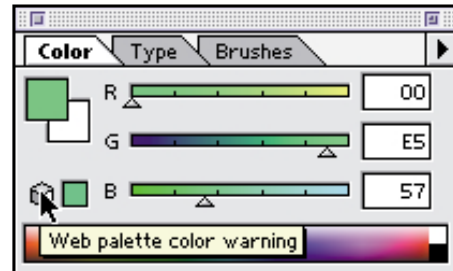
Because ImageReady was developed as a dedicated Web graphics tool, the browser-safe palette is part of ImageReady and doesn't have to be imported or loaded. Simply go to the Swatch palette, and it's already loaded! Not only that, but it's much more nicely organized than the Photoshop 5.0 version, don'tcha think?



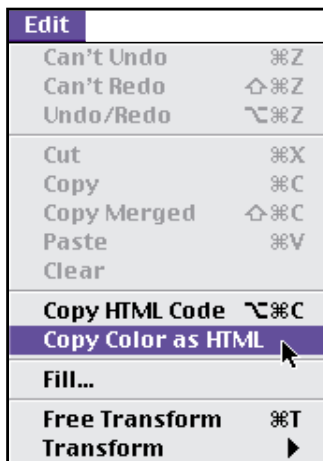
ImageReady goes many steps further than Photoshop in that it has added a browser-safe color picker to its other Color palette.



This means that you can move the RGB sliders and know that any color you snap to will be within the browser-safe selection range.

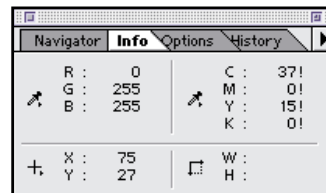


Let's say you want to use the RGB Spectrum picker located below the sliders. This effectively lets you select from millions of colors. If a color you select is not browser safe, the warning cube will appear in the lower-left corner of the Color palette. Click on the cube icon, and the non-safe color you selected will shift to the closest browser-safe color.



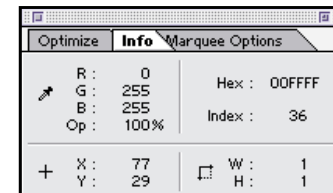
Another great feature in ImageReady is the ability to select a color within the swatch or within color palette and copy the color as hexadecimal code into an HTML editor. All you do is pick a color and select **Edit:Copy Color as HTML**. When you paste, the code it will look something like this:
`COLOR="#009900"`

Photoshop's Info Palette



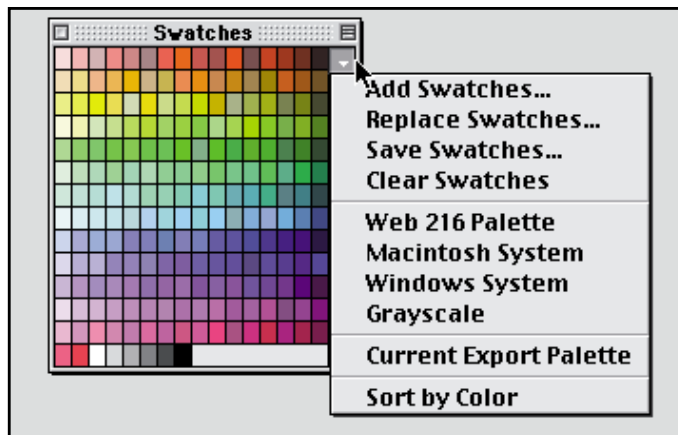
Unlike in Photoshop, the Info Palette window in ImageReady shows hex values in addition to RGB. ImageReady, on the other hand, could care less about CMYK information!

