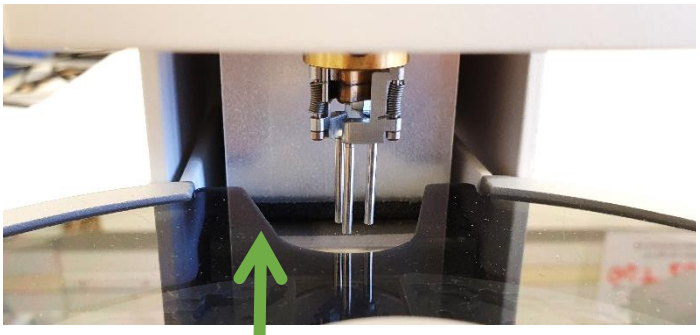
Mettler TGA/DSC 3+ short checklist

Note: If you need the Heat flow (DSC) curve in addition to the mass information (TGA curve), contact the instrument responsible for insertion of a reference crucible.

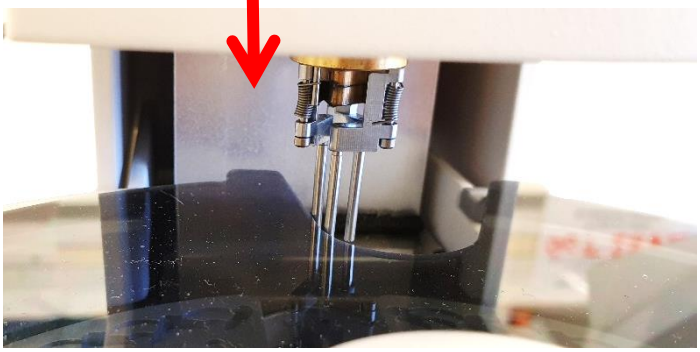
The TGA temperature range is room temperature to 900°C. For temperatures exceeding 500°C you must use aluminum oxide crucibles, which are available for loan from the instrument responsible.

1. Make sure you have a suitable method, then open the Experiment window.
2. Weigh the empty sample pan, insert the weight in the Experiment window.
3. Place your sample in the pan, typically 1-10 mg. Make sure the outer surfaces and top of pan are absolutely clean.
4. Select a physical sample position and check that it is not the same as the running sample (if applicable). Make sure the plastic lid is placed in its correct position.
5. Add 100 to the sample position, i.e. physical position 23 = 123 in the Experiment window. Send the experiment.
6. Register your experiment/s in the TGA logbook. You can check the experiment time in the TGA module window, remember to add 30-40 minutes for cooling after each experiment.
7. In case of questions, do not hesitate to contact the instrument responsible.



Plastic lid YES

Plastic lid NO (will block robot sampler)



Mettler TGA/DSC 3+ User instructions

Thermogravimetric Analysis (TGA) principles

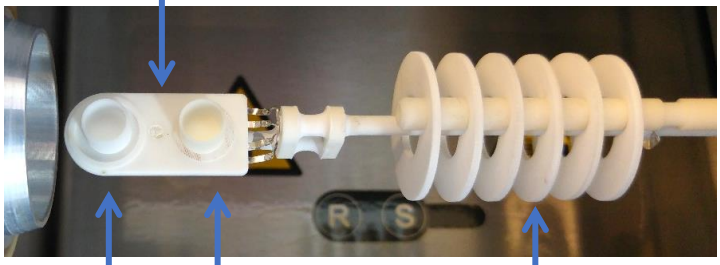
In TGA, sample mass is measured as a function of sample temperature or, in the case of isothermal experiments, as a function of the time.

The instrument

Tube oven (inside)

Balance (inside)

