

APPLICATION NOTE

Online Monitoring of Saybolt Color Using a ClearView® db Photometer

Purpose

To determine Saybolt color with our GUIDED WAVE™ ClearView® db filter photometer.

Measurement Background

Saybolt color (reference ASTM D156, ASTM D6045) is primarily used in characterizing fuels including automobile and aviation gasolines, jet fuel, diesel fuel and other petroleum products. The Saybolt color scale goes from 30, which is a barely perceivable yellow, to -16 which is a definite yellow. Standards for Saybolt color can be prepared by diluting a yellow dye solution with either dodecane or mineral oil, or they can be purchased commercially.

Experimental

A series of standards for Saybolt color (-11 to 25) were used to calibrate a ClearView db filter photometer. The ClearView db provides the ability to measure two separate sample locations online, in real time. The Saybolt color configured ClearView db has one analytical wavelength and one reference wavelength. The photometer is connected via fiber optics to a sample cell (flow cell or inline probe) with a 50 mm pathlength.

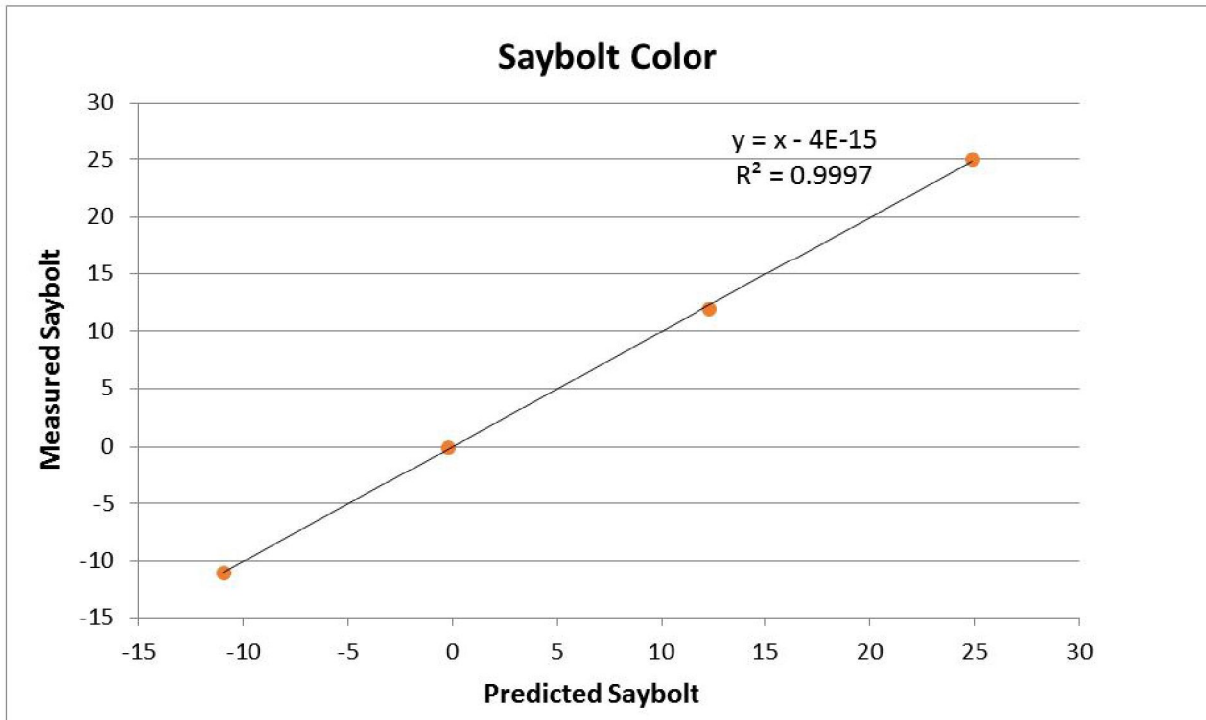


Figure 1

Results

The calibration results are shown in Figure 1, with an R^2 value approaching unity. (An R^2 value of 1 indicates a perfect correlation between the model and reference method). The ClearView db has long-term photometric drift of $<500 \mu\text{AU rms}$, which provides for excellent long term measurement stability.

Conclusion

The ClearView db photometer is an excellent choice for online, real-time Saybolt color analysis of samples from -16 (dark) to +30 (light). The pathlength can be specified to give the optimal sensitivity depending on the Saybolt measurement range. The ClearView db can be configured with 4-20 mA analog outputs and corresponding contact closure outputs to alert error states. Modbus communication over Ethernet is also standard.

The ClearView db is an outstanding choice due to its linearity and repeatability, as well as being a rugged work-horse in diverse process environments. It can also be configured for a variety of measurements in a wide range of applications. Visit the Process Insights website for full analyzer specifications.

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