



APPLICATION NOTE

No. 2.02 PETROCHEMICAL & OFFSHORE

SAYBOLT COLOR

- +30 to -16 Saybolt color scale (ASTM D 156)
- Color of refined petroleum products
- Real time continuous measurement
- Zero maintenance
- High temperature operation - up to 275°C / 527°F (process and ambient)
- High pressure operation
- For use in zone 1 hazardous areas (EExD)

The ASTM D 156 Saybolt color scale is used in the petrochemical and pharmaceutical industries to grade the yellowness of pale liquid products and to monitor product contamination. The Saybolt color scale is applicable to a wide range of petroleum products, such as undyed motor and aviation gasoline, jet propulsion fuels, naphthas and kerosene, in addition to petroleum waxes and pharmaceutical white oils.

The Saybolt color scale traditionally relies upon matching a standard colored disc viewed through an adjustable volume of sample. This one dimensional color scale is prone to operator bias and error due to slight variations in the way different operators will perceive color. In essence, color is simply how our brains respond to different wavelengths of light and such a process can be standardized and automated using a [Kemtrak DCP007](#) photometer.

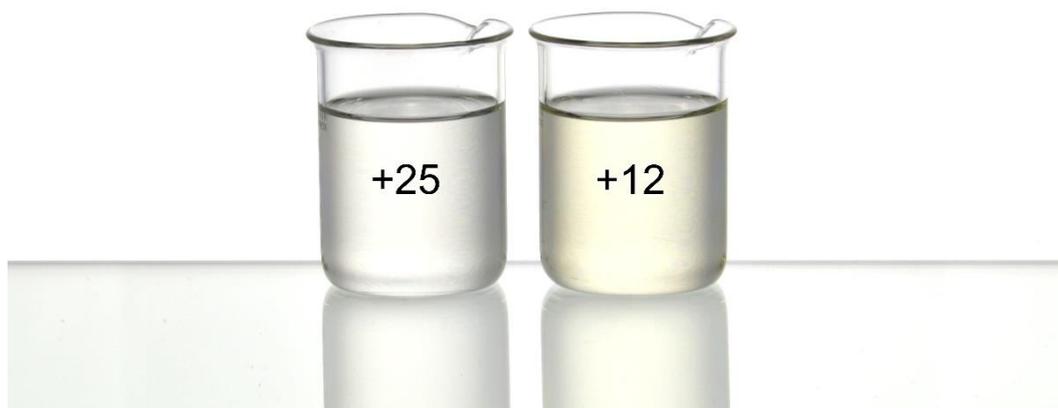


Kemtrak 4" ANSI ASME B 16.5 150lb RF 316L zero maintenance industrial fiber optic measurement cell.

APPLICATION

The Saybolt color scale is accurately measured using a [Kemtrak DCP007](#) process photometer.

The [Kemtrak DCP007](#) utilizes a long life LED light source, precision optical filters and robust industrial grade fiber optics to provide a Saybolt color analyzer with outstanding performance and reliability. A proprietary dual wavelength four channel measurement technology ensures precise trace color measurement. A primary "absorbing" wavelength approximates the perception of the human eye, while a secondary reference NIR wavelength not influenced by the sample color is used to compensate for turbidity and/or fouling of the optical windows.



Since optic fibers are used to transfer light to the measurement point and back, the measurement cell contains no electronics, moving parts or sources of heat and is well suited for hazardous and extreme environments.

INSTALLATION

A colorless solution has a Saybolt color value of +30, corresponding to the maximum distance one could see a standard colored disc viewed through a volume of sample. The strongest measureable Saybolt color value is -16.

The instrument should be configured for the desired measurement range for maximum resolution and accuracy. The measurement range must be specified at time of ordering as it will influence the optical measurement path length and measurement wavelength required. For applications where sample contamination is being monitored, the Saybolt color scale range often selected is +30 (colorless) to +10 Saybolt color units using a long measurement optical path length (*typically 10cm or longer*) and a two point factory calibration.

The measurement cell can be installed in various process environments with a continuous maximum process and ambient temperature rating of 275°C.

NIST-traceable validation filters are available to verify analyzer performance without process interruption.

Note:

- (1) *The Saybolt color scale is similar to that of the Platinum-Cobalt (Pt-Co)/Hazen/APHA color scale (ASTM D 1209, ISO 6271-1). See application note 9.01 Water & Environment, Water Color.*
- (2) *For darker colored oils & hydrocarbons, the ASTM D 1500 color scale should be used. See application note 4.01 Petrochemical & Offshore, ASTM D 1500 Color.*



Kemtrak DCP007 industrial photometer housed in an ATEX EExD zone 1 explosion proof enclosure