

Introduction

The following information will describe how to use the dual response Solid Secondary Standard with the PhytoFlash Active Fluorometer.

The three main benefits of using the Solid Secondary Standard are:

1. It can be used in place of a primary liquid standard once a correlation between a primary standard and the solid standard has been established (Blue PhytoFlash only).
2. It can be used to check the fluorometer stability, and/or check for loss in sensitivity resulting from the growth of bio-fouling organisms on the sensor optics.
3. One Solid Standard has two sides that yield either a High or Low fluorescence response.

The Solid Secondary Standard provides a very stable fluorescent signal.

Installing the Secondary Standard

1. Before installing the Solid Standard you must ensure that the optical surface of the PhytoFlash is completely clean and dry. The Solid Standard is indexed and it must be installed so that the indexing ball (A) click into the indexing mark on the PhytoFlash.



Figure 1

2. To install, place the Solid Standard into the optical end of the PhytoFlash.
3. With the Solid Standard completely in, rotate in either direction until you feel the Solid Standard indexing ball (A) click into the indexing mark on the PhytoFlash.
4. Either end of the Solid Standard will yield a non-adjustable **High** or **Low** fluorescence response.
5. If you are recording the fluorescence values in the **Manual Laboratory Mode**, note the concentration level (High or Low).
6. Note that the response of every solid standard is unique. Hence, a new correlation must be determined for each solid standard.



Use of the Solid Secondary Standard for *In Vivo* Chlorophyll Applications (Blue PhytoFlash)

1. To establish a correlation between a known chlorophyll concentration and the fluorometer output voltage, immerse the sensor in a sample containing algae and note the PhytoFlash value.
2. The PhytoFlash value can be detected by performing a "Test Run". This can be conducted in any of the operating modes
3. Dry off the PhytoFlash and attach the Solid Standard to the fluorometer.
4. Record the PhytoFlash value of the Solid Standard by performing a "Test Run".
5. Next, perform a chlorophyll extraction using a Laboratory Fluorometer, Spectrophotometer or HPLC to determine the actual chlorophyll a concentration in the sample¹. This will provide the correlation of actual chlorophyll a concentration to the Solid Standard.
6. The Solid Standard can now be used to check/establish a new correlation between a known equivalent concentration and the current PhytoFlash value.

Note: If you are using the PhytoFlash in the Manual Laboratory Mode, make sure you use the same gain settings (Concentration Level Detector)

Ordering Information

Solid Secondary Standard for Blue PhytoFlash
P/N 2500-900

Solid Secondary Standard for Red PhytoFlash
P/N 2500-901

Additional Information

Further information on Solid Secondary Standards can be found on the Turner Designs FAQ's at the following URL:
<https://www.turnerdesigns.com/technical-support>

¹ Information on performing chlorophyll extractions can be found on the Turner Designs web site at this URL:
<https://www.turnerdesigns.com/chlorophyll-fluorometer>