ImageReady's Info Palette

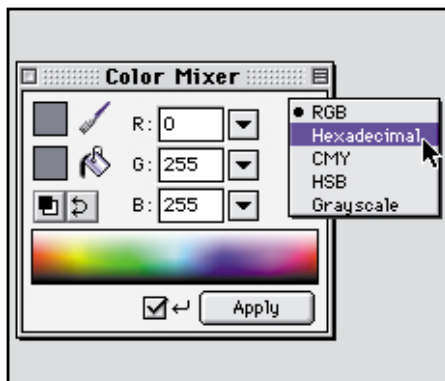


How to Load the Browser-Safe Palette into Fireworks

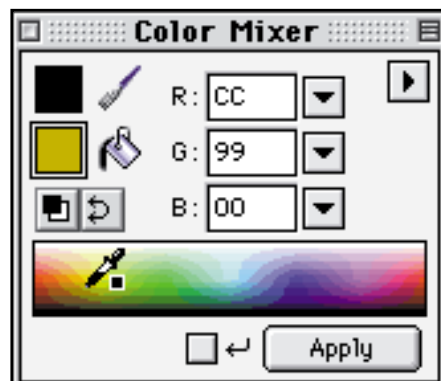
Because Fireworks was also developed specifically as a Web graphics application, it also has better Web color support than Photoshop. The browser-safe palette is the default palette here, too.



You can add, replace, save, and clear swatches in Fireworks. The Swatches palette displays browser-safe colors by default. You can also **Sort by Color** (shown above) to arrange the colors in a more pleasing array than you get from Photoshop's mathematical sorting.



The Fireworks Color Mixer palette defaults to the RGB spectrum. You can change it to the Hexadecimal palette by accessing the popup menu available in the upper-right side.



The Hexadecimal setting limits the spectrum colors to browser-safe values, and the numeric readouts display hexadecimal code instead of RGB values.

How to Ensure That Your GIF Artwork Stays Browser Safe

If you work with browser-safe colors when you create artwork, you still have the important task of ensuring that those colors remain browser safe during the file format conversion process to GIF. This is easy in ImageReady and Fireworks, but it's cumbersome in Photoshop. The following sections review this process for each of these applications.

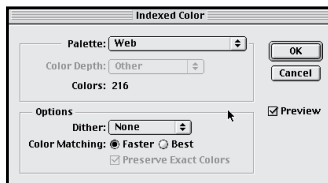
Safe GIF Files in Photoshop

Unfortunately, Photoshop does a very poor job of this, so you must learn workarounds to ensure that your artwork holds the safe colors. Even if you create an image using browser-safe colors, they can be lost during the saving process! Here's how to prevent this from happening to your graphics:

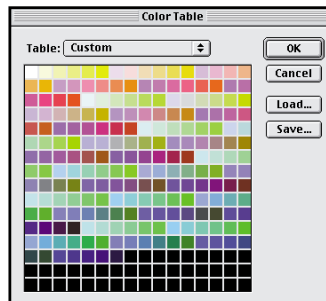
Step 1: Open or create an image that contains browser-safe colors (it must be a **.psd**, **.pict**, **.tiff**, or **.bmp** to begin with).

Step 2: Choose **Mode:Indexed Color:Web**. This converts the image to include only Web-safe colors. Notice that the color table includes all 216 of the Web-safe colors. That is unnecessary and will make the GIF file much too large.

Step 3: Choose **Mode:RGB**. This converts the image back to RGB color. Next, choose **Mode:Indexed Color:Exact**. In this example, the exact palette has only 21 colors, but they are all browser safe. This will create a browser-safe image and will remove all the unused colors.



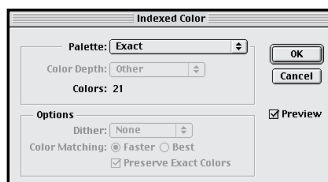
Here is the Indexed Color dialog box in Photoshop, when Web is selected.



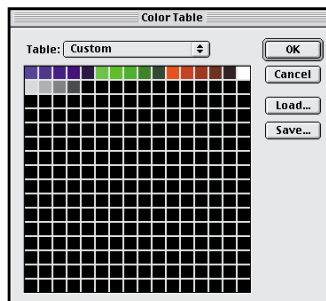
The resulting color table.



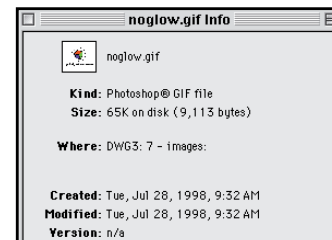
The resulting file size—11.4k—is too big!



Here is the Indexed Color dialog box in Photoshop, when Exact is selected after Web was applied.