Sample holder with thermocouples

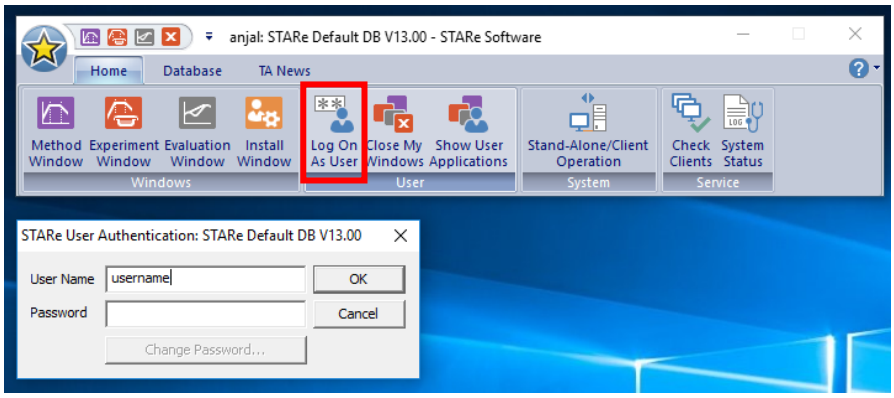


Reference Sample

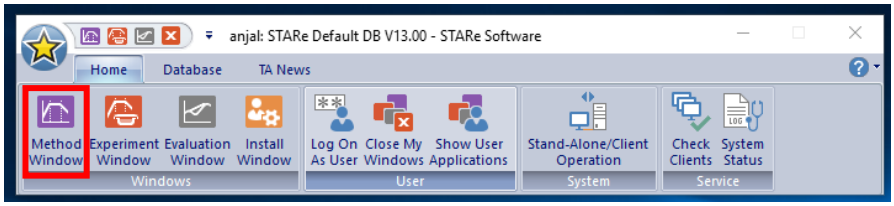
Reflector discs – protecting the balance from heat

Basic operation

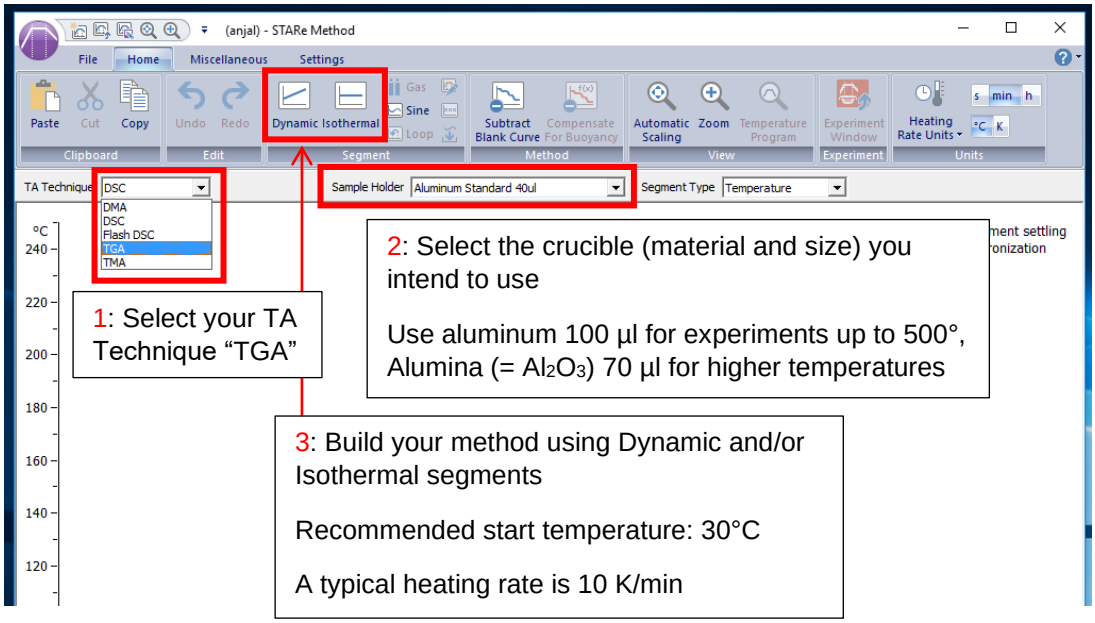
1. Log on to the STARe software



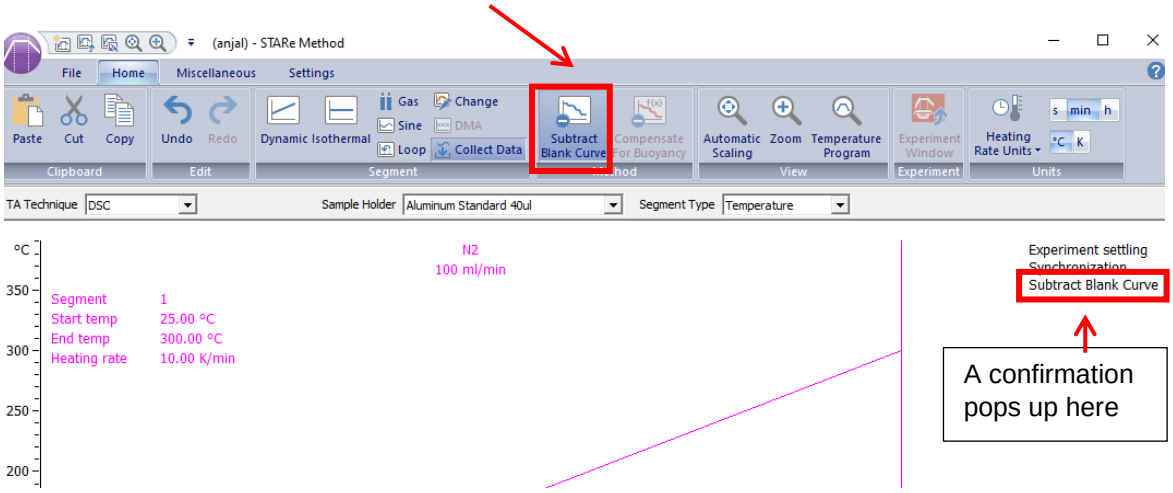
2. Prepare your method using the software. If you already have a suitable method, skip this and go to step 3.
    a. Open the method window



