ASTM D1003 Type A versus Type B Hazemeters

FAQ: "We have a HunterLab spectrophotometer – the UltraScan PRO –USPRO. We use it for color and transmission haze measurements quite often. Recently another group purchased a Haze meter to measure transmission Haze% from BYK. We have noticed that our USPRO system gives a 10% lower value compared to new BYK Haze meter. I was wondering if our system is out of calibration. Can you please help to resolve this issue?"

As long as your HunterLab USPRO passes its diagnostics tests, it is working fine.

There are two categories of instruments for measuring transmission haze that conform to ASTM D1003 - the Type A Hazemeter (BYK) and Type B colorimetric spectrophotometers (USPRO). Both are similar sphere-based instruments but not identical in design.

In keeping with other Type B instruments, the USPRO will measure about 2% low at the high end 30% end of the transmission haze scale (compare Table 3 versus Table 4 of ASTM D1003). This bias decreases at lower levels and both instrument designs match at 0 representing a perfect clear. Most of the bias, even at the high end, is lost in the typical measurement variation associated with measuring real world samples.

The Type A Hazemeter is the long standing classic design for measuring scattering but this haze and overall luminous transmission are all it measures. As the Type A design is the long standing historical haze meter design, should you end up in court arguing over a 1% difference in measured haze on a near transparent sample, the Type A Hazemeter is the arbiter.

However, the Type B colorimetric spectrophotometer such as the USPRO has much greater functionality in that it not only measures transmission haze and luminous transmission of transparent samples, it also measures full CIE color, yellowness index in reflectance and transmission for many types of samples which the Type A Hazemeter cannot do.

Both instrument types conform to ASTM D1003 but are not identical. The Type A Hazemeter is the arbiter but the USPRO has much more functionality.