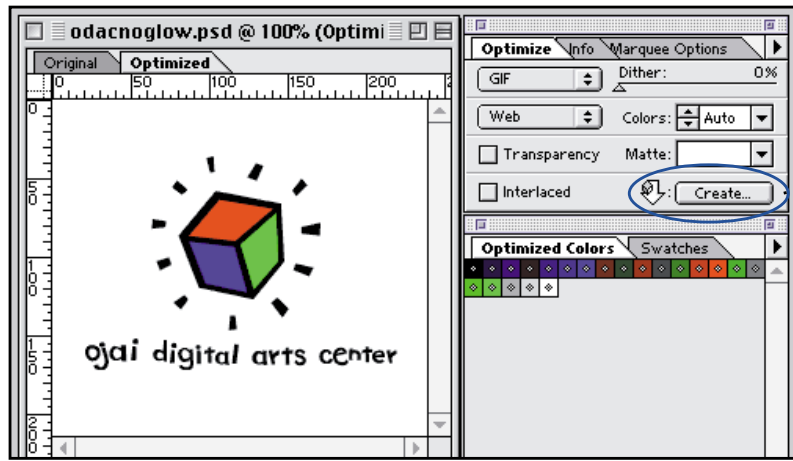
The resulting color table has fewer colors; all are browser-safe.



The resulting file size—9.3k—is much better!

Safe GIF Files in ImageReady

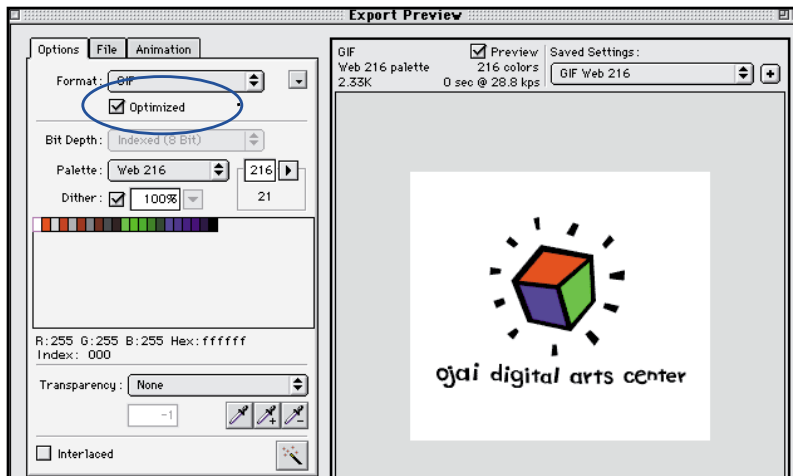
ImageReady accomplishes what Photoshop does but in fewer steps and with better file saving results. When the GIF format is set to Web and Colors are set to Auto, the program knows to eliminate all unused colors. Look at the file size too—an impressive 2.271k—quite a bit smaller than what Photoshop delivered, even with the Exact color palette trick.



The Auto setting figures out the fewest necessary Web safe colors for the file.

Safe GIF Files in Fireworks

In Fireworks, choose **File:Export** to see this Export Preview dialog box. If you apply the GIF Web 216 to your Saved Settings, the program also eliminates unused colors automatically. Notice also that Fireworks has found only 21 browser-safe colors, and the resulting file size is 2.33k—smaller than both Photoshop and ImageReady!



The optimize button chooses the fewest necessary Web safe colors.

Vector-Based Software: Illustrator and FreeHand

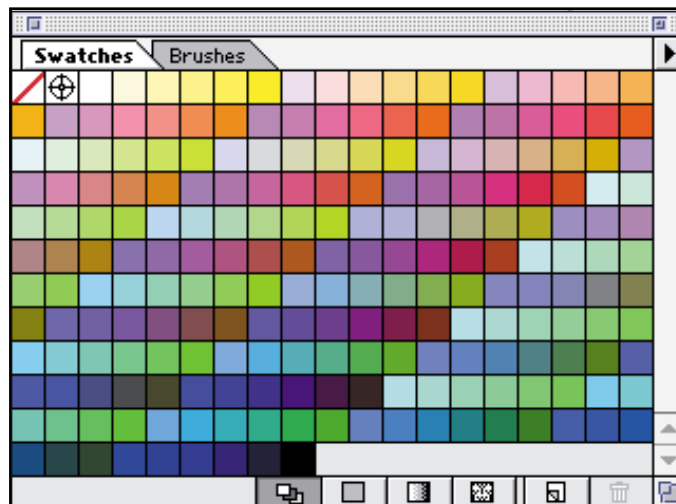
Most vector-based software packages were designed for print mediums, not the screen-based Web. For this reason, many vector-based programs support only CMYK and not RGB color.

