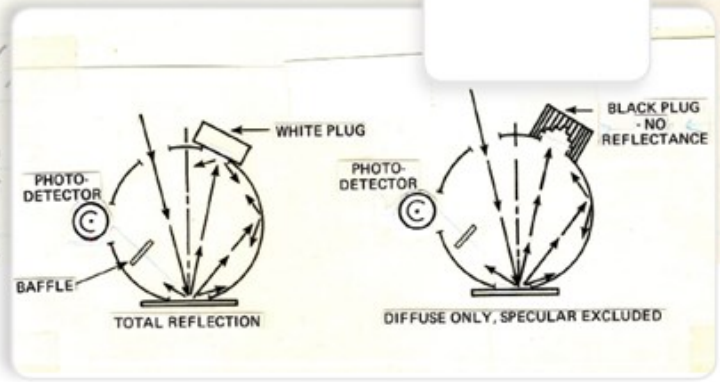
Applications Note

AN 1127



Making Non-Solid Samples Solid for Color Measurement

There are several types of samples that require special techniques so that the sample is actually presented to the instrument as a solid surface.

Abstract

HunterLab often states that the ideal sample for yielding repeatable color measurements is completely opaque or completely transparent, flat, smooth, homogenous, non-directional, non-photochromic (not affected by light), non-thermochromic (not affected by heat), and non-hygrochromic (not affected by moisture). What is not explicitly stated within this list is that the sample should also be solid.

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"What?" you may ask. "We measure liquid samples all the time." This may be true, but you don't measure a liquid sample directly or that liquid would damage the insides of the instrument. No, you pour a liquid sample into a sample cell or sample cup, which makes the surface presented to the instrument actually solid. There are several types of samples that require special techniques so that the sample is actually presented to the instrument as a solid surface.

Liquids

Transparent, translucent, and opaque liquids must all be placed in a container for measurement. Transparent samples would normally be placed in a glass transmittance cell and measured in the transmittance compartment of a diffuse/8° instrument such as the Vista, UltraScan PRO, or UltraScan VIS. Translucent and opaque liquids would either be placed in a glass sample cup and measured using a 45°/0° or 0°/45° instrument such as the Agera, ColorFlex EZ or placed in a glass transmission cell and measured at the reflectance port of a diffuse/8° instrument such as the UltraScan PRO or UltraScan VIS.

Transparent Liquid in a diffuse/8° instrument

Semi-solids

Translucent semi-solids, such as yogurt, baby food, and salad dressings, would either be placed in a glass sample cup and measured using a 45°/0° or 0°/45° instrument such as the Agera , ColorFlex EZ or placed in a glass transmittance cell and measured at the reflectance port of a diffuse/8° instrument such as the UltraScan PRO or UltraScan VIS.

Translucent liquid on diffuse/8° instrument

Powders

While powders are technically solids, like liquids they would damage your instrument if not contained or made even more solid. Powders may be pressed smooth into a plaque and measured using a glass sample cup and measured using a 45°/0° or 0°/45° instrument such as the Agera and ColorFlex EZ in the port-up orientation. Less preferred, but still possible, is measuring powder in a glass transmittance cell at the reflectance port of a diffuse/8° instrument such as the UltraScan PRO or UltraScan VIS.

Powder plaque

Semi-Solid on ColorFlex EZ

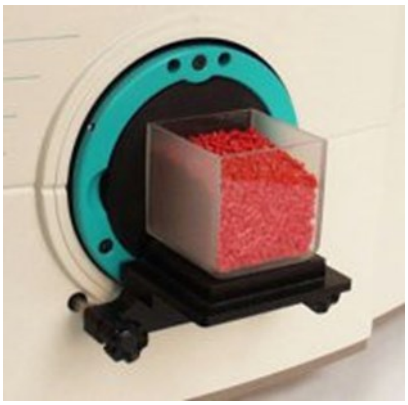
Pellets

Plastic pellets and similar items like rice and sugar must be measured in a batch rather than individually, which makes them more fluid than solid. They would either be placed in a glass sample cup and measured using a 45°/0° or 0°/45° instrument such as the Agera or ColorFlex EZ or placed in a glass transmittance cell and measured at the reflectance port of a diffuse/8° instrument such as the UltraScan PRO or UltraScan VIS.

Cup of pellets on ColorFlex 45/0

Large Particulates

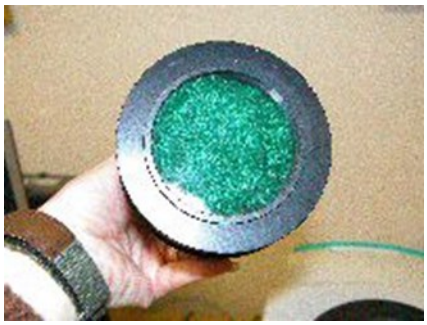
Items larger than pellets, but that still must be measured in a batch, include things like cereal, dog food, and even small plastic parts. These items would either be placed in a glass sample cup or dish and measured using a 45°/0° or 0°/45° instrument such as the Agera and ColorFlex EZ or placed in a glass transmittance cell or Petri dish and measured at the reflectance port of a diffuse/8° instrument such as the UltraScan PRO or UltraScan VIS.



Cell of pellets on diffuse/8° instrument

Textile Fibers

Like powders, textile fibers are technically solids. However, a transparent layer must be provided between the fibers and the sample port to keep the textile fibers in the proper place relative to the instrument optics, rather than having them enter the sample port. Normally, textile fibers are flattened to the bottom of a sample cup using the compression cell set available for the Agera, UltraScan PRO, and UltraScan VIS.



Compressed Fibers

Large Particulates in Petri Dish

About HunterLab

HunterLab is the technology leader in color measurement solutions, providing instruments, software, knowledge and service to a wide variety of industries.
With over 5 decades of experience in more than 65 countries, HunterLab applies our leading edge technology to your products helping you measure and communicate color simply and effectively.

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