Introduction

Liquid Color

Color of transparent liquids like varnishes, lacquers, shellacs, drying oils, fatty acids and resin solutions has been evaluated visually since the late 1800s. A change in color can indicate contamination or impurities in the raw materials, process variations caused by heating and oxidation, or degradation of products exposed to weathering over time.

For simplicity, one dimensional scales for yellowness were established, e.g., Gardner Color Scale, American Public Health Association (APHA) and Hazen, Saybolt, and Iodine (Hess-Ives).

In the visual test the yellowness is determined by pouring the sample into a tube and comparing it to a known standard. The standard that the sample falls closest to then becomes the value for the liquid. This procedure is highly subjective due to variations of observers, illumination and to some extent the standards themselves.

Quality control systems like ISO 9000 demand objective measurements using instrumentation that gives reliable data on a consistent basis.

Correlation equations were developed to link visual observations to instrumentally measured values.

Most products are not strictly yellow and therefore require a three dimensional description of color: red/green, yellow/blue and light/dark differences. Modern instruments read this information by the use of standardized color scales like CIE L*a*b* or L* C* h°.

BYK-Gardner offers a complete line of visual color comparators for quick evaluation, as well as, objective instrumentation for liquid color measurement, tolerance setting and pass/fail analysis.

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