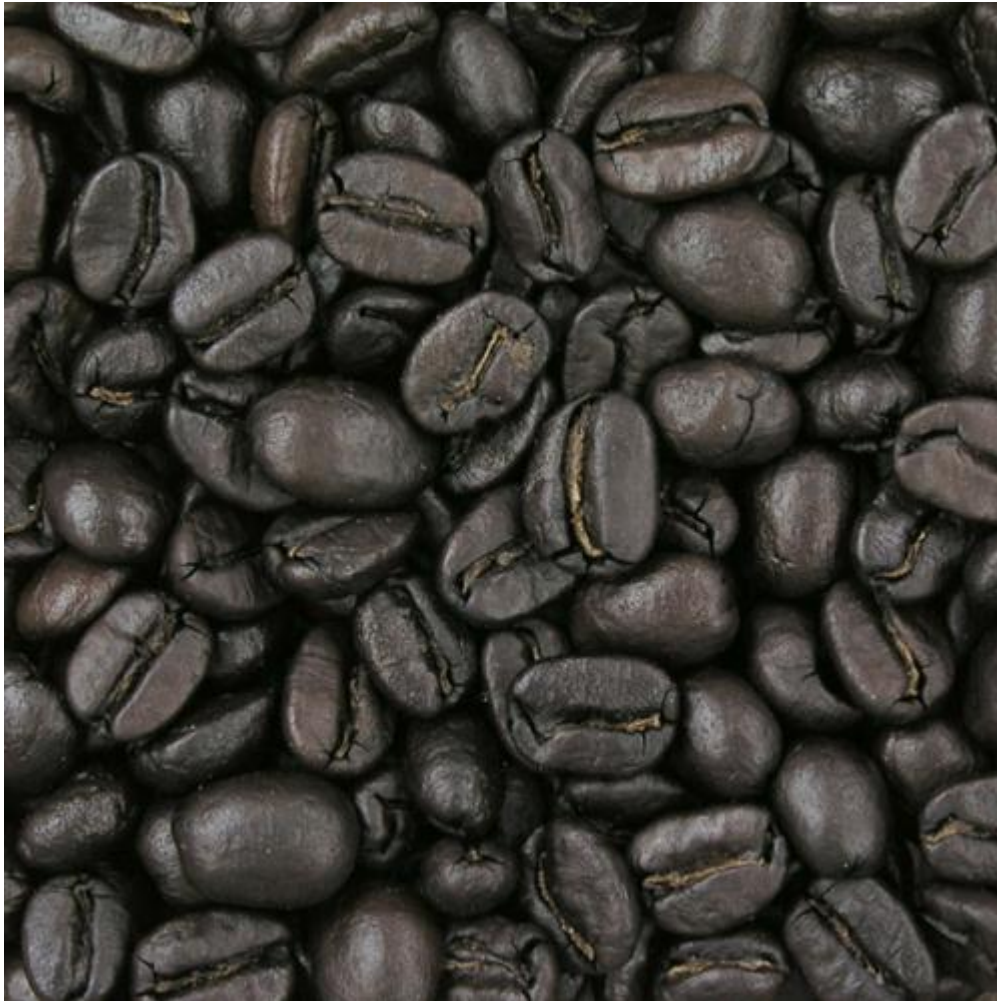




Color measurement solutions like spectrophotometers help you spot the difference between a dark bean and a burnt one. Image Source: MaxPixel user Nikon D7100

Although [lighter roasts](#) have a greater number of flavors than dark roasts, the reality is that many customers still prefer dark roast coffee. In fact, an estimated 42 percent of consumers drink dark roast coffee each day, compared to just 15 percent of consumers who drink light roast coffee.<sup>1</sup> This is why many coffee manufacturers choose to make both styles of beans in an effort to cover the full spectrum of the market.

However, just because these dark roast drinkers prefer a bolder coffee doesn't mean that they want their coffee to taste burnt. To cater to the large population of dark coffee drinkers in the United States and perfect your roasts, you need to have a system of color measurement solutions designed specifically for coffee beans. After all, just a few minutes too long on the roaster could mean the difference between a bold, dark bean and a burnt one.



Some beans are so dark in color that it's difficult to tell whether they've been roasted for too long.  
Image Source: Wikimedia user Dan Bollinger

#### Darker Coffee Bean Shades Pose Challenges

Color measurement solutions are essential for coffee roasting because there's a strong link between a coffee's color and its flavor. The lighter the roasted beans are, the fruitier and sweeter the resulting coffee will be, whereas darker roasts start to lose these light, fruity flavors. In a dark roast, certain flavors in the coffee, such as chocolate-like notes, become stronger, while more subtle flavors, like fruit, disappear. However, if you roast your beans for too long, even these strong chocolate flavors begin to turn bitter, resulting in an unpleasant, burnt taste.

