

Color is a key indicator of quality in petroleum-based products and developing a color range is an important part of the refinement process. A color range can often be used for monitoring contamination and quality control. Petroleum-based products make up a wide variety of manufactured goods; with consumers relying on color for acceptability, it's crucial to meet the quality standards of visual perception.

There are several test methods available for determining the color of refined oils and these are necessary for addressing the use of petroleum within a variety of applications. From fuel sources to pharmaceuticals, color analysis plays an important role in developing products that are high in quality and safe for use. Spectrophotometric determination and quantification of color is commonly used for developing color range measurements needed for monitoring variations in processing and meeting standardization requirements.

Saybolt and ASTM color standards

The advanced refinement process for petroleum based product requires set measurements and color range parameters. These guidelines are imperative in meeting standardization process regulations for ensuring product compliance, quality, and safety. The two color scales primarily used for measuring petroleum products are the Saybolt and ASTM color¹. These systems use a color range scale of liquid petroleum based on a range of lightness to darkness. Spectrophotometers employ a visual comparison method to quantify these variations in the color range and visually match them with the appropriate number on the color scale.

[Spectrophotometry is the preferred method of analysis in ASTM and Saybolt color scale evaluation](#) for many reasons: instrumentation is both durable and portable, making it ideal for laboratory and manufacturing settings. This rapid and easy-to-use tool provides repeatable information that can be used to develop the color range parameters needed to classify various petroleum-based products for specific application and usage.

Applications of color range measurements

In many cases, color is “an indication of the degree of refinement of the material. When the color range of a particular product is known, a variation outside the established range can indicate possible contamination with another product.”² Color range measurements can determine the color of a “wide variety of petroleum products such as undyed motor and aviation gasoline, aviation turbine fuels, naphthas, kerosene, pharmaceutical white oils, diesel fuel oils, and lubricating oils.”³ Understanding and utilizing color range measurement is critical for proper petroleum usage for [chemical analysis in the petrochemical industry](#). Determining the purity of raw materials dictates the use of these materials, ensuring both safety and quality; thus, the right instrumentation is crucial for quantifying the color range and meeting standards and regulations in the petroleum industry.

Instrumentation and measurement procedures

Spectrophotometric determination of color range requires various sample mediums based on petroleum product application and refinement stage. Instrumentation design to accommodate a variety of sample sizes and viscosities is important for developing the appropriate color range scale, while still ensuring accuracy and ease of use.

Full article with photos available here:

<https://www.hunterlab.com/blog/color-chemical-industry/determining-color-range-in-petroleum-products/>