

APPLICATION NOTE**No. 4.01 PETROCHEMICAL & OFFSHORE****ASTM D 1500 Color**

- 0 – 8 ASTM D 1500 Color Scale
- Manufacturing quality and control
- Real time continuous measurement
- Zero maintenance
- High temperature operation - up to 275°C / 527°F (process and ambient)
- For use in zone 1 hazardous areas (EExD)

The ASTM D 1500 color scale is applicable to a wide range of petroleum products, such as lubricating oils, heating oils, diesel fuel oils and petroleum waxes. The ASTM D 1500 color scale is the principal quality measurement used for the purchase and sale of partially refined oils.

As an oil is refined, there exists a correlation between the color of the distillate and the degree of refinement. During the refining process, crude oil is transformed into a range of products with distinct colors ranging from the dark red-black of crude through to the pale yellow hue of the lighter fractions. The distinct petroleum colors can be accurately measured and the refinement process controlled using the ASTM D 1500 color scale.

The ASTM D 1500 color scale is also used for product and interface detection, and for product contamination monitoring.

**APPLICATION**

The ASTM D 1500 color scale is accurately measured using a [Kemtrak DCP007](#) process photometer.

The [Kemtrak DCP007](#) uses a long life LED light source, precision optical filters and robust fiber optics that provides an ASTM D 1500 color analyzer with outstanding performance and reliability. Thanks to a proprietary dual wavelength four channel measurement technology, highly colored to trace color detection is no problem. The primary “absorbing” wavelength approximates the perception of the human eye, while a second 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 pipe 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 environments

INSTALLATION

The instrument should be configured for the desired measurement range for maximum resolution and accuracy. For full range operation (0 to 8 ASTM D 1500 color) the maximum optical path-length is 2cm. Please contact Kemtrak for specific configuration details at different measurement ranges.

The [Kemtrak DCP007](#) utilizes a broad spectrum white LED light source with a custom broadband optical filter for the primary color measurement and a NIR LED light source for the reference measurement. The high performance LED light sources should last for the lifetime of the instrument.

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: For the measurement of refined products that have an ASTM D 1500 color value of <0.5, please refer to Kemtrak application note No. 4.02 ASTM D 156 Saybolt Color



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

Left: Kemtrak DIN DN50 (2") PN16 316L measurement cell with integrated NIST validation accessory.

