

Application Note



No. 1051.01

Citrus Scores

. . . Measure the color of fresh and concentrated orange, grapefruit and lemon Juice

Abstract

Color is often used as an indication of quality and freshness for food products. This is the case for orange juice where a red-orange color is preferred. Originally, orange juice manufacturers used subjective methods for measuring color. The subjective method used involved the visual comparison of orange juice in a standard glass tube to a set of United States Department of Agriculture (USDA) plastic comparators, also in glass tubes. As with any subjective method, the results were inconsistent.

Challenge: To measure objectively Citrus Samples.

In the 1950s and 60s, research was done by a number of companies in the hopes that they could produce an instrument for objective measurement of the color of orange juice. HunterLab developed the D45 Citrus Meter which is no longer manufactured. The current HunterLab instrument for measurement of orange juice is the ColorFlex 45/0. This is a compact spectrophotometer that can be used to measure the color of fresh and concentrated orange, grapefruit and lemon Juice contained in the same kind of glass tube that was used for the visual comparison method. It can show citrus score values through hitch standardization with an OJ4 plastic standard.

Conditions for Measurement

Instrument: ColorFlex Citrus

Measurements: The system comes complete with a sample tube holder, stand, clamp and a calibrated plastic O.J. standard. The instrument has a large, easy-to-read display and a sealed keypad. It requires very little bench space, and is very easy to use. In practice, the juice sample is poured into a test tube or capped tube. The tube is inserted into the instrument tube holder. By pressing one button on the instrument the measurement is made. CN (Citrus Number), CR (Citrus Redness) and CY (Citrus Yellowness) will simultaneously be displayed. The ColorFlex EZ Citrus can be connected to a printer if hard copy data is desired.

Citrus Scores Setup:

The Citrus Color is stored in the ColorFlex EZ's memory when configured at the factory.

From the **MAIN MENU**, press the **DOWN ARROW** key until the product setup screen is reached. Press **GO** to select a setup.

Press the **UP** or **DOWN ARROW** to select the **CITRUS COLOR SETUP** or **OTHER JUICES**. Press **GO** to continue.



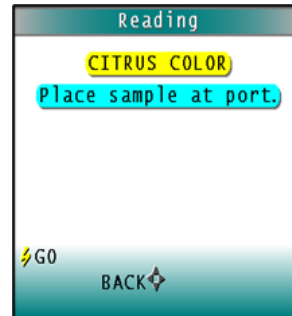
Select **READ** from the ColorFlex EZ Citrus's **MAIN MENU**. Move the cursor to highlight its position using the **UP** and **DOWN ARROW** buttons and then press the **GO** button.

When beginning measurements of Citrus products, it is recommended to read the hitched Citrus Standard as a Performance Qualification check. If the instrument is still hitched correctly, it should read the assigned Hunter Lab C/2 values closely. If not, reset the hitch to the OJ4 Standard as described under **USING A HITCH TO THE CITRUS OJ Standard**.

To measure a sample, pour the sample into an empty sample tube until it is almost full.

Place the sample tube into the tube holder.

Measure the sample by pressing the **GO** key .



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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