

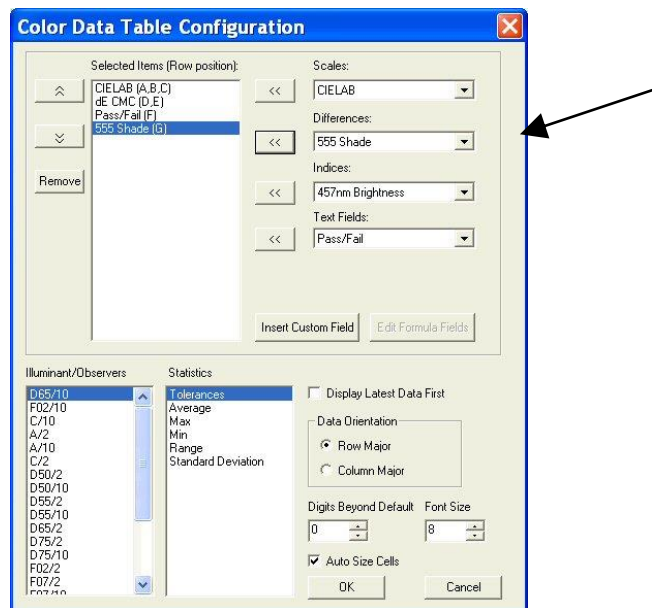
## EasyMatch® QC Lesson 10:

### Obtaining Shade Numbers

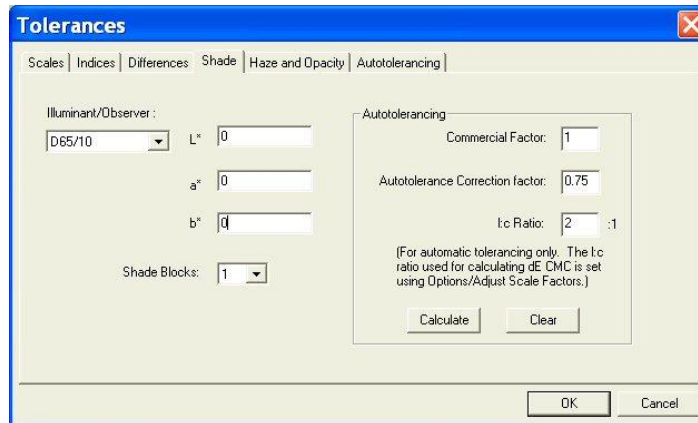
Shade numbers provide a convenient way of sorting samples into groups of similar color. This is helpful in situations where several separate pieces will be combined into a whole and the colors of the pieces must be closely matched.

In order to use shade numbering, you must first read or recall an ideal product standard into your job then enter your desired tolerances for the standard. These tolerances will provide the borders on which your shade blocks will be based. Auto-tolerancing may be used to calculate these tolerances if desired, but manually-entered tolerances work just as well. In this lesson, we will demonstrate both methods.

1. **Open the job** you created and saved in Lesson 6.
2. **Select A Standard and Tolerances.** Click on the standard created in Lesson 6 and look at the Color Data Table to confirm that the automatically-generated tolerances are listed there. Write down the tolerances for  $L^*$ ,  $a^*$ , and  $b^*$ .
3. **Open the Color Data Table Configuration** and add the “555 Shade” Difference to the display.



- a. Right-click on the standard in the Job Tree and choose **Properties** from the menu that appears.
- b. On the Standard Properties screen that appears, click the **Tolerances** button.
- c. On the Tolerances screen, click the **Shade** tab.

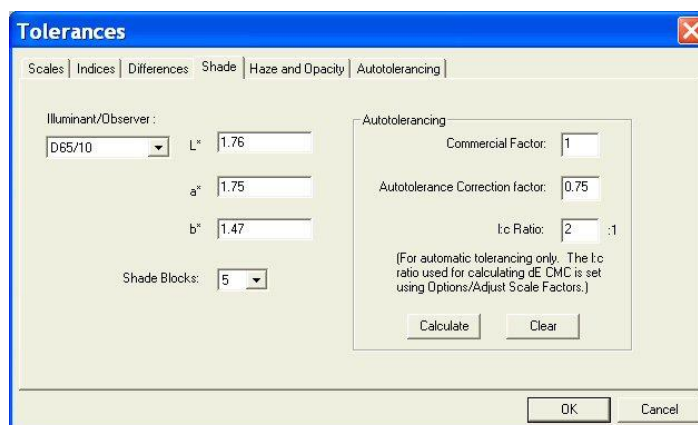


- d. Drop down the box next to Shade Blocks and select the number of shade blocks you wish to have fit inside your tolerance. For this lesson, select 5.
- e. Look at tolerances you wrote down in Step 2. If the positive and negative values for each parameter ( $L^*$ ,  $a^*$ , and  $b^*$ ) do not match exactly, calculate the average of the two.

*Note: If we had not already automatically generated tolerances for this standard in Lesson 6, you could do so now on the **Shade** tab by clicking the **Calculate** button.*

- f. Enter the average number for  $L^*$  into the First Trace tolerance box.
- g. Enter the average number for  $a^*$  into the Second Trace tolerance box.
- h. Enter the average number for  $b^*$  into the Third Trace tolerance box.

*Note: Do NOT divide your overall tolerance by the number of shade blocks. The software will do this for you.*



- i. Click **OK** twice to accept the shade tolerances. They will not be shown in your Color Data Table, but will be used in calculating the shade numbers that will be displayed for each sample read.

4. **Read a sample** that is close in color to the standard and link it with the standard for which we just altered tolerances. Its shade number will be displayed along with its color values.

ID	L*	a*	b*	dE CMC	dE CMC (1:c)	Pass/Fail	555 Shade
Standard 1	92.94	-2.56	22.62				
+Tolerances	2.16	1.10	1.75	1.00			0
-Tolerances	2.16	1.13	1.75	1.00			0
Sample 1	93.18	-2.52	22.51	0.11	2.00 : 1.00	Pass	555

5. Read another sample, one that is further from the standard than the first one and link it to the same standard. Once the data is displayed in the Color Data Table, click the 555 Shade column header to sort the measurements based on their shade numbers.

ID	L*	a*	b*	dE CMC	dE CMC (1:c)	Pass/Fail	555 Shade
Standard 1	92.94	-2.56	22.62				
+Tolerances	2.16	1.10	1.75	1.00			0
-Tolerances	2.16	1.13	1.75	1.00			0
Sample 2	92.54	-3.20	21.92	0.76	2.00 : 1.00	Pass	544
Sample 1	93.18	-2.52	22.51	0.11	2.00 : 1.00	Pass	555

6. **Read a new standard.**

- a. **Apply L\*, a\*, and b\* tolerances** (D65/10) of  $\pm 1$  to this standard for each parameter of the color scale.
- b. Also **enter shade tolerances** of this value (1) for L\*, a\*, and b\* for this standard and choose to use 5 shade blocks.
- c. Read a sample and link it to this new standard.
- d. Observe the shade number for this sample in the Color Data Table.

ID	L*	a*	b*	dE CMC	dE CMC (1:c)	Pass/Fail	555 Shade
Standard 2	92.57	-3.15	22.02				
+Tolerances	1.00	1.00	1.00	1.00			0
-Tolerances	1.00	1.00	1.00	1.00			0
Sample 3	92.41	-3.15	22.05	0.06	2.00 : 1.00	Pass	455

- e. Save the job and save each standard to the database. The new tolerances will be saved with each standard.