

Chlorophyll Fluorometer Characterization in Uranine liquid Proxy (new method)

Date: 2/14/22
Serial #: AFL-015
Tech: TS/SML

Dark Counts 0.217 volts
CEV 2.006 volts
SF 14.975

FSV 5.38 volts

Linearity: 0.999 R² (0–1.5 volts)
0.995 R² (0– 5.45 volts)

Notes:

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

CEV is the chlorophyll equivalent voltage. This value is the signal output of the fluorometer when using a Uranine dye fluorescent proxy that has been determined to be approximately equivalent to **26.79 µg/l** of a *Thalassiosira weissflogii* phytoplankton culture.

SF is the scale factor used to derive chlorophyll concentration from the signal voltage output of the fluorometer. The scale factor is determined by using the following equation:
 $SF = (26.79) / (CEV - \text{dark})$.

FSV is the maximum signal voltage output that the fluorometer is capable of.

Chlorophyll concentration expressed in µg/l (mg/m³) can be derived by using the following equation: (µg/l)
 $= (V_{\text{measured}} - \text{dark}) * SF$

The relationship between fluorescence and chlorophyll-*a* concentrations in-situ is highly variable. The scale factor listed on this document was determined by 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 determination of chlorophyll concentration see [Standard Methods For The Examination Of Water And Wastewater] part 10200 H published jointly by: American Public Health Association, American Water Works Association and Water Environment Federation.