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Saturation Clipping

Saturation Clipping

In this lesson, we're going to go into more detail on Saturation Clipping, which is something that can happen when you push the colors in a photograph too far. Saturation clipping refers to the loss of detail in an area where the colors have been overly saturated.

To understand this, let's look at how changes in saturation affect the RGB (red, green, blue) values. Each RGB value can range from 0 (having no color) to 255 (having the most color). If you look at the RGB numbers for a color that is fully saturated, one number will always be 255 and another number will always be 0. To get a gray tone, every RGB value will be equal, therefore allowing no single color to be more pronounced than another.
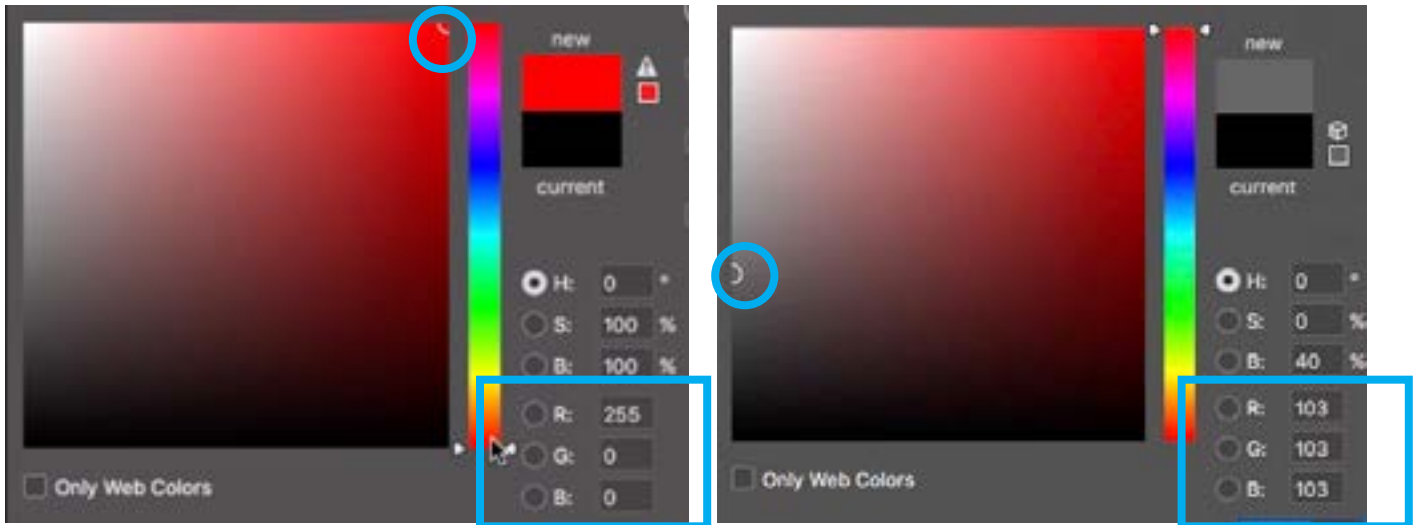

The color picker is shown in the two screen shots above with the RGB values visible. On the left, we have selected the most colorful red possible, and the R value is 255. The other values are 0. On the right, we have a shade of gray selected, and the RGB values are all equal.

If you have an image with vibrant colors (flowers, for example) and you start dragging the saturation adjustment slider (within the Vibrance Adjustment Layer Properties panel) to the right, you'll eventually start to see a loss of detail, which will start in the most colorful areas. With a flower, you might start losing any texture in the


The left screen shot has some texture. In the right screen shot, we increased the saturation a lot and the detail started to disappear.

