PO Box 518
620 Applegate St.
Philomath, OR 97370

WET ● Labs

(541) 929-5650
Fax (541) 929-5277
www.wetlabs.com

ECO Chlorophyll Fluorometer Characterization Sheet

Date: 7/25/2007   Customer: University of Washington

Job #: 707006   SO #: 1490   S/N:# BB2FVMG-381

Chlorophyll concentration expressed in µg/l can be derived using the equation:

CHL (µg/l) = Scale Factor * (Output - Dark Counts)

Dark Counts   39 counts
Scale Factor (SF)   0.0146 µg/l/count
Maximum Output   4122 counts
Resolution   3.3 counts

Ambient temperature during characterization   21.5 °C

Dark Counts: Signal output of the meter in clean water with black tape over detector.

SF: Determined using the following equation: SF = x + (output - dark counts), where x is the concentration of the solution used during instrument characterization. SF is used to derive instrument output concentration from the raw signal output of the fluorometer.

Maximum Output: Maximum signal output the fluorometer is capable of.

Resolution: Standard deviation of 1 minute of collected data.

The relationship between fluorescence and chlorophyll-a concentrations in-situ is highly variable. The scale factor listed on this document was determined using a mono-culture of phytoplankton (Thalassiosira weissflogii). The population was assumed to be reasonably healthy and the concentration was determined by using the absorption method. To accurately determine chlorophyll concentration using a fluorometer, you must perform secondary measurements on the populations of interest. This is typically done using extraction-based measurement techniques on discrete samples. For additional information on determining chlorophyll concentration see "Standard Methods for the Examination of Water and Wastewater" part 10200 H, published jointly by the American Public Health Association, American Water Works Association, and the Water Environment Federation.

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Scattering Meter Calibration Sheet

7/25/2007   Customer: University of Washington   SO #: 1490
Wavelength: 700   S/N#: BB2FVMG-381   Job #: 707006   Tech: k.c.

Use the following equation to obtain "scaled" output values:

$$\beta(\theta c)\ m^{-1}\ sr^{-1} = \text{Scale Factor} \times (\text{Output} - \text{Dark Counts})$$

- **Scale Factor for 700 nm**   =   2.307E-06 (counts)
- **Output**   =   meter reading (counts)
- **Dark Counts**   =   38 (counts)

Instrument Resolution   =   3.1 (counts)   7.23E-06 $(m^{-1} sr^{-1})$

Definitions:

- **Scale Factor**: Calibration scale factor, $\beta(\theta c)$/counts. Refer to User's Guide for derivation.
- **Output**: Measured signal output of the scattering meter.
- **Dark Counts**: Signal obtained by covering detector with black tape and submersing sensor in water.

Instrument Resolution: Standard deviation of 1 minute of collected data.

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Scattering Meter Calibration Sheet

7/25/2007	Customer: University of Washington		SO #: 1490
Wavelength: 470	S/N#: BB2FVMG-381	Job #: 707006	Tech: k.c.

Use the following equation to obtain "scaled" output values:

$$\beta(\theta c)\ m^{-1}\ sr^{-1} = \text{Scale Factor} \times (\text{Output} - \text{Dark Counts})$$

- **Scale Factor for 470 nm**   =   9.622E-06 (counts)
- **Output**   =   meter reading (counts)

- **Dark Counts**   =   48 (counts)

Instrument Resolution	=	1.6 (counts)	1.57E-05 $(m^{-1}\ sr^{-1})$

Definitions:

- **Scale Factor**: Calibration scale factor, $\beta(\theta c)$/counts. Refer to User's Guide for derivation.
- **Output**: Measured signal output of the scattering meter.
- **Dark Counts**: Signal obtained by covering detector with black tape and submersing sensor in water.

Instrument Resolution: Standard deviation of 1 minute of collected data.