Browser-Safe Colors in Illustrator 8.0

Like many other computer graphic programs, Illustrator was originally engineered to generate artwork for print projects and functioned only in CMYK. With the popularity of the Web and because so many Illustrator customers use this product for Web graphics, the product finally supports the RGB color space. Woo hoo! Unfortunately, any versions of Illustrator before this did not support RGB color, so it is impossible to work with browser-safe colors in older versions.

How to Work with Illustrator 8.0 Swatches

Illustrator 8.0 ships with a Web palette, but it doesn't work the way palettes do in Photoshop. If you install Illustrator with its Swatch Libraries folder, you simply open the folder and open the document named Web in the Mac version or **Web.ai** in Windows version. This loads the browser-safe colors into the Swatches palette automatically.



The Swatches Palette in Illustrator 8.0 with the Web palette loaded. Swatch palettes cannot be loaded or saved in Illustrator as they can in Photoshop. Basically, any colors that you use or mix in any Illustrator 8.0 document become part of the Swatches palette.

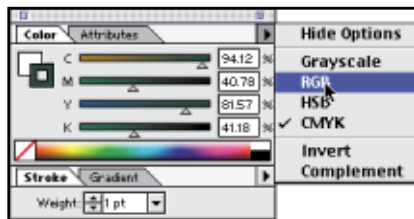
warning

Illustrator 7.0 and 8.0 CMYK Problem

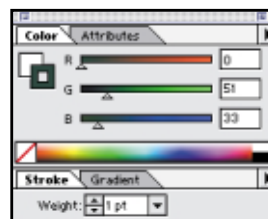
Make sure the colors you pick from the swatches palette are in RGB! If the colors are CMYK colors, they will shift into non browser-safe colors when the image is rasterized in RGB. Check your color palette to see if your values read in CMYK as pictured below. One clue that the colors are CMYK is that the color amounts are given in percentages. Also, make sure to check the fill as well as the stroke when changing color. In fact, check every element and change it to RGB so that none of your colors stray.

A few other things to keep in mind:

- Illustrator 7 will rasterize your images to RGB in the program; however, the artwork will come out cleaner and crisper if it's rasterized with the place function into Photoshop.
- Gradients between browser-safe colors aren't browser safe.



If the value readout shows CMYK, change the CMYK color to RGB. Use the triangle button in the upper-right corner to switch to RGB. The color readout will then range from 0 to 255.



Restrict your color picking for browser-safe colors in Illustrator to six values. The values are 0, 51, 102, 153, 204, 255 for the red, green, and blue channels. If you want to use the color palette to mix colors yourself, round off the colors you pick to the nearest numbers to achieve browser-safe versions of them.

Working with FreeHand 8.0

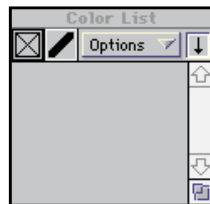
Artists who use FreeHand for its excellent type-handling tools and vector-drawing tools are in luck! FreeHand allows users to work directly in RGB and includes a Web safe color palette.

FreeHand works with RGB percentages instead of specific RGB values. It's possible to mix browser-safe colors right in RGB within FreeHand. Just remember these conversions:

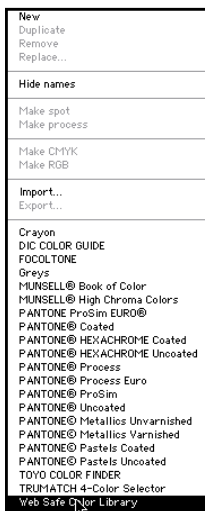
Percentage	RGB	HEX
100	255	FF
80	204	CC
60	153	99
40	102	66
20	51	33
0	0	0