petals. Note that the saturation adjustment treats all colors equally and makes them all more colorful. The Vibrance slider, however, tries to concentrate on the mellow colors within your picture. It will apply the adjustment less and less as it gets into the more saturated areas. This Vibrance adjustment makes it so that we can get away with making our image more colorful without running into the problem of saturation clipping.
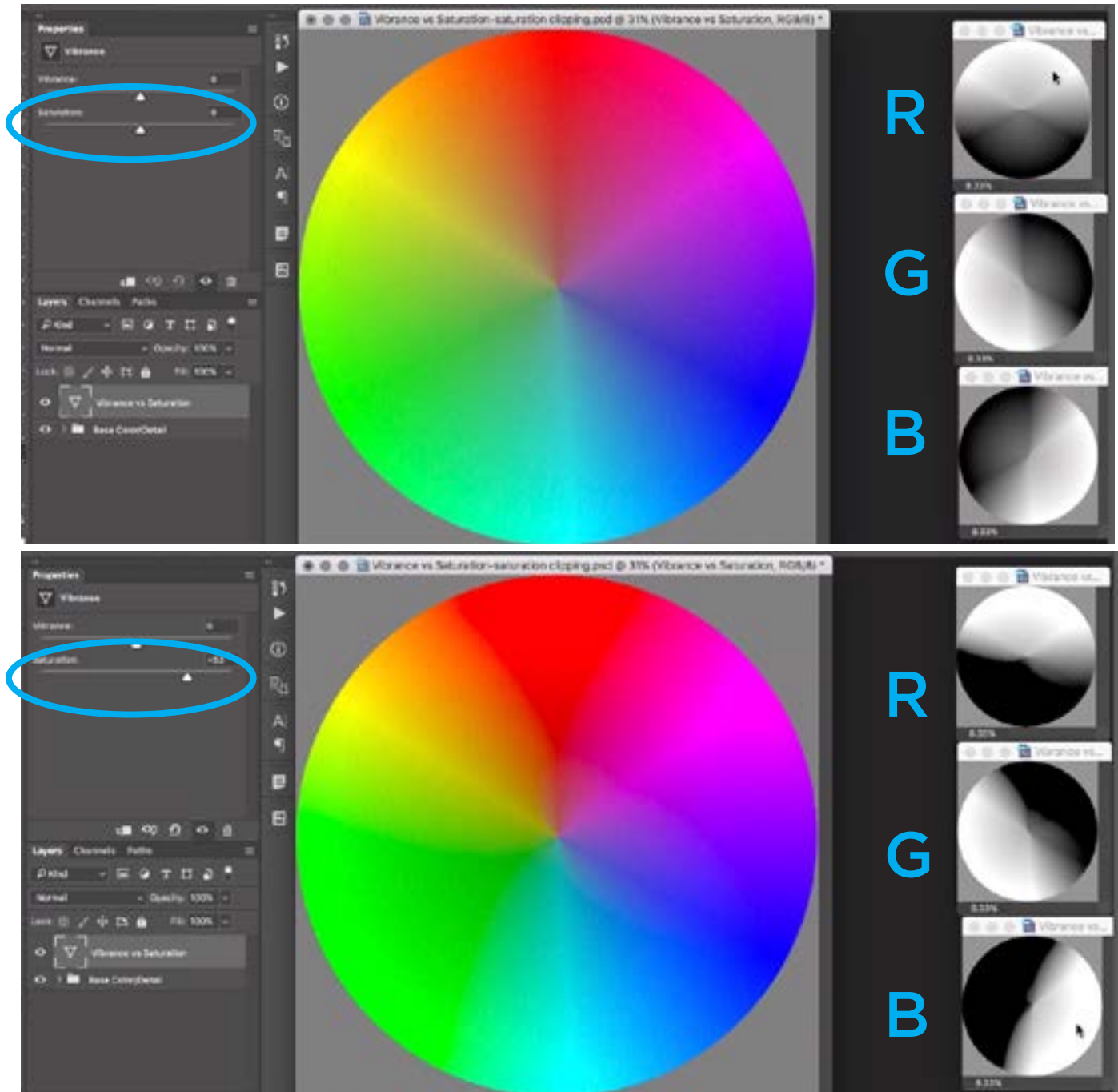

