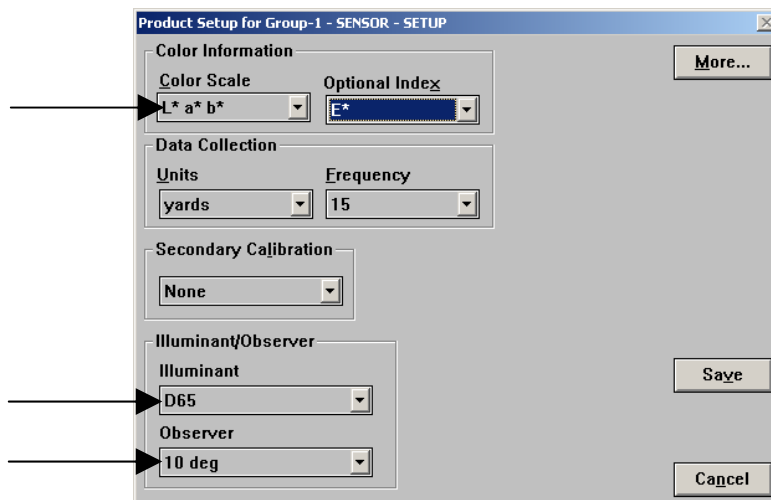# Applications Note

Establishing a Numeric Standard in MultiSensor Software for SpectraProbe XE

There are two methods for establishing a numeric product standard using MultiSensor Software and the SpectraProbe XE. The most statistically valid method is to accumulate data for at least ten runs of good product and calculate the average color values from these runs. This method is described in the first section below. In some cases, however, you may need to establish a numerical standard quickly and might be willing to use a less accurate method. This method is given in the second section below.
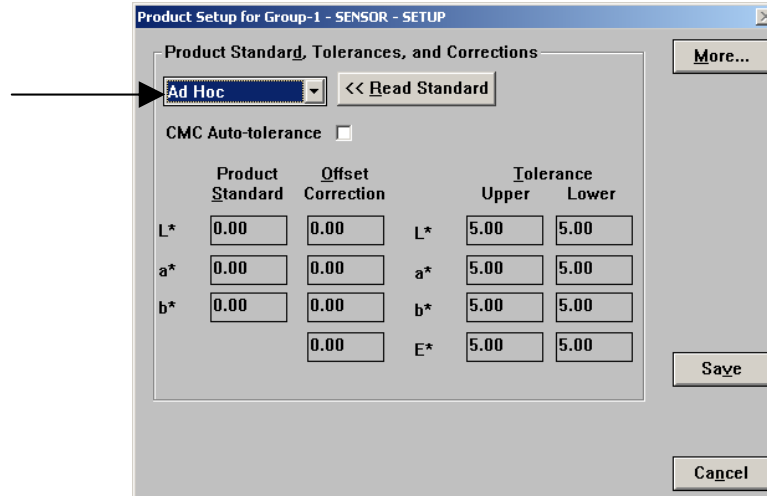
Statistical Method

Perform the following steps to complete the statistical method for determining a numeric product standard:

1. Open MultiSensor XE Software.

2. Choose **Offline** from the main toolbar.

3. Select **Product Setup Editor** from the Offline Functions Menu.

4. On the first page of the Product Setup screen, select the color scale, illuminant, and observer you wish to use for your numeric standard. In this example, we will use CIELAB and D65/10°.


5. Click **More**.

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6. On the second page of the Product Setup screen, select Ad Hoc for the product standard type.

7. Click **Save**. You will be prompted to name the new product setup. Type the name desired and click **OK**.

8. Start good product that is as close to the desired standard for the product as possible running under the SpectraProbe XE.

9. Click **Start** from the main toolbar to begin a run.

10. When the run is complete, or when standard product is no longer being presented to the SpectraProbe XE, click **End**.

11. Complete Steps 8-10 nine more times using this product setup.

12. Click **Offline** on the main toolbar.

13. From the Offline Functions Menu choose **Archive Viewer**. A list of runs will be shown.

14. Click the first run you made in this process. On the right side of the screen, select 1:1 for the Compression Ratio.
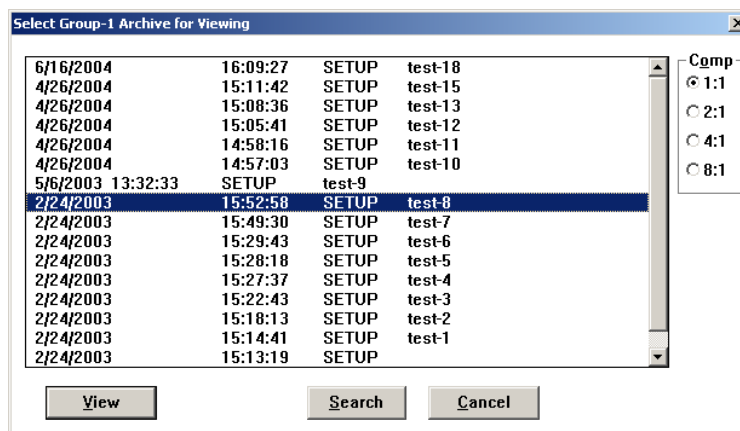
15. Click **View** to view the data for this run in the archive viewer.