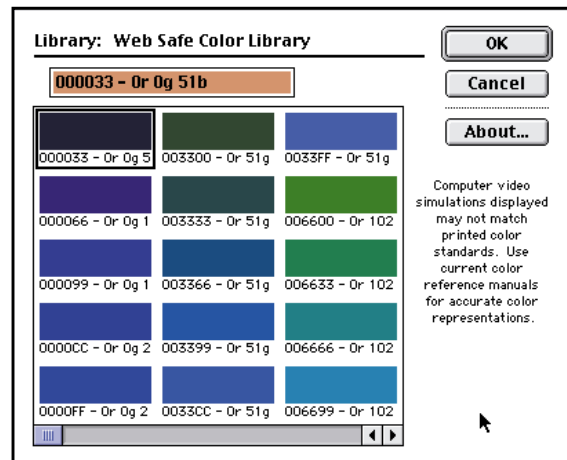
The following steps will enable you to access the Web safe color palette in FreeHand 8.0:



Step 1: Open the Color List Palette. Under **Options**, choose **Import**. Locate the Web Safe Color Library.



Step 2: Select **Web Safe Color Library**.



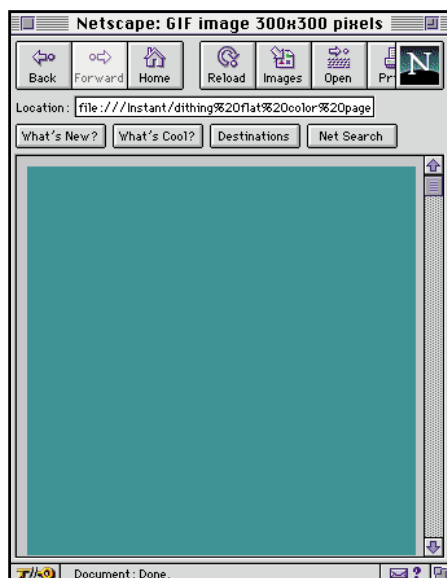
Step 3: If you use these colors to paint with, you can Choose **File:Export** in the GIF file format. Click on the Options button to set dithering (or not!) and also to set GIF transparency.

JPEG Artwork Cannot Retain Browser-Safe Colors

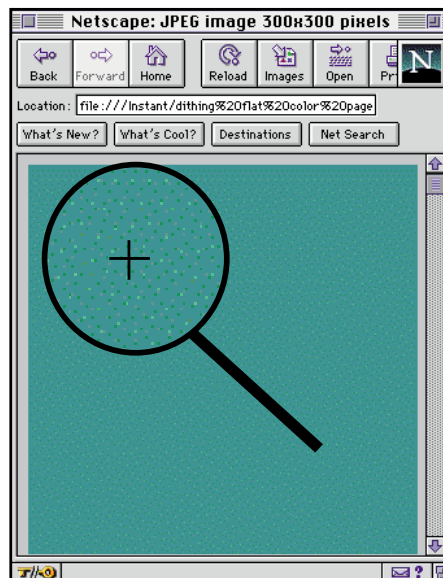
Unfortunately, files that are converted to JPEGs do not retain precise color information. The lossy compression method that's used throws away information and introduces compression artifacts, even though they are often not easily visible. Because of this, there is no way to accurately control color using the JPEG file format.



Here's an example of a solid browser-safe color, with the hex readout of 51, 153, 153.



When saved as a GIF file, this color stayed browser safe.



When saved as a JPEG, the color shifted from 51, 153, 153 to 154, 154, 156. It is no longer browser safe, as is evident by the dither that appears when it's displayed in Netscape under 8-bit monitor conditions. Note: If you use the highest quality JPEGs, color inconsistency can be avoided, but you will have to deal with larger files sizes. Seems like if one thing doesn't get you, something else certainly will!

