


CEFAS BIOGEOCHEMICAL PROCESSES STANDARD OPERATING PROCEDURE (SOP)	
S.O.P. No. EQ-BGC-004D	Issue: 1 Page 1 of: 5

Analysis of salinity samples using the Portasal

Production Summary

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Bench Tested			
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Introduction

The 8410 Portasal is the industry standard for the measurement of salinity whilst on board. The salinometer employs a unique continuous flow system, where the sample water is drawn under low air pressure from the original sample bottle. A high stability temperature control bath and heat exchanger maintain the sample at precisely defined temperature during analysis, avoiding the need for temperature compensation. An accuracy of better than 0.003 equivalent practical salinity units can be achieved.

Scope

This SOP describes the routine procedure to be followed when analysing seawater samples for salinity content. It does not include installation and set up.

Training

Operator must be trained thoroughly in GLP (good laboratory practice). Before using this SOP the operator should familiarise themselves with the instrument and the technical manual (TM8410)

Apparatus


1. 8410 Portasal
2. 8410 manual
2. Tubing
3. 10 litre plastic wide mouth container without tap
4. Ampoule of "OSIL" standard sea water 35 PSU
5. Salinity bottle of ultra pure water (for rinsing)

Procedure

Note: this procedure is to be used in conjunction with manual TM8410.

Checking the calibration is stable Analysis


1. Samples should be left in the lab to stabilise at room temp for 24 hours before analysis.
2. Make a note of room temperature on the sample analysis logsheet. When the portasal bath temperature is set to 24°C, room temperature should be close to 20°C.
3. The light in the window of the salinometer will flicker on and off when the water bath has reached the correct temp for salinity analysis. DO NOT attempt analysis if the temperature is not correct.

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4. Before starting analysis fill in the top section of salinity analysis log sheet (see appendix I for example).
5. Check zero reference. Select **FUNCTION** switch to **ZERO**. Check last four digits of display read 0000 (last digit + or – 5). If the instrument does not conform to this check specification recalibration is necessary. Note that the stability of this number over time is of more significance than it's actual value
6. Return **FUNCTION** switch to **STANDBY**.
7. Now check the display again to see that it has not drifted since the standardisation. The same as above applies to this number.
8. Ensure **FUNCTION** switch is set to **STANDBY**.
9. Note the conductivity number printed on the Standard Sea Water for use in step 15.
10. Turn **FLOW RATE** dial clockwise to maximum to initiate the pumps.
11. Fill and flush the flow cell 3 times with an old standard or some nominal 35 psu seawater.
12. Rock standard seawater gently to homogenise. Open and offer up to salinometer immediately.
13. Do not use standard seawater when the water level is within 5 cm of the bottom of the vial as errors may be introduced due to possible salts concentration.
14. Fill and flush cell 3 times and allow to fill.
15. Set 'function' dial to 'read', note reading of display on the log sheet where it says SSW and flush cell.
16. Repeat step 15 until you get 3 close readings.
17. Flush cell. Remove bottle and wipe pickup tube with a clean tissue. Ensure that all traces of sample are gone from pickup tube.
18. Here you are checking the calibration of the instrument with a standard of known concentration. If the value reported by the instrument differs wildly from that displayed on the bottle, do not continue with analysis. Go to step 30 then consider recalibration or troubleshooting.

Analysis

19. Rock sample gently to homogenise. Remove black cap, remove insert and offer up to instrument immediately.
20. Fill and flush cell 3 times to remove all traces of last sample and allow to fill.
21. Set **FUNCTION** switch to **READ** and allow to stabilise for a few seconds.
22. Note: There is a quality flag available if the sample is anything other than perfect.
 - I - Insert missing (new bottles only)
 - C - Cracked bottle
 - O - Open Bottle
 - X - Slightly salted
 - XX - Very salted
 - B - Broken
 - E - Empty
23. Make a note of the bottle number on log sheet and the conductivity reading beside it.

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24. Do not leave 'function' dial on 'read' for too long or ionisation of sample will occur. If display fails to stabilise, drain cell, refill and try again.
25. Continue till you get 3 stable readings for the sample.
26. Flush cell. Remove bottle and wipe pickup tube with a clean tissue. Ensure that all traces of sample are gone from pickup tube.
27. Continue with next sample and repeat steps 19 to 26 for each sample.
28. If the batch of samples is quite large (60 samples) run another standard seawater at the end of the analysis to check for drift.
29. Fill and flush at least 3 times with ultra pure water. Fill cell with ultra pure water, Switch off pumps by turning FLOW rate dial anticlockwise.

Post Processing

1. Make two photocopies of the salinity log sheets filled in by customer.
2. File one copy in log sheet folder created for the cruise held in room 155 together with the analysis sheet.
3. Send the original to the customer.
4. Send the last copy to the person responsible for inputting the data onto the LSDM.
5. Enter the salinity data and correction factor (conductivity readings) into the spreadsheet template and save with a unique filename.
6. Record the file details on the data file list and update the archive spreadsheet with sample numbers and quality control info.
7. Send a copy of the data to the customer and one to the person in point 4.

Appendix I.

SALINITY ANALYSIS LOG SHEET

CRUISE PROJECT OPERATOR DATE ANALYSED
 OUTPUT FILE RESULTS TO ROOM TEMP BATH TEMP
 STDIZATION SSW BATCH SSW RATIO SSW SALINITY

BOTTLE NO.	RATIO 1	RATIO 2	RATIO 3	RATIO 4	RATIO 5	FLAG	COMMENTS
SSW START							
SSW END							
DRIFT							

PLEASE NOTE FLAGS I : NO INSERT B : BOTTLE BROKEN