Essential oil spectrophotometers help you determine how pure an oil is based on its color, which in turn could impact how your perfume smells. Image Source: Flickr user sunny mama

The alluring aroma of a perfume might win over the heart of a picky customer, but experienced perfume manufacturers know that this is only one small part of what makes a particular scent so enticing. In reality, the perfume's color also plays a major role in sales, and in some cases, can directly impact the scent of the perfume itself. After all, the quality of a perfume is only as good as the ingredients that went into producing it. If you want to ensure that the oils you use are absolutely pure and powerfully fragrant, you should consider investing in a spectrophotometer. Using this tool, you can make sure that each bottle of perfume looks identical and that you're always using the best essential oils available.

Some essential oils, like sandalwood, will look darker in color and appear hazier than clear, brighter essential oils like lavender. Image Source: Flickr user Your Best Digs

Spectrophotometers Measure Essential Oil Quality

The main reason you'll want to use a spectrophotometer when manufacturing perfume is that oil quality varies greatly. Some essential oil manufacturers make purer, more fragrant samples than others. The lowest quality essential oils are comprised of artificial phenols (aroma molecules) mixed with vegetable oils, which results in a dulled-down scent and a color that's out of character for that particular oil. For instance, pure lavender oil should be nearly clear, with the subtlest tinge of yellow along the edges; artificial lavender oils might appear deep gold instead (like the color of olive oil), which is a sign of a low-quality product.[1]

However, dark colors aren't always a sign of a low-quality oil. Certain highly-pigmented oils, like vetiver, sandalwood, chamomile, and patchouli naturally have far deeper coloration than other, virtually clear oils. In these oils, deeper coloration is the sign of a high-quality sample, meaning they will likely have a longer-lasting scent.[2] Essential oil spectrophotometers can help you compare colorful samples to find the highest quality source for your perfume. This is an especially useful tool for darker essential oils since these oils have a noticeable color that can be seen with the naked eye. To use a spectrophotometer to determine essential oil quality, simply compare the sample you have to that particular oil's ideal, natural color.

The Value of Versatility and Flexibility

Most essential oils are virtually clear, and the human eye can't always detect subtle color differences between them. For these types of oils, a spectrophotometer is the best choice because it's capable of measuring even the slightest differences in color. You can also use spectrophotometric purity testing on any dark-colored essential oils in your blend. For instance, sandalwood ranges from pale yellow to rich gold in color, and the purer the sample is, the darker in color it will appear, which your

spectrophotometer will be able to detect. When you choose a spectrophotometer, make sure that you get a model that's capable of handling hazy samples as well, since many essential oils can be cloudy. Lemon oil tends to be hazier than floral-based oils because it has waxier properties; this comes from the lemon peel itself, from which most oil manufacturers press their samples. [3]

If one batch of your perfume is darker than usual, it's a sign that the essential oils in the blend weren't mixed or measured properly. Image Source: Flickr user Vetiver Aromatics

Perfume Color Matters

Beyond helping you measure oil quality, spectrophotometers can also promote consistency in your final perfume blend. Color can deeply affect customers' perception of perfume quality.[4] Perfumes that are dull in color or that appear inconsistent bottle-to-bottle will be less appealing than perfumes that maintain color consistency. Using a spectrophotometer, you can do one final measurement on your ideal mixed blend. This gives you a benchmark reading that you can then use to compare all of your future perfume samples. Any changes in the perfume's color from this benchmark measurement could be a sign of an improperly-mixed product (which might impact how

the perfume smells). This is an especially useful tool to have if your employees hand-mix perfumes for customers on-demand — it ensures that your employees get the mix just right every time.

Additionally, you can go back and measure the color of the essential oils you used to make the off-color blend to note any changes in the oil quality. Sometimes, established oil manufacturers will swap out their original, high-quality products for cheaper (often different-colored) alternatives. By going back and measuring the oils that went into the off-color perfume blend, you can pinpoint any changes in specific oil colors and find a different source for that particular oil. This ensures that your customer always gets the best version of your blend, even if your oil sources change. The best spectrophotometer for a task like this will be capable of measuring a range of liquid colors and haze.

HunterLab Quality

Our experts at HunterLab can help you decide which features you need in an essential oil spectrophotometer, from haze measurements to accurate color readings for translucent liquids. We can also answer any technical questions that you have about our measurement tools and how to meet your color measurement challenges. Contact HunterLab's experts to determine which spectrophotometer will give you the most accurate readings on your perfume samples.

1. "Lavender Essential Oil", https://www.aromaweb.com/essential-oils/lavender-oil.asp
2. "7 Signs Your Essential Oils Are Fake", April 28, 2014, http://www.prevention.com/beauty/natural-beauty/7-signs-your-essential-oils-are-fake
3. "Annual Report on Essential Oils, Synthetic Perfumes", 1948, https://books.google.com/books/about/Annual_Report_on_Essential_Oils_Syntheti.html?id=ODegAAAAMAAJ
4. "Analysis of Perfume Quality", January 30, 2013, https://www.ncbi.nlm.nih.gov/pubmed/23597889