

Turner Designs offers liquid dye standards that can be used to calibrate the AquaFluor converting relative fluorescence to concentration estimates. The response from various dye standards is correlated with actual fluorophore concentrations for many applications so customers simply choose the appropriate standard for their application, if it is listed below, and calibrate their AquaFluor using the following calibration instructions to obtain fluorophore concentration estimates.

Application (Channel)	Liquid Calibration Standard Concentration (ppb)	Part Number	Fluorophore Concentration	Units of Measure	NOTES
Chl <i>in vivo</i>	RWT 400 ppb	6500-120	60	µg/L	
Phycocyanin	RWT 200 ppb	6500-020	210	ppb	
Phycoerythrin	RWT 100 ppb	*See Notes	950	ppb	Purchase 6500-020 and dilute to 50% with deionized water
Crude Oil	PTSA 100 ppb	10-608	145	ppm	Oil emulsions in water

1.0 Calibration Instructions

1.1 Material Required

- AquaFluor Fluorometer
- Square 10x10 methacrylate plastic cuvettes
- Appropriate calibration standard for your optical channel or application
- Deionized water

1.2 How to Calibrate AquaFluor Fluorometers with Firmware Version 1.00

- 1) Press the ON/OFF button to power up the AquaFluor and wait for the 5 second countdown
 - a. If your AquaFluor displays a version number while powering up you may continue to step 2 of this section (1.2).
 - b. If your AquaFluor does not display a version number while powering up proceed to section 1.3, "How to calibrate AquaFluor Fluorometers"
- 2) Select the Channel you wish to calibrate using the A/B button
- 3) Press the CAL button
- 4) Press ENTER
- 5) Fill a 10x10 methacrylate cuvette ¾ full with deionized water
- 6) Lift the lid to the sample compartment and insert the cuvette
- 7) Close the lid and press ENTER
- 8) Wait for the Blank to be measured
- 9) The RFU value for the blank will be displayed, record the RFU and press ENTER
- 10) Lift the sample compartment lid and remove the blank sample
- 11) Use the up/down arrow keys to set the Std1Val to the Fluorophore Concentration from the table above that matches the dye standard selected. **Note: Press and hold the arrow keys for faster scrolling.**
- 12) Press ENTER once the value has been set
- 13) Fill a 10x10 methacrylate cuvette ¾ full with your dye standard

- 14) Insert the cuvette into the sample compartment
- 15) Close the lid and press ENTER
- 16) Wait for the standard to be measured
- 17) The RFU value for the standard will be displayed, record the RFU and press ENTER
- 18) Use the up/down arrow keys to select Cal Done and press ENTER
- 19) Use the up/down arrow keys to select the units that correlate with your dye standard
- 20) Press ENTER
- 21) Press the STD VAL button and make sure the Std Val is set to 1.0

Calibration is now complete! The AquaFluor will display fluorophore concentration estimates for every sample measured.

1.3 How to Calibrate AquaFluor Fluorometers

- 1) Select the Channel you wish to calibrate using the A/B button
- 2) Press the CAL button
- 3) Press ENTER
- 4) Fill a 10x10 methacrylate cuvette $\frac{3}{4}$ full with deionized water
- 5) Lift the lid to the sample compartment and insert the cuvette
- 6) Close the lid and press ENTER
- 7) Wait for the Blank to be measured
- 8) Lift the sample compartment lid and remove the blank sample
- 9) Fill a 10x10 methacrylate cuvette $\frac{3}{4}$ full with your dye standard
- 10) Insert the cuvette into the sample compartment
- 11) Close the lid and press ENTER
- 12) Wait for the standard to be measured
- 13) Press ENTER to accept the calibration
- 14) Remove the standard cuvette from your sample compartment
- 15) Press the STD VAL button
- 16) Use the up/down arrow keys to set the Std Val to the Fluorophore Concentration from the table above that matches the dye standard selected. **Note: Press and hold the arrow keys for faster scrolling.**

Calibration is now complete! The AquaFluor will display fluorophore concentration estimates for every sample measured.