Notice what happens to the individual RGB channels when the saturation is increased a great amount. With the Saturation slider at 0, you can see detail. With the slider over 50, the detail becomes lost.
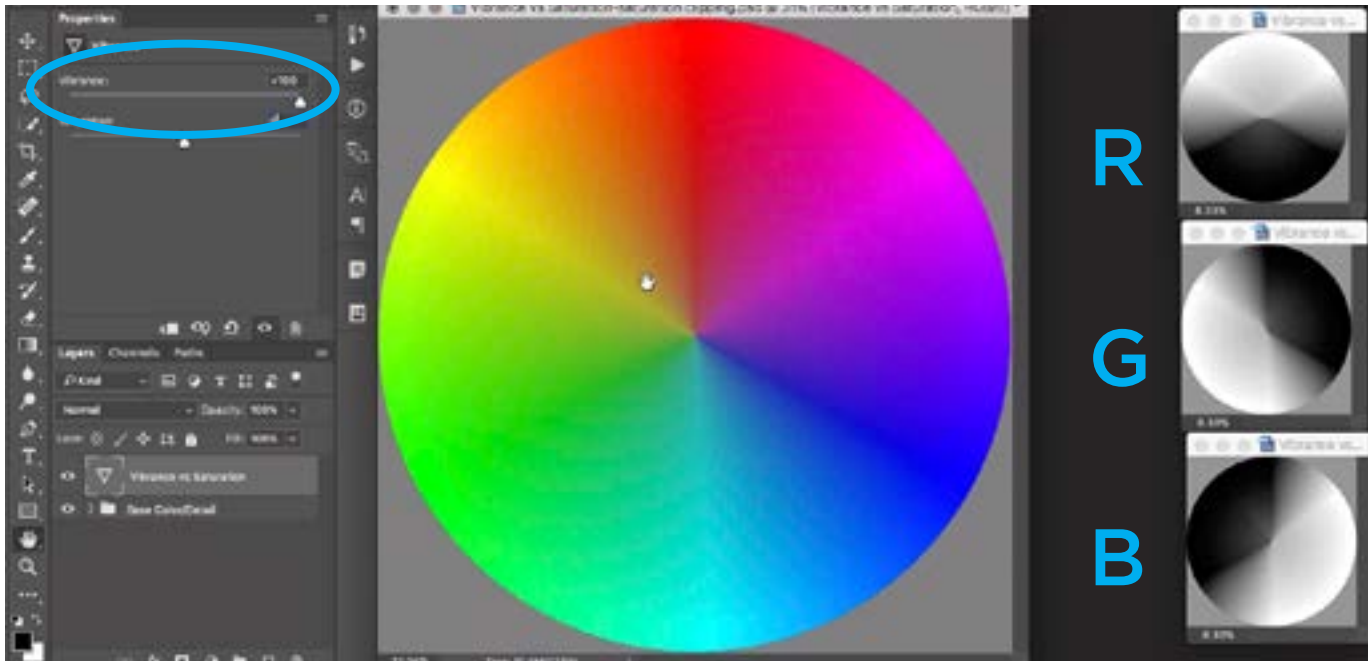
Here, we are increasing the vibrance instead of the saturation. Notice that more detail is maintained in the individual RGB channels.

