

Chemistry Lab Cookbook

Coulometer, v210.0

Instrument:

Coulometer

ODP #: 01304

Website:

N/A

Software:

ODP Labview v.198

Documentation Available:

Document Name/Title/Number	Source	Version	Associated Instrument(s)	Associated Measurement(s)
Coulometer Cookbook Binder	in-house, Coulometrics.	notes from Leg 144, user guide 7/22/1996	coulometer	Carbonate
Coulometer: Original Manual & Misc. Binder	in-house, Coulometrics.	instruction manual, 1985	coulometer	Carbonate

Quick Summary User Guide for the Coulometer/Balance Program

v210

1. Calibrating the Cahn Balance

The calibration is done from the weighing screen by selecting the “Calibration” button of the balance LabVIEW program (MC71). Make sure that MC67 is network connected and is shown on the desktop.

Two calibrations (0 - 10mg for the Coulometer/CNS and 0 - 100mg for RockEval) are done during port call. One need first to calibrate the instrument with the hardware itself and then with the software.

The Cahn should be set to measure in the 250mg to 1 μ g range. To calibrate the hardware, press the “Tare” button once on the Cahn, after the trays are stationary. Then place a 200mg weight on tray A and press “Cal” on the Cahn Balance. To calibrate the Cahn with the software, first press "Reset Tare" and make sure that the slope is 1 and the intercept 0, then select "Calibrate" and follow the on-screen instructions. Make sure that the program is set up to count by statistics with a precision of 0.01 and a confidence of 99.50. Start with no weight and enter “0.0” as the mass. When the count is finished, continue on with weights of 1, 2, 5, 7 and 10mg (or 0, 5, 10, 20, 50 and 100mg). After the last weight is measured, save and name the calibration (eg. Calib183_10 and Calib183_100).

The calibration factors in use will be displayed at all times above the Measure, Tare etc..buttons. To change the calibration, click on the “Calibration” button and select the calibration to be used by simply clicking on its file name.

2. Weighing Samples

Weighing can be done by using statistical analysis or fixed counts. The “Stop Criteria” is used to toggle between Statistics, where the confidence interval and precision can be set as desired, and Counts. The “Tare” button is used to tare the empty “boats” and the “Measure” button is used to weigh the sample plus boat. The difference between the two gives the actual sample weight displayed in the “Sample (mg)” box. The “Readings” button can be depressed to see the last ten measurements. Clicking on any of these measurements will bring the selected reading and its associated values back to the weighing screen.

Before weighing the carbonate samples, one should first enter the carbonate sample IDs into the “List” window of the coulometer program by either downloading the IDs directly from the database, scanning the IDs, or by manual entry.

2.1. Downloading Carbonate Samples

To download the carbonate sample Ids, from the database, to the “List” window, go to MAC MC67 and click on the “Download Carbonate Samples” icon. In the “Carb Import” box select the appropriate Leg - Site - Hole for the desired samples, then select “Import”. This will download the sample IDs (with the code CARB) into the coulometer program “List” window. The “Download” program will query the database for samples of a particular site each time this site is selected, but only the samples not yet

downloaded for that site will be transferred to the “List.”

2. 2. Scanning or Adding Carbonate Samples Manually

Samples can also be added by scanning the bar code labels or by manually entering the data. At the main menu to the coulometrics program, select “Sample” and then select “Scan”. Of the three bar codes on the CARB label, use only the bottom two (the other bar code, on top, is the unique Janus ID). Scan in the data by aligning the laser from the bar code scanner to the appropriate bar code. When finished scanning the sample, click on the “Save” button in the program to save the selection to the “List” window. The CARB samples need not be in order as the program will automatically sort them. Samples can also be added manually by selecting “Sample” at the main menu screen, then selecting “New”. Enter the appropriate information, then save.

2. 3. Weighing Carbonate Samples

To weigh a particular carbonate sample, click on the “List” button and load that sample ID into the “Sample ID” field by simply selecting the ID (double-click on the ID) from the “List” window. Sample IDs can also be added at this screen by selecting the “New” or “Scan” button. Enter the appropriate vial number in its field and weigh the sample. When the sample is weighed (10-11mg), you will be prompted to save the reading. Clicking on the notifier will transfer the sample ID, and associated weight and vial number, back to the “List” window.

2.4. Weighing Any Other Type of Samples

If the sample is a CaCO_3 standard, Rock Eval or CNS standard/sample, keep the vial number at 0. In these cases, the sample ID can remain blank; simply use the “Tare” and “Measure” buttons to weigh the samples. When the standard/sample is weighed, you will not be prompted to save the reading. A message “Measurement Completed” will be displayed; click “OK” and continue weighing. Make sure to keep a record of your masses though.

3. Running the Coulometer Program

Open the “Carbon” window.

To run a sample, one has to first load that sample ID and its associated weight and vial number in the “Sample ID” field. If the sample ID (and associated weight and vial number) is already in the “List” (previously downloaded, scanned or manually imputed), simply type in the vial number in the “Sample ID” field, then hit the tab key. The sample ID and weight will appear in their appropriate window.

When the sample is ready to be analyzed, select “Measure” and inject the acid. When the measurement is finished, you will be prompted to “Save”. When a new sample ID is loaded, the previous run results and graph default to zero.

If the sample is not in the “List” (such as a standard or an “unofficial” sample), use the “New” window. In this window, the vial number and sample ID will default to the last vial number and sample ID processed and one can change it using the up and down arrows (give it any sample ID and vial number

for a standard). Enter the weight directly in the “Mass” box and “Save”. Hit the tab key to recall the vial number to the “Sample ID” field and then “Measure”. When the run is finished, do not save it.

3.1. Viewing Carbonate Results

The carbonate results (%INOR_C and %CaCO₃) can be seen at the same time that one is actually running samples. At the main coulometrics menu, select “Reports” and then select the appropriate site and report format (Table or Graph). The Table can be updated and printed at any time from this window.

3.2. Exporting and Deleting Carbonate Results

When all the measurements are finished for a site/hole, the results can be exported automatically to an Excel spreadsheet. At the main menu, select “Export” and fill in the appropriate fields. Usually the core and section fields will be left at 0 so that all saved data for the site/ hole will be sent to Excel. Select “Table” to bring up all the sample results. If certain sample results are not to be sent, they can be selected (holding down the shift key and dragging will allow multiple selections) and deleted. Use the “Remove” selection to delete these out of the table (note: this will *not* delete them from the database, only remove them from the table to be exported).

When ready to export, press “Excel” and a “Shell_to_Excel_vi” will open. Next to the box “Template” click on “List”. This will lead you to the file menu. Scroll until you find the predefined Janus spreadsheet you want to send the data to (e.g. CARB1064 in the CARB RESULTS folder). Use the “Start” box to tell the program at which row it should start filling the spreadsheet with data. The default is 5. When sending data for the first time to a Janus spreadsheet, always use 5. When sending a second batch, modify the “Start” value to match the new row number where you want the program to start filling up. The default “Template” is “Workbook1”. If you do not enter a different spreadsheet name, the program automatically opens “Workbook 1” for you and fills up the rows starting at row 5. To start the transfer to Excel, click on “Go to Excel”.

To delete data for an entire site or hole, go in the Coulometrics folder on MC67 and delete the *.cs text document for that particular site (e.g. of file format: 1721063A.cs).

Document Information:

Author, Original:

Version Number, Original: 172

Revision History:

210:Chris Bennight

Signature (Department Supervisor)