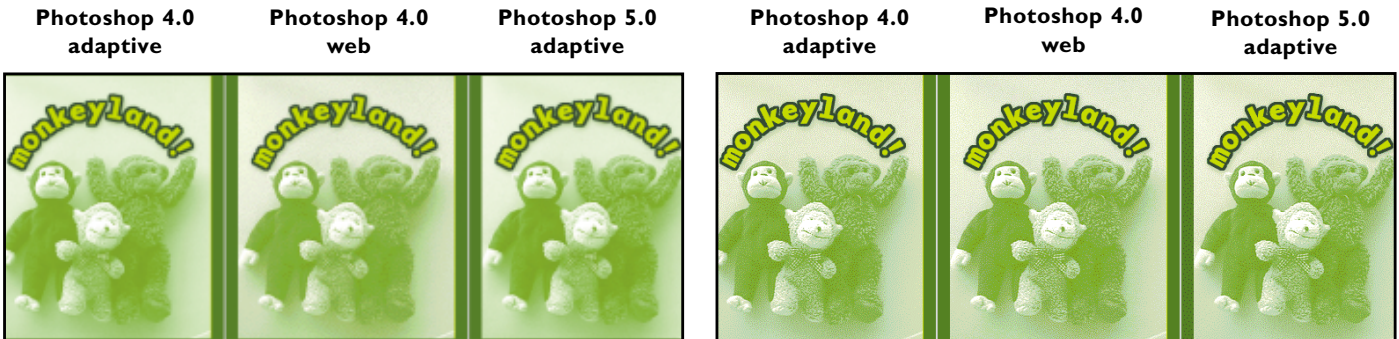
What this means is that you cannot accurately match foreground GIFs to background JPEGs or foreground JPEGs to background GIFs. Even if you prepare images in browser-safe colors, they will not remain browser safe when converted to JPEG—no matter what you do. We've already established (in Chapter 3) that JPEGs are not good for solid colors. This is one more reason not to use JPEGs when dealing with flat-style illustration, logos, cartoons, or any other graphical image that would not lend itself to having unwanted dithering.

Hybrid Image Challenges

Like most things in life, there are exceptions to the rules. When you have an image that combines line art and continuous tone art, you have to combine browser-safe colors and non-safe colors. If you map the continuous tone artwork to browser-safe colors, it will look terrible; and if you leave the solid colors in non-safe colors, they will dither. It is possible to combine techniques to achieve a hybrid image, but only in the GIF and PNG formats. There is no way to lock a browser-safe color in the JPEG format. Instructions for creating hybrid images as GIFs in browser-safe and non-safe colors follow.

Hybrid Image as GIF in Photoshop

Whenever you deal with hybrid images that contain solid and continuous tones, it's best to save in an adaptive GIF palette instead of the Web-safe palette.



This row of images shows the differences between saving with an adaptive palette (left and right) and a browser-safe palette (middle). You can see that the adaptive palettes look better than the Web.

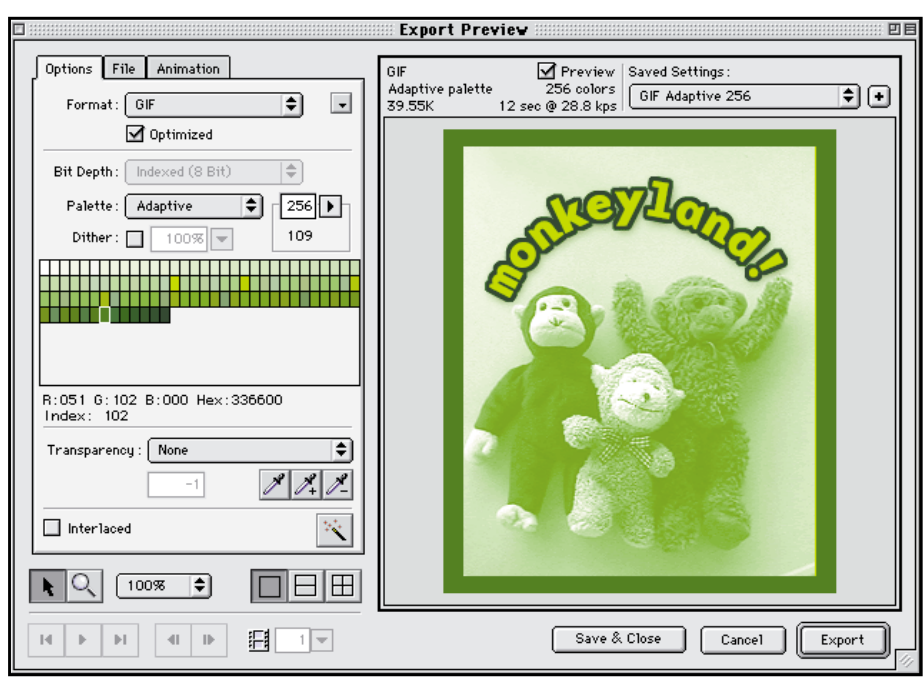
When viewed on an 8-bit system, all these images look identical. The browser converts the adaptive palettes to the browser-safe palette as expected.