Identifying saturation clipping in Photoshop When working with an image in Photoshop, there are a couple ways of determining whether you might have saturation clipping (other than by visually recognizing it). One of these is by using the Info panel. If the Info panel is not already visible on your screen, you can access it via the Window menu. With the Info panel open, activate the Eyedropper tool and simply hover your cursor over the area of your image that you think could be losing detail due to saturation clipping. When you hover your cursor over your image, the individual RGB values for that particular area will appear in the Info panel. If any one of those numbers is at one of their extremes (0 or 255), that means you could be losing detail.
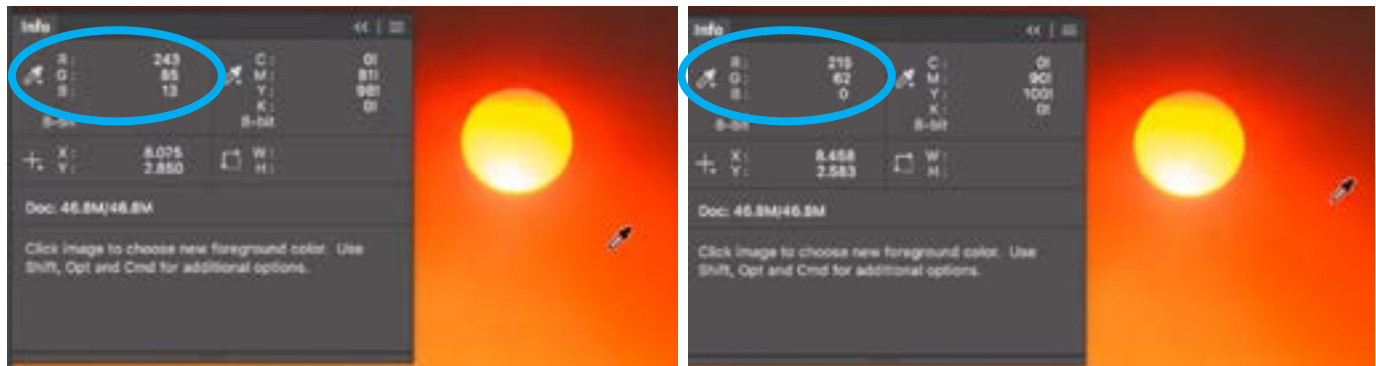

When hovering the Eyedropper over an area, the Info panel will display the RGB values for that area. If one of those values is at its extreme (0 or 255) as it is at right, there may be a loss of detail.

Another way to locate saturation clipping is inside the Channels panel, which is usually hidden behind the Layers panel. Click through the individual channels and look for any abrupt transitions where there should be a smooth gradient. If you see that in one of the channels, that is the color that contains the clipping, or loss of detail. This lesson is mainly an overview of saturation clipping, but in future lessons, we'll talk about how we can try to fix the issue by stealing detail from one channel and copying it to the channel that contains the clipping. This can be done with the Channel Mixer adjustment.

You can determine if saturation clipping is occurring in a particular channel by clicking through the channels in the Channels panel. If one of the channels shows abrupt transitions where there should be a smooth gradient, as there is here, there is likely a loss of detail in that channel.

