

## EasyMatch® QC Lesson 4

### Using a Hitch Standard

Hitch standardization can be used to make your instrument read samples of a particular color the same way as another instrument, improving agreement. If a product standard has been measured on another instrument (primary readings) and color or spectral values have been assigned to it, then your instrument can be adjusted to those values (secondary readings) so that samples you read are corrected for any differences between the two instruments.

To perform a hitch standardization, you need a standard with either color values or spectral values assigned to it. Your instrument should already be attached to the computer and installed in EasyMatch QC before performing this lesson.

- 1) **Standardize the Secondary Instrument.** Standardize the instrument in the same mode in which the hitch standard's color values were obtained. In this example we'll use RSIN (reflectance) mode.
- 2) **Measure the Hitch Sample.** Place the hitch sample measured on the primary instrument at the measurement port. Measure it on the secondary instrument as a **Standard** from the **Measurements** menu.
- 3) Assign Values to the Hitch Sample.
  - a) Select (check) **Job Tree** in the **View** menu if it is not already displayed.
  - b) Right click on the standard you just read in the Job Tree and select **Properties** from the menu that appears.
  - c) Click on the **Hitch** button. The Hitch Readings to Standard screen appears.

	L*	a*	b*
As Read	93.23	-0.81	-0.54
Target			

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- d) Select whether the assigned values are spectral or tristimulus (color values). We happen to have tristimulus values.

- e) Choose whether you wish to use a ratio or additive hitch. For this lesson, choose Additive.

An **additive hitch** is a simple linear offset from the values measured using your instrument. The value displayed in the Color Data Table for each parameter (such as L, a, and b) is the measured value plus the offset value indicated by the hitch standard. The offset value may be positive or negative and is automatically calculated by EasyMatch QC. When performing an additive hitch, the hitch standard should be very close in color to the samples you wish to measure using the hitch. For example, a reddish-orange standard should be used when measuring tomato products.

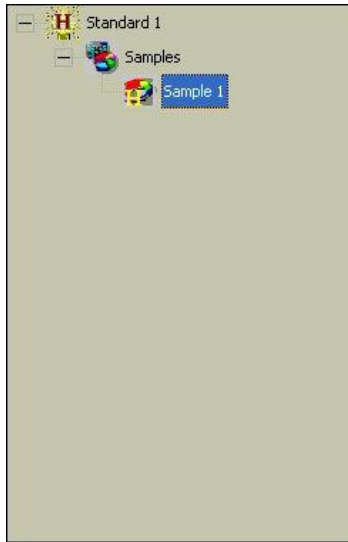
A **ratio hitch** is a ratio multiplier of the values measured using your instrument. The value displayed in the Color Data Table for each parameter (such as L, a, and b) is the measured value times the ratio value determined by the hitch standard. The ratio value is automatically calculated by EasyMatch QC. The ratio hitch is slightly more robust than the additive hitch for measuring samples of varying colors.

- f) Choose the color scale and illuminant/observer for which you have hitch standard measurements. We happen to have CIELAB values using D65/10°. Type the assigned values into the cells next to the word “Target” and click **OK** twice. In this case, type in 94.00 for L\*, -1.00 for a\*, and 1.00 for b\*.

	L*	a*	b*
As Read	93.34	-0.78	-0.28
Target	94.0000	-1.0000	1.0000

*Note: When using a tristimulus hitch you should enter hitch values using the same illuminant/observer as you wish to use for measurements. The software cannot calculate measurement values for a different illuminant/observer when a tristimulus hitch is being used.*

- 4) **Read Samples with the Hitch Standardization.** Read the samples you wish to adjust according to the hitch, associating them with the standard you just hitched. Samples on the branches for other standards will not be hitched. If, at any time, you wish to stop using the hitch associated with this standard, simply access the Hitch Readings to Standard screen again, and check the box next to “Disable Hitch Temporarily.” The items that are hitched will be shown in the Job Tree with a special “H” icon to indicate that they are hitched.



*Note: Geometric differences between instruments cause differences in measured values, as can differences in sample preparation. Hitch standardization is recommended for use only among instruments with the same geometry and using a set procedure for sample preparation.*