

Metrohm Ion Chromatograph (IC): Quick Start Guide

V1.1; L. Brandt; Approved 8/21/2013 (DJH)

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Reagents

Make sure all reservoirs are filled with the following reagents:

Dosino Reservoir: 18 mega-ohm DI water

Suppressor Rinse Solution: 0.1% methanol in DI water

Suppressor Regenerant Solution: 0.05 M sulfuric acid solution (2.7 mL sulfuric acid to 1 L DI water)

Anions Eluent: 3.2 mM sodium carbonate/1.0 mM sodium bicarbonate solution (purchase concentrated packs from Metrohm, called "A Supp 5 Eluent Snips")

- Snip off tube with scissors and pour contents into a 1 L volumetric flask
- Rinse the tube with DI water, adding to the flask
- Bring flask to volume

Cations Eluent: 1.7 mM nitric acid/1.7 mM PDCA (pyridine-2,6-dicarboxylic acid CAS# 499-83-2)

- Dissolve 0.248 g PDCA in DI water in a 1 L flask
- Add 106 μ L concentrated trace metals grade nitric acid
- Bring flask to volume with DI water
- *To make a carboy's worth, in a 2 L volumetric flask, properly mix 872 μ L nitric acid, 2.272 g PDCA with DI water and bring to volume. This may involve using a stir plate with a stir bar in the flask. Pour into the carboy and add three more 2 L flasks filled with DI water.*

Setting up the Instrument

The Metrohm IC does not require priming.

1. To start the instrument, select **Workplace** > **Run** > **Equilibration** tab > **green Start HW** button.
2. To shut down the instrument, select the **red Stop HW** button.
3. Monitor instrument conditions for ~30–60 min before performing a run.
4. The anions baseline should be ~1 μ S/cm. Suppressor may cause a small peak every 10 min or so. The anion pump pressure should be around 6.5–7.0 MPa.
5. The cations baseline should be ~865 μ S/cm. The cation pump pressure should be around 4–4.5 Mpa.
6. The column thermostat display appears red until reaching 45°C.

Setting up the Calibration Standards and Samples

All samples are diluted 1:100 with DI water before analysis.

Prepare a standard curve of 10 mL per level as follows in IC vials:

	Standard 1 (DF 100)	Standard 2 (DF 150)	Standard 3 (DF 200)	Standard 4 (DF 350)	Standard 5 (DF 500)
IAPSO (μ L)	100	66.7	50	28.6	20
DI water (μ L)	9900	9933.3	9950	9971.4	9980

Notes about standards

To change standard levels or method parameters, select **Method > File > Open** to open the method.

Setting up a Sequence

1. To set up a sequence, select **Workplace > Run > Determination Series**.
2. Double click on a line to edit the analysis in place or use the dropdown menu **Sample Table > New** to make a new sample table. Sample table columns should be as follows:
 - **Method:** 361
 - **Ident:** Text_ID of the sample. Standards are not entered into the database yet.
 - **Sample Type:** *Sample, Standard 1–5, or Blank*
 - **Position:** Autosampler position of the vial
 - **Injections:** 1
 - **Status:** *Finished, In Progress, or Ready*
 - **Volume:** 10 µL
 - **Dilution:** Select “1.” Dilution is supposed to be the dilution factor for manual or hand dilutions performed by the analyst prior to the sample being placed in the system; however, the standards are built around 1:100 being baseline, so we don’t want the software to calculate dilutions.
 - **Sample Amount:** Should be “1.”
 - **Value 1:** Dosino Dilution Factor, the dilution factor performed by the automated dilution system. For hand dilution, set this to “1.”
3. After the filled sample table is complete, press the green **Start** button to start the run. A display of the current run will be shown on the Live Display Window.

Evaluating the Calibration

In the **Database** tab, first select an injection of interest in the Determination overview window. In the **Curves** window, are tabs for **Anions** and **Cations**. Select either Anions or Cations, then click on the **calibration curve** radio button. Select the element to evaluate from the pull-down menu.

Uploading Data to LIMS

Use MUT to upload 2 files for each analysis, an Excel file and a PDF report.

1. In the **Database** tab, select **Determinations > Export**.
2. To make the Excel file, select **All Selected Data Records** and template *MUT Export*. Click **OK** to drop the files in *C:\Metrohm Export*.
3. To make the PDF, select the determination, and then **File > Print > Report**.
4. Next select **Selected Determinations, Report template = result, Output target: PDF file** and give the file an appropriate name by clicking on the button (...) beside the filename field and entering your response.
5. Once you have both PDF and Excel files, drag them into the MUT uploader directory. MUT works best when only one pair of files is uploaded at a time.

Maintenance

For maintenance, see the Metrohm guide, *Routine IC Maintenance Guide V2.pdf* located in the *METROHM MANUALS* guide on the desktop.

Helpful Hints

Sometimes the autosampler ends in an annoying spot where some vials cannot be accessed. To get the autosampler to move, select the **Manual** tab on the main panel, then select **858 Professional Sample Processor** (this is the autosampler). Select **Tower**, change the rack position input, then hit **Start**.

The business card for the Service rep is taped to the side of the instrument.

The help function in the software actually seems pretty good. There is a tutorial for the software in the *METROHM MANUALS* folder on the desktop, along with other manufacturer manuals.