So what's the moral of the story? Use an adaptive GIF palette with hybrid images. It will usually (though not always) retain the browser-safe colors and will produce a much better looking continuous tone image. On 8-bit systems, it will look the same as if you had forced it into the browser-safe system yourself.

There is one potential disadvantage to this technique. If you use adaptive palettes, you will often use more colors than if you stick to browser-safe colors. This sometimes results in larger file sizes. It's that "beauty versus size" thing again, and it all boils down to your own personal preferences.

Hybrid Image as GIF in Fireworks

Fireworks allows you to save in GIF with an adaptive palette. It has presets at 256 and 128 colors.



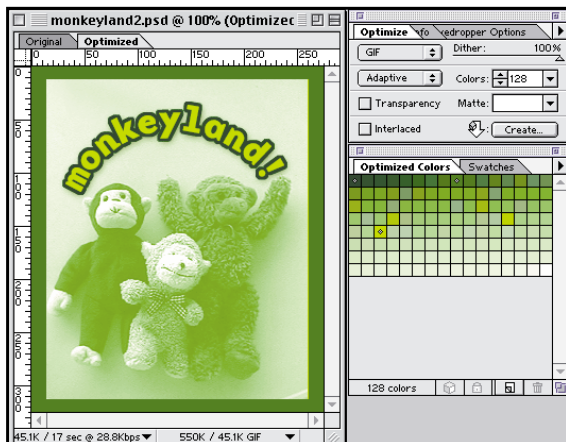
To access this dialog box, choose **File:Export**. The adaptive palette is best for hybrid images and will not alter browser-safe colors.

Hybrid Image as GIF in ImageReady

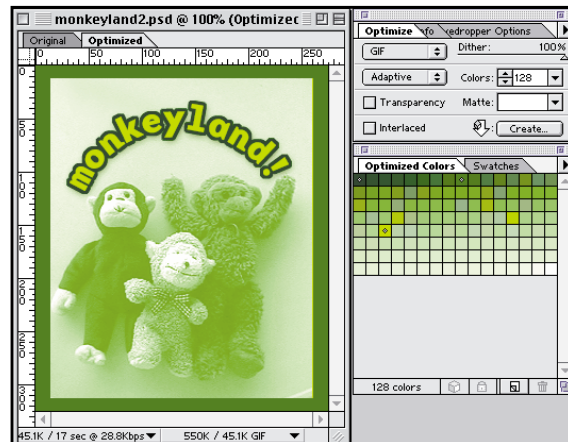
ImageReady has three different types of adaptive palettes: Perceptual, Adaptive, and Selective.

Each of these algorithms works slightly differently, but all preserve solid browser-safe colors as a priority. The only reason to try the different types of adaptive palettes is to see if you like the image quality of one better than another.

