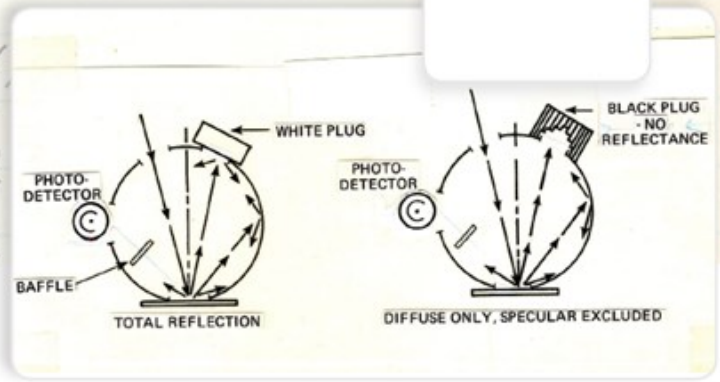
Applications Note

AN 1059



Spectrophotometric Measurement to Determine Alcohol Content in Beverages

With little tolerance for error . . . manufacturers must employ tight monitoring to ensure they meet the regulations that will allow them to sell and market their products.

Abstract

Federal regulations require alcoholic product manufacturers to adhere to strict guidelines regarding alcohol content both for the purposes of accurate labeling and for classification. In the case of liquor, these guidelines call for specific percentages of alcohol content in not only the bottled liquor product but at various points of the manufacturing process. Spectrophotometers offer precise measurements to optimize your ability to consistently produce the desired alcohol levels and immediately alert operators when alcohol levels are out of spec, allowing them to take swift corrective action.

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Challenge: To measure alcohol content for Quality Control

Consumers rely on accurate claims by liquor manufacturers in order to make informed decisions regarding the type and quantity of alcoholic beverages consumed. For example, wine with 17% alcohol content may not be a prudent choice for a dinner party where guests expect to linger over several bottles. Similarly, a whiskey connoisseur may have very specific preferences regarding the exact percentage of alcohol she prefers to optimize her enjoyment. However, it is not only the consumer choice that may be affected by alcohol content labeling; inaccurate advertisement of alcohol levels present in a product can damage consumer confidence and lead to legal complications. In 2013, a class action lawsuit was launched against Anheuser-Busch, accusing the beer producer of watering down its products and misleading consumers by overstating alcohol content. While the lawsuit was ultimately dismissed and independent sources found that the products in question did contain the advertised levels of alcohol, the case highlights the importance of alcohol content measurement and labeling both legally and to preserve brand reputation within the marketplace.[1]

Whiskeys must meet strict guidelines in order to be classified as bourbon. Image Source: Flickr user Joseph

Regulating Alcohol Content Throughout Manufacturing

Federal regulations require alcoholic product manufacturers to adhere to strict guidelines regarding alcohol content both for the purposes of accurate labeling and for classification. In the case of liquor, these guidelines call for specific percentages of alcohol content in not only the bottled liquor product but at various points of the manufacturing process. For example, whiskey must be distilled at less than 190 proof and bottled at a minimum of 80 proof.[2] Depending the exact characteristics of the whiskey, it may then be eligible for inclusion in specific whiskey subtypes. For example, in order to fit the criteria for bourbon, whiskey "must be distilled to a maximum strength of 160 proof, bottled at a strength of at least 80 proof, and barreled for aging at no more than 125 proof."[3] With little tolerance for error (+/-.15% by volume), manufacturers must employ tight monitoring to ensure they meet the regulations that will allow them to sell and market their products.

Integrating spectrophotometers in the alcohol manufacturing process ensures optimal quality control. Image Source: Flickr

Spectrophotometric Measurement of Alcohol Content

Traditionally, alcohol content measurement has been a laborious process employing Density Meter Analyzers (DMAs) to determine the density of the product. DMA measurement is prone to inaccurate analysis due to the inclusion of solid particles in some alcohol manufacturing processes; accounting for these solid particles in order to produce accurate results is time consuming and can impede efficiency. By integrating advanced spectrophotometric instruments in the alcohol distillation and blending process, manufacturers can move past the limits of DMAs and seamlessly integrate alcohol content measurement in their production lines.

Spectrophotometers offer precise measurements to optimize your ability to consistently produce the desired alcohol levels and immediately alert operators when alcohol levels are out of spec, allowing them to take swift corrective action. These sophisticated instruments may be used at various critical points in the manufacturing process to guarantee that your product stays within the required range throughout distillation, barreling, and bottling. Flexible and versatile, spectrophotometers may also be used for additional quality control parameters, such as enzymatic analysis to measure the sugar content in alcoholic beverages. [4] By moving away from time-consuming alcohol content measurement processes, you can optimize efficiency and reduce costs while gaining greater control of your production.

Innovation in Color Measurement

For over 60 years, HunterLab has offered the most advanced spectrophotometric instruments available, allowing manufacturers of alcoholic beverages to maximize quality control. Our nnovative technologies offer highly customizable, easy-to-use solutions to meet government regulations, consumer expectations, and your own standards of excellence.

References

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About HunterLab

HunterLab is the technology leader in color measurement solutions, providing instruments, software, knowledge and service to a wide variety of industries. With over 5 decades of experience in more than 65 countries, HunterLab applies our leading edge technology to your products helping you measure and communicate color simply and effectively.

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