16. Click **Tabular** on the archive viewer's toolbar.

17. Locate the columns for the components of the color scale (L*, a*, and b* in our example) and highlight them.

18. Click **Copy** to copy the columns to the Windows clipboard.

19. Open another Windows-based program where you can paste the data. Microsoft Excel or another spreadsheet package is recommended, but a word processing program or Windows Notepad will also work.

20. Open the **Edit** menu of this Windows program and choose **Paste**. The data you highlighted in MultiSensor Software's archive viewer will be pasted into the Windows program.

21. Back in MultiSensor Software, click **Done** to exit the archive viewer for this run.

22. Complete Steps 14-21 for the additional nine runs you made for this product, pasting the data from each run at the bottom of the Windows program's file.

23. Calculate the average for each of the three parameters of your color scale (L*, a*, and b* in this example) for all of the data in the Windows program's file. If you are using a spreadsheet, it can automatically calculate averages. Other packages require that you hand-calculate the averages.
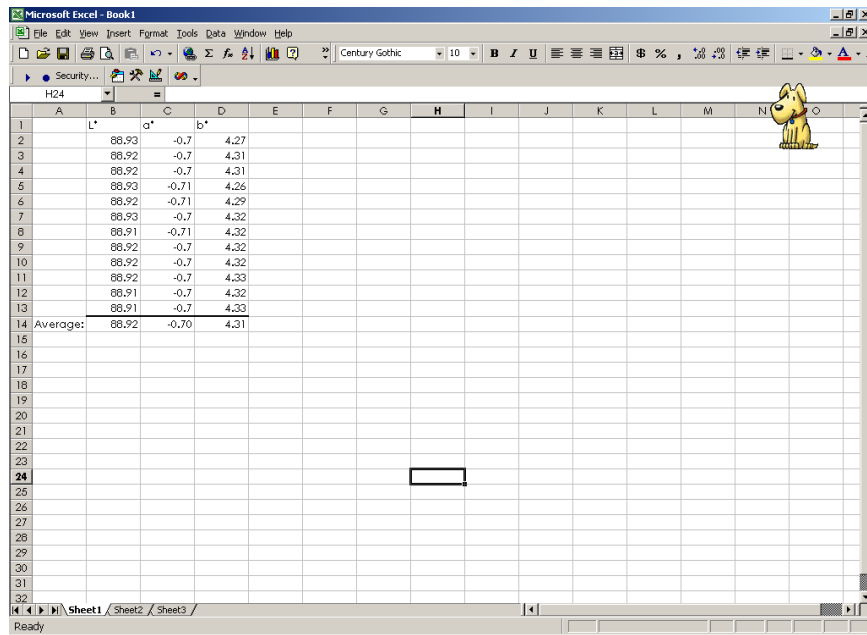
24. Back in MultiSensor Software, Click **Done** to exit the archive viewer.

25. Choose **Offline** from the main toolbar.

26. Select **Product Setup Editor** from the Offline Functions Menu.

27. On the second page of the Product Setup screen, define the standard type as Numeric. Then enter the averages you calculated for the components of the color scale in the boxes beneath Product Standard.
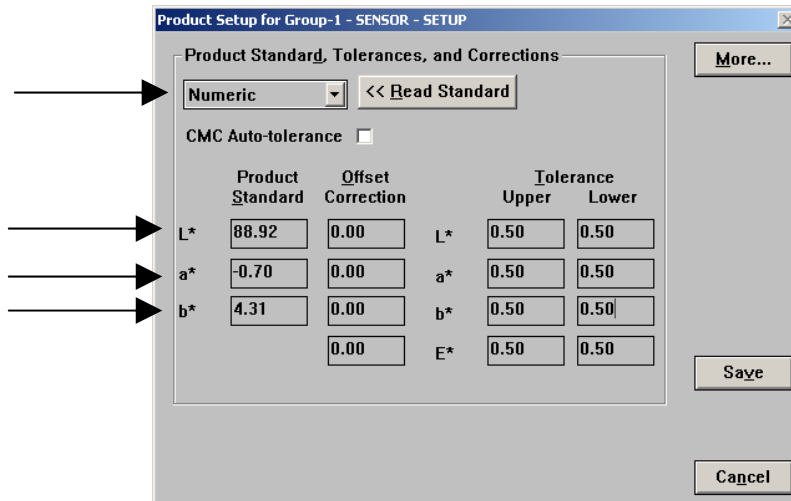
28. Click **Save** to save the modified product standard and enter whatever name you like. You now have a product setup containing a product standard established using a large quantity of desirable product to which you can compare other product of this type to determine if it is acceptable.

