Textured products may leave behind residue or crumbs on the surface of the sample holder. As a result, operators usually have to clean the surface thoroughly before testing a new sample. Image Source: Wikipedia user SCEhardt

A popular food manufacturer has a huge number of different snack products in its line, from chips to cookies to crackers. But to determine whether these products are consistent in color from batch to batch, the manufacturer has to perform potentially hundreds of individual color quality control tests each day. This is an immensely time-consuming process; an operator could easily spend a full shift just preparing and testing these samples one by one if using a standard spectrophotometer. Not only does it take a great deal of time to perform these measurements, it sample preparation itself is often a laborious and time-consuming process; the operator has to thoroughly scrub the sample holder between measurements and check the instrument's sensor for scratches and stray crumbs. Even if the operator only spends five minutes cleaning and preparing the holder for each sample, this could add up to hours of extra work.

In many industries, sample prep is one of the most time-consuming steps in the color quality control process.[1]However, sample prep times aren't the same for every spectrophotometer. When you use a non-contact instrument like HunterLab's Aeros, you may significantly reduce the time and labor you spend preparing your samples.

Contamination Leads to Longer Prep Time

Contamination is a major challenge when you perform color quality control tests on a sample. This is an especially common problem with loose powder, oily samples, and textured samples, such as ground coffee or potato chips coated with seasoning. Products like these are more prone to contaminating future test samples because they contain very small particles that can be difficult to

spot with the naked eye.[2] Unless you spend time preparing each sample carefully and cleaning your equipment thoroughly between measurements, you may miss these small particles completely, ultimately interfering with the accuracy of subsequent measurements.

A good example of this is when you test a sample of cookies that are coated with powdered sugar. To prepare a cookie sample for color measurement, you typically have to house the sample inside of a plastic or glass holder with a protective lid. This lid prevents the sensor from touching the sample directly and getting damaged as a result. However, even if you use a protective lid to prevent your sensor from coming into direct contact with the cookie sample, you'll still have to clean out the powdered sugar residue that the cookies left behind inside of the sample holder. Any leftover powdered sugar in the holder can alter the color reading of your subsequent samples, skewing your results. This is why operators usually spend at least a few minutes thoroughly cleaning the surface of the holder in between readings.[3] And these minor cleaning preparations add up over time.

https://youtu.be/nd1Jt9LqR20

Non-Contact Spectrophotometers Prevent Contamination

When you use a non-contact spectrophotometer, you limit the risk of contaminating your samples and lower your prep time in the process. Unlike most spectrophotometers, with a non-contact instrument, the sensor never touches the sample or the sample holder directly. The Aeros, for example, automatically adjusts its height so that the sensor is always suspended just above the sample (this is what makes the instrument "smart"). You won't have to waste time cleaning or replacing a damaged sensor because your sensor remains undisturbed even after thousands of measurements.

Some non-contact spectrophotometers also reduce prep time by simplifying the cleaning process for the sample platform. The Aeros has a removable platform that can be cleaned and replaced within moments without having to clean or move the rest of the instrument. This removable platform is also durable, meaning that you won't have to clean out small grooves or cracks in the surface, saving you potentially hours of extra cleaning work over time. Additionally, all of the instrument's components are fully sealed, preventing any small particles from getting stuck. Overall, these features make it easier to maintain a clean instrument with minimal effort.

Finally, non-contact spectrophotometers limit prep time and minimize risk of contamination by eliminating the need for protective sample holders. Most spectrophotometers require you to use a sample holder that has a clear glass or plastic lid which protects the sensor from touching the sample and getting damaged; the sensor touches the plastic or glass instead. However, over time, this protective layer can become scratched and contaminated with sample particles. When this happens, the sensor can't accurately detect the color of the sample through the cloudy, scratched secondary surface, compromising the accuracy of your readings. To prevent this, you must replace your sample holder lids frequently and prepare every sample carefully to avoid scratching the lid. A non-contact instrument removes the need for this extra step, saving you time and unnecessary prep work.

If a sample holder becomes scratched, the sensor may not accurately detect the sample's color. Image Source: Shutterstock user Sergey Nivens

Non-Contact Instruments Can Measure Samples in Their Natural States

Another significant benefit to non-contact instrumentation is that you won't have to spend extra time preparing your samples or your sample holder for every measurement. With standard spectrophotometers, you usually have to alter your products slightly so that they fit within the instrument's small sample area. For example, you likely won't be able to measure large cookies using a standard contact spectrophotometer because the cookies won't fit within the instrument's limited parameters. Instead, you may have to grind the cookies into a powder and use a pressed powder holder to determine the overall color of the sample. Or, you may have to measure just one small section of cookie at a time. Not only does this take a great deal of preparation, it also may not yield the most accurate results.

HunterLab's Aeros saves you time and effort not only because samples can be measured in their whole form, but because it has the largest sample area of any spectrophotometer in the world. You won't have to press your products into a powder or measure your samples one at a time, but can analyze a sizable sample—or multiple samples—in its natural state. To use the instrument, you simply place your unaltered sample or samples onto the platform. The Aeros automatically adjusts its height and rotates the platform to take multiple measurements and then provides you with the results directly on the screen. Other than rinsing the removable platform off between measurements, there's no prep work required. By using non-contact color measurement technology, you can focus on testing your products thoroughly without worrying about small preparation details.

HunterLab Innovation

Contact us today to find out more about the innovative new Aeros and the benefits of non-contact color measurement technology. Our team of experts will walk you through all of the features of the

Aeros, including the instrument's advanced smart communications system and our proprietary Remote Access Support. With these and many other state-of-the-art features, the Aeros allows you to bring your color quality control program to new heights and gives you deeper insight into your products and processes than ever before.

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