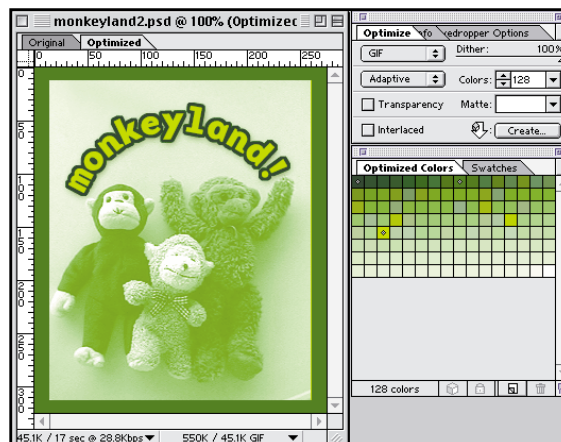
Perceptual



Adaptive



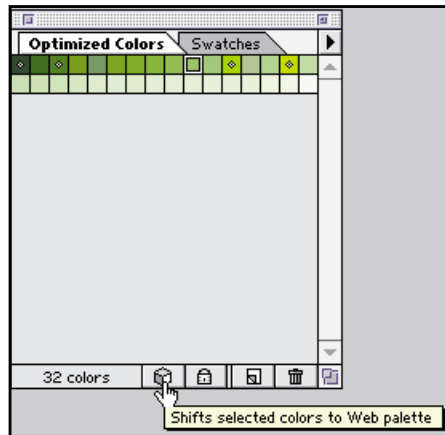
Selective



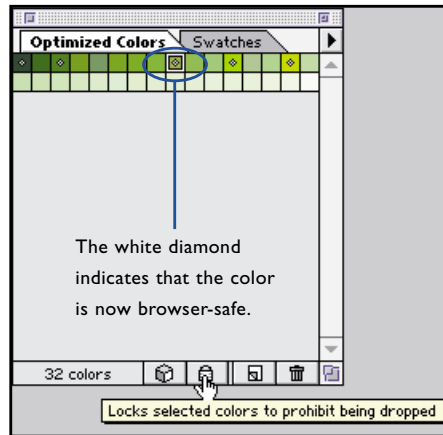
Non-Safe Images with Solid Colors

What about images that weren't created with browser-safe colors but should have been? Fireworks has a nifty feature called the WebSnap palette. This shifts colors towards the browser-safe colors when it encounters solid areas of color that are not safe.

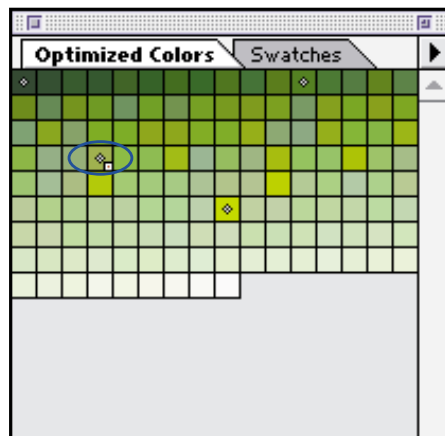
To access the WebSnap Adaptive palette, choose **File: Export**. This palette will shift non-safe solid colors to safe ones.



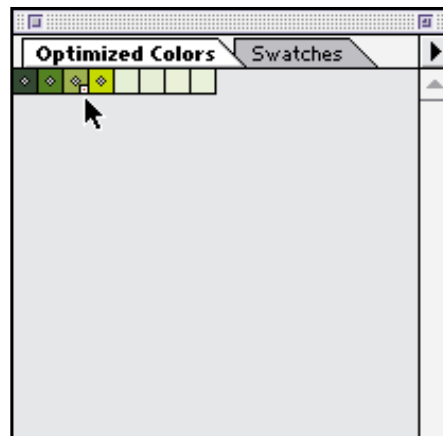
ImageReady allows you to select individual colors within your document with the eyedropper and then shift a non-safe color to a safe one by clicking the cube icon.



After you shift a color, you can lock it so that the color will not disappear if you reduce the colors within your GIF.



When a color is locked in ImageReady, a little white box appears in the palette display.



When you reduce the color depth to fewer colors, the locked colors remain.

summary

Browser-Safe Color

Browser-safe color is a huge subject, with lots of variables and different implementations. This chapter covered the what, why, where, and how of browser-safe color, outlining the specs and software tools for producing safe graphics and safe HTML code. Here's a summary of the main points in this chapter:

- Always use browser-safe color with HTML-based schemes, such as your background, text, links, visited link, and active link colors.
- Always use browser-safe color for graphics that include areas of solid color.
- Don't use browser-safe colors on photographs.
- Save photographs in the JPEG format when possible.
- If you have a hybrid image that has areas of solid color and continuous tone imagery, use the GIF format with an adaptive palette.
- You can shift solid color artwork to browser-safe colors using Fireworks or ImageReady.
- Never save browser-safe colors in the JPEG format.