The challenge of dark roast coffee is that when you get into the darkest end of the color scale, it's much more difficult to spot the differences between a bean that's extremely dark brown in color and one that's veering into the black end of the scale. As a product's color approaches the darkest shades that the human eye is capable of seeing, some available visual light is absorbed.<sup>2</sup> When this happens, it's harder to spot differences because the beans appear too dark to accurately detect subtle hues of brown within the black. What's more, even when you compare dark roast coffee beans to a standard color sheet, most beans are going to lie somewhere between that ideal color and the color next to it. The accuracy of [color measurement solutions](#) that rely on the human eye alone are often biased; one viewer might see a dark bean that appears closer to the ideal color on the color scale card, while another might see a bean that's closer to the "burnt" end of the scale.

## The Fine Line Between Dark and Burnt Beans

Small inconsistencies in color perception add up over time and could have serious consequences for your company. To start, inconsistent roasts could make your company appear less reliable to consumers, which may impact your sales in the future. A new customer may be impressed with your company's ability to craft a dark roast that doesn't taste burnt the first time, but if the next package that they buy from you is too deeply roasted, they may be afraid to buy coffee from you again. It's also important to remember that, while dark roast coffee beans can appear nearly identical in color to burnt beans, there is a significant difference in flavor. It's true that a quality dark roast coffee will have fewer flavors than lighter roasts, but that doesn't mean that all dark roasts are flavorless and bitter.<sup>3</sup> The goal is to achieve a bold profile and full-bodied feel without making your coffee taste like bitter charcoal.



A coffee spectrophotometer can accurately measure the grounds of your beans to determine whether the roast is too dark, or just right. Image Source: MaxPixel user Canon EOS 70d

### Use Spectrophotometers Specifically Designed for Coffee

To achieve a sufficiently dark (not burnt) roast and eliminate bias in your color measurement protocols, you'll need to combine a [coffee-specific spectrophotometer](#) with the Specialty Coffee Association of America (SCAA) color measurement scale. By using both of these methods, you can use your industry's standards and get accurate, easy-to-read data from your spectrophotometer that adheres to these standards.

Many coffee manufacturers use [the SCAA scale](#) to determine whether their beans are roasted perfectly. This scale uses colored tiles that are numbered according to how dark the beans are. When you use the scale, you'll see that the darkest roast (tile #25) appears nearly black in color against a white background. Yet when you set this tile up against a black background, you'll notice that it's actually a very dark brown. When you roast coffee, you'll want your beans to be slightly

lighter than this darkest shade on the scale. Beans that are darker than tile #25 tend to taste bitter and burnt, even when you use the highest quality beans.

By using a specialty spectrophotometer like the [ColorFlex EZ Coffee instrument](#), you can accurately measure the exact hue of your beans and the spectrophotometer will automatically match this reading to a corresponding SCAA tile number. In addition to providing you with the exact tile number, the instrument can also give you SCAA roast classification data or HunterLab's proprietary coffee color index (the HCCI). You don't need to install these components separately; each coffee spectrophotometer comes equipped with this firmware already installed. By combining these specialty scales with accurate 45°/0° measurement geometry, coffee manufacturers never have to rely on the human eye to test their coffee. Rather than using human testers, who are naturally biased and experience frequent flaws in color perception, [this coffee spectrophotometer](#) remains consistent over time and gives you clear data on exactly where your coffee falls, no matter what scale you use.

#### HunterLab Innovation

If you're interested in perfecting your own dark roast in order to attract more customers, you can start by integrating spectrophotometric color measurement solutions in your coffee roasting process. [Contact HunterLab](#) to find out more about our coffee-specific instruments. We can provide you with detailed information about every color scale we use to ensure quality control in every roast and can help you find the perfect solution for your company's needs. Our experts will walk you through the instrument's specifications, as well as how to install this spectrophotometer in your test lab. With our expert staff on your side, you'll create a bold, rich dark roast that your customers will love.

1. "Share of U.S. Coffee Consumers By Coffee Roast", January 2017, <https://www.statista.com/statistics/323434/share-of-us-coffee-consumers-by-coffee-roast/>
2. "Colors of Light", April 4, 2012, <https://www.sciencelearn.org.nz/resources/47-colours-of-light>
3. "Myths About Dark Roast Coffee", April 20, 2013, <http://www.huladaddy.com/articles/myths-about-dark-roast-coffee.htm>