Identifying Saturation clipping in Camera Raw When working with an image in Camera Raw, you can tell if one of the channels is losing detail by looking at the histogram. If you notice tall, colored spikes on the ends of the histogram, then you might have saturation clipping. If you see these spikes, look at your picture and hover your cursor over the areas you feel are the most colorful and look at the RGB numbers under the histogram. If one of those numbers is at 0 or 255, then you might have a loss of detail. You can try to fix this by moving the Saturation slider to the left or my using a selective adjustment to lower the saturation in just that area.
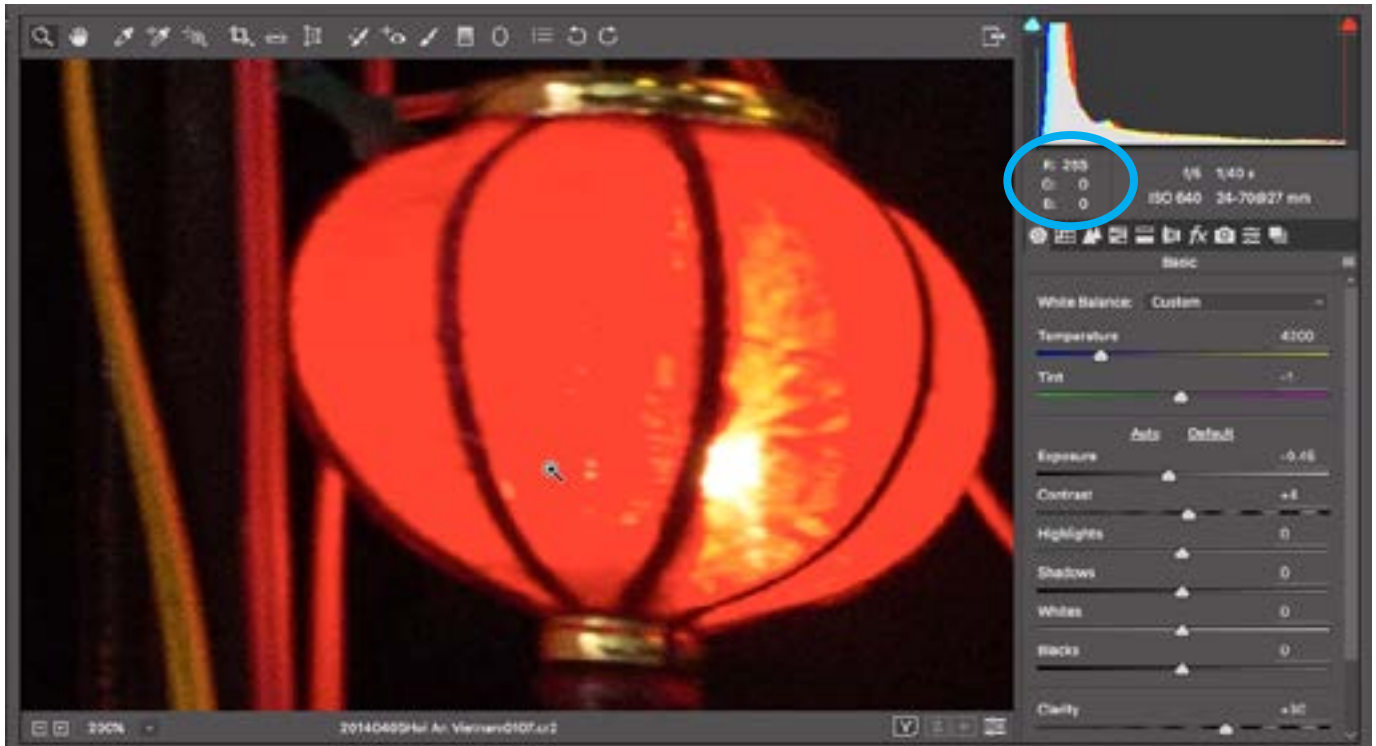
In Camera Raw, colored spikes on the ends of your histogram indicate that the image may have saturation clipping. If you have these spikes, hover your cursor over the most colorful area and look at the numbers beneath the histogram. If one or more of the numbers is at its extreme (0 or 255), there is likely a loss of detail.

In Camera Raw, there is another reason why saturation clipping may occur. There is a setting that can be found at the bottom of the screen and it looks like a line of text containing info about the image. The first thing this line of text displays is the image's color space. The color space of an image determines how colorful things can become.


The small line of text under the image window in Camera Raw will indicate what color space the image is using.

The smallest and most limited color space is sRGB, and when you saturate colors in this mode, you'll get saturation clipping much earlier than you would when working in any other mode. If you have an image that contains extremely colorful areas, you probably don't want to be using the sRGB color space. The next color space up is Adobe RGB and it will allow you to have more vivid colors in your

image than sRGB will allow. The next space up is called ProPhoto RGB, which is an absolutely huge color space and it would be difficult to get saturation clipping when using this color space.

If you click on that line of text, you will get the Workflow Options dialog, inside of which you can change the setting for the image's color space.