Quick Method

Perform the following steps to complete the quick method for determining a numeric product standard:

1. Open MultiSensor XE Software.

2. Choose **Offline** from the main toolbar.

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3. Select **Product Setup Editor** from the Offline Functions Menu.

4. On the first page of the Product Setup screen, select the color scale, illuminant, and observer you wish to use for your numeric standard. In this example, we will use CIELAB and D65/10°.
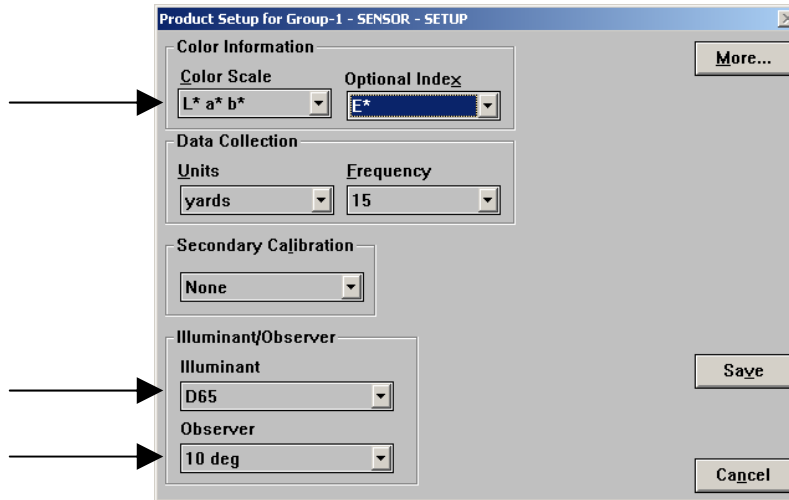
5. Click **More**.

6. On the second page of the Product Setup screen, select Ad Hoc for the product standard type.
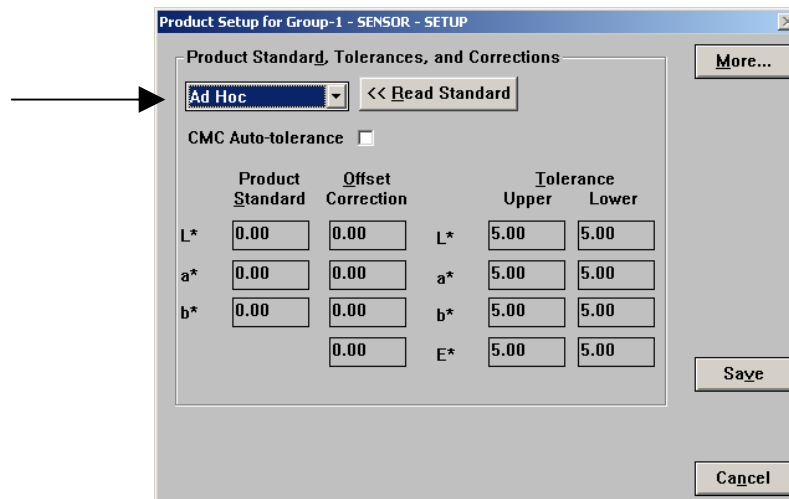
7. Click **Save**. You will be prompted to name the new product setup. Type the name desired and click **OK**.

8. Start good product that is as close to the desired standard for the product as possible running under the SpectraProbe XE.

9. Click **Start** from the main toolbar to begin a run.

10. When the run is complete, or when standard product is no longer being presented to the SpectraProbe XE, click **End**.

11. Record the numbers listed on the Product Setup screen next to Product Standard. These numbers are the first ones reported for the run. If you suspect that the product at the beginning of the run was not good, you will not want to use these numbers and will want to perform Steps 8-10 again.

12. Choose **Offline** from the main toolbar.

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13. Select **Product Setup Editor** from the Offline Functions Menu.

14. On the second page of the Product Setup screen, define the standard type as Numeric. Then enter the values you recorded for the components of the color scale in the boxes beneath Product Standard.

15. Click **Save** to save the modified product standard and enter whatever name you like. You now have a product setup containing a product standard established using a small quantity of desirable product to which you can compare other product of this type to determine if it is acceptable.

Combination Method

You may use some combination of the statistical method and the quick method by completing the steps of the statistical method, but using data from fewer than ten runs. The greater the number of runs used, the more appropriate the numeric standard will be.

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