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Application Note:

On-Line Monitoring of Saybolt Color with a ClearView® db Photometer

Purpose: To determine Saybolt color with the ClearView db fiber optic photometer.

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 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 dual beam filter photometer. The ClearView db provides the ability to measure two separate sample locations on-line, 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 nm pathlength.

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 µAU rms, which provides for excellent long term measurement stability.

Conclusions: The ClearView db photometer is an excellent choice for on-line, 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.

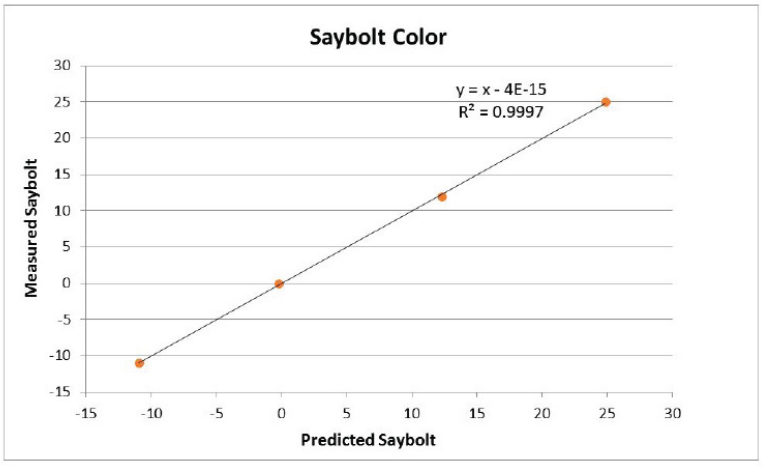

Figure 1

ClearView db Enclosure Options

Zpurge Unit
Class I, Division 2

ExProof Unit
Class I, Division 1

General
Purpose Unit

Process Insights
Premium Insights Into Process
GuidedWave

+1 916-638-4944 phone
+1 916-635-8458 fax

gwinfo@guided-wave.com
a Process Insights Brand

www.guided-wave.com

https://www.process-insights.com/

Literature: 3067-16-11-16

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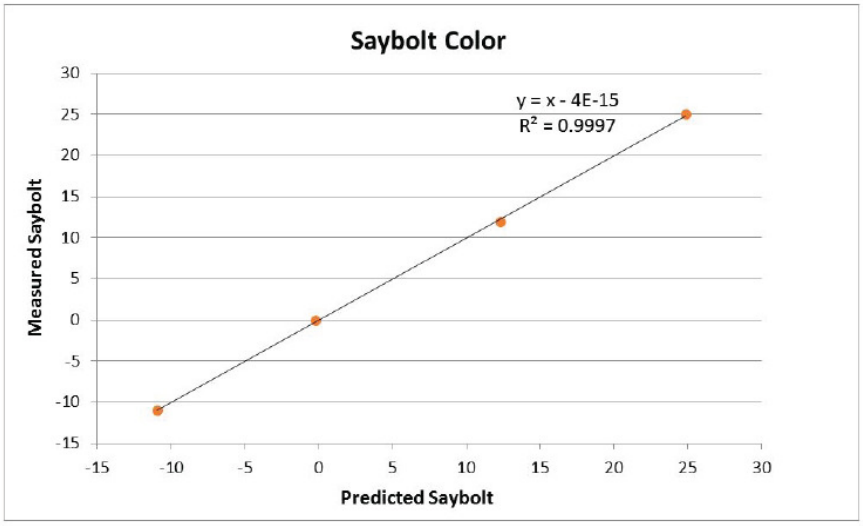

Figure 1

ClearView db Enclosure Options

Zpurge Unit Class I, Division 2

ExProof Unit Class I, Division 1

General Purpose Unit

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