Color adjustments in Photoshop When making color adjustments in Photoshop, it can be useful to have the Info panel open so that you can see what's happening with your colors. If you are ever in the middle of making an adjustment, the Info panel will display two sets of numbers for each RGB value. The number on the left is what you started with (before applying the adjustment) and the number on the right is what you will end up with (after applying the adjustment).
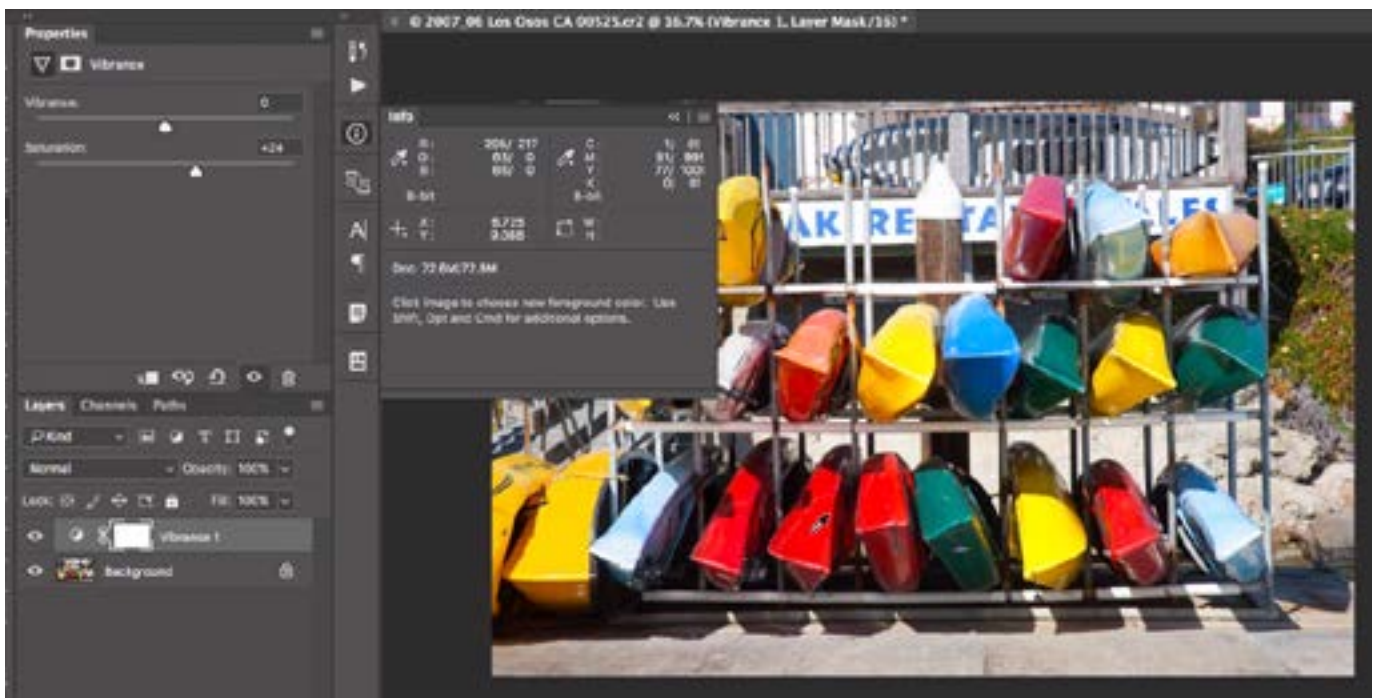
We are making a Vibrance adjustment layer using the Saturation slider. We have the Info panel open so that we can see what's happening with the colors. The numbers on the right indicate what the colors would be after the adjustment. If any of them are 0 or 255, then there is likely a loss of detail. Here, the green and blue channels are at 0.
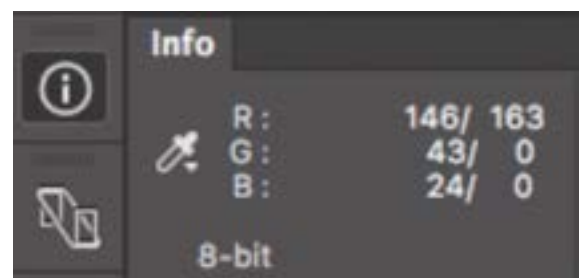
I will usually look at these numbers while adjusting the Saturation slider within the Vibrance adjustment layer Properties panel. If I see one of the RGB numbers hitting 0 or 255, I might back off on the adjustment and see if I can avoid that loss of detail.

When making adjustments like this, you will need to decide what's more important, seeing the detail or making it more colorful. You don't need to completely avoid saturation clipping. It's just important to be aware of it.