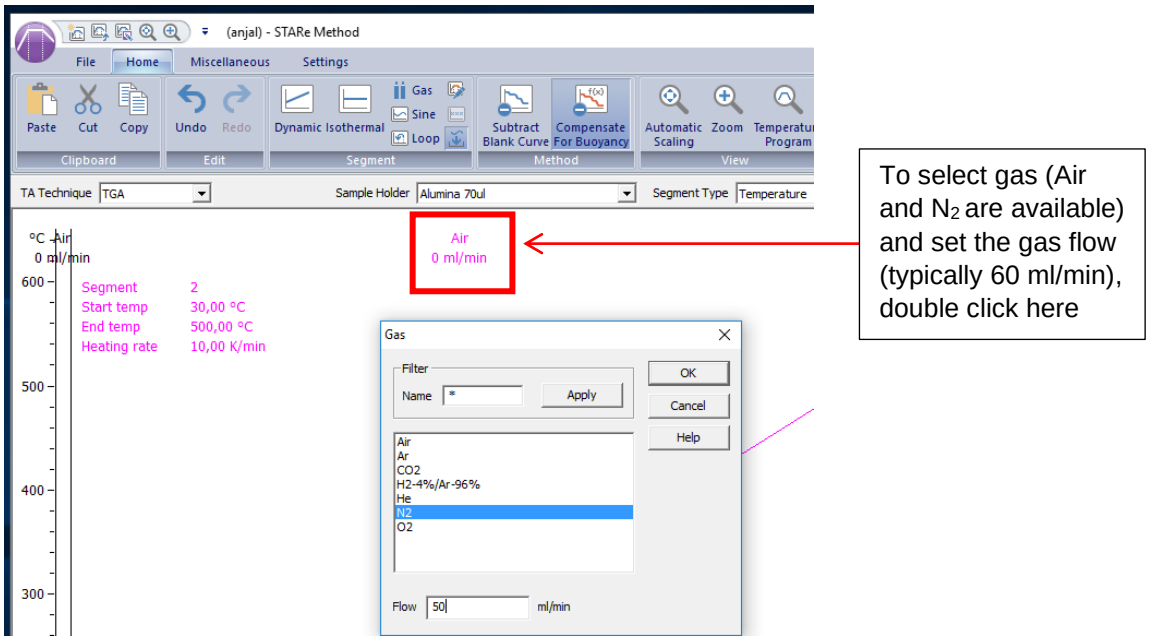
    b. Prepare your method



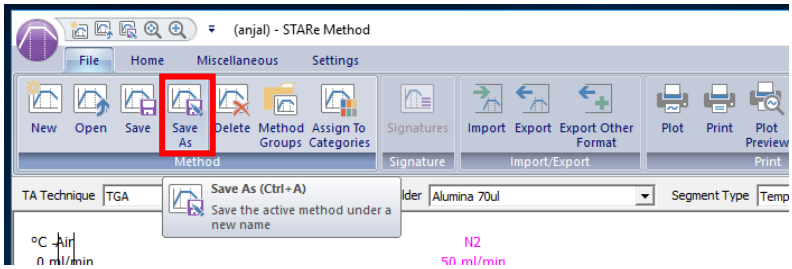
c. IF you want to run a blank first, i.e. a run with an empty crucible (highly recommended for heat flow measurements), add that to the method by clicking "Subtract Blank Curve".



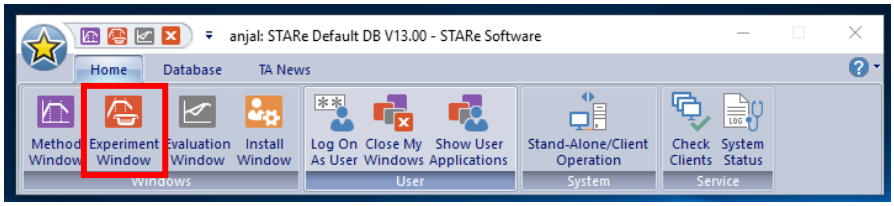
d. Set the atmosphere conditions



