Technical Notes
030

Exceeding Expectations

Color Testing

The determination of the color of petroleum products is an important quality characteristic and is used mainly for manufacturing control purposes. To learn more about this property, let's apply the **AmSpec** approach.

A = Application

The color of a product is one of the first indicators that reflects the quality of the product. The petroleum industry uses the D156 Saybolt Color for measuring and defining the color of hydrocarbon solvents. For products lighter in color, D1209 Platinum-cobalt system is used. For products that are darker, D1500 ASTM Color should be used.

Various sources have reported that a Saybolt color of +25 is equivalent to 25 in the platinum-cobalt system. However, because of the subjective manner in which the measurements are made and the differences in the spectral characteristics of the various color systems, exact equivalencies are difficult to obtain.

Figure 1 - D1209 Platinum-Cobalt Color Scale Showing Light (5) to Dark (60)

M = Methods

The most common method that AmSpec uses to determine the color of various products are:

D156 - Saybolt Color of Petroleum Products (Saybolt Chromometer Method)

D1209 - Color of Clear Liquids (Platinum-Cobalt Scale)

D1500 - ASTM Color of Petroleum Products (ASTM Color Scale)

D6045 - Color of Petroleum Products by the Automatic Tristimulus Method

S = Scope

Method	Products	Scope
D156	Undyed motor and aviation gasoline, jet propulsion fuels, naphthas, kerosene, petroleum waxes, and pharmaceutical white oils.	-16 (darkest) to +30 (lightest)
D1209	Essentially light colored liquids.	1 (lightest) to 8 (darkest) for very light products, 5 (lightest) to 60 (darkest) for light products
D1500	Lubricating oils, heating oils, diesel fuel oils, and petroleum waxes.	0.5 (lightest) to 8 (darkest)
D6045	Undyed motor and aviation gasoline, aviation turbine fuels, naphthas, kerosene, pharmaceutical white oils, diesel fuel oils, heating oils, and lubricating oils. Waxes may be ran with careful preparation.	Results are a 1:1 correlation to both D156 and D1500. D156 = 0 to +30 (dark to light) D1500 = 0.5 to 8 (light to dark)

** *Please note below,* ***Turnaround Time*** *is defined as the actual length of time, on average, it takes to perform a particular method once the sample has arrived and logged in the lab, and prepared for testing.*

P = Procedure Notes

Method	Limitations	Instrumentation	Turnaround Time
D156	For products darker than -16, use D1500.	**Saybolt Chromometer**	10 Minutes
D1209	Only used for products with color-producing bodies present that have light absorption characteristics nearly identical with those of the platinum-cobalt color standards used.	**Color Comparator**	5 Minutes
D1500	Samples darker than an 8 can be diluted with Kerosene and reported as a diluted color.	**Colorimeter**	5 Minutes
D6045	Not for solid samples, cloudy samples*, products containing dye, and products that have an extreme fluorescence. *Filter before running.	**Tristimulus Filter Colorimeter**	5 Minutes

E = Equivalents

ASTM	IP	ISO	DIN	JIS	AFNOR
D156			51411	K2580	M07-003
D1209					
D1500	196	2049	51578	K2580	T60-104
D6045					

If you would like to be removed from our distribution list or you require information on a certain subject, please let us know via return email.
Also, please be advised individual / group AmSpec laboratory / operational tours can be arranged upon request.

C = Cause & Effect

The property of color of a solvent varies in importance with the application for which it is intended. The presence or absence of color in a material may be an indication of the degree of refinement to which the solvent has been subjected or of the cleanliness of the shipping or storage container in which it is handled. When the color range of a particular product is known, a result outside the established range can indicate possible contamination with another product or a long term stability issue.

However, color is not always a reliable guide to product quality and should not be used indiscriminately in product specifications. If there is a doubt or concern, call your AmSpec contact for technical and testing support.

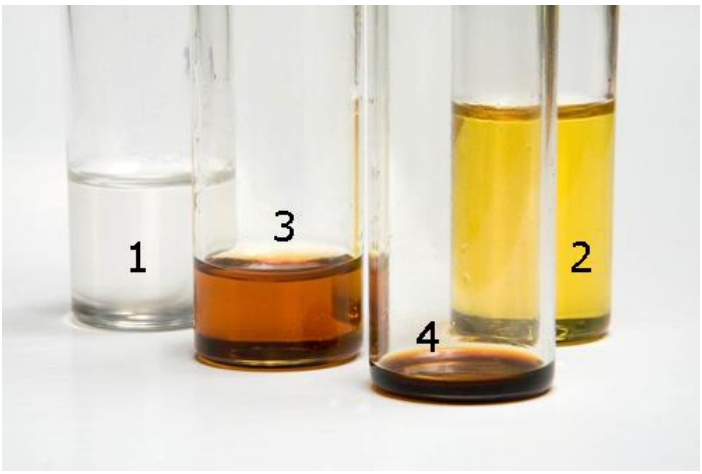

Figure 2 - D1500 ASTM Color Showing Light (1) to Dark (4)

For any questions about these methods, please contact Jennifer Nesci at JNesci@amspecllc.com

Also, please download the new & improved AmSpec Smart Phone app for a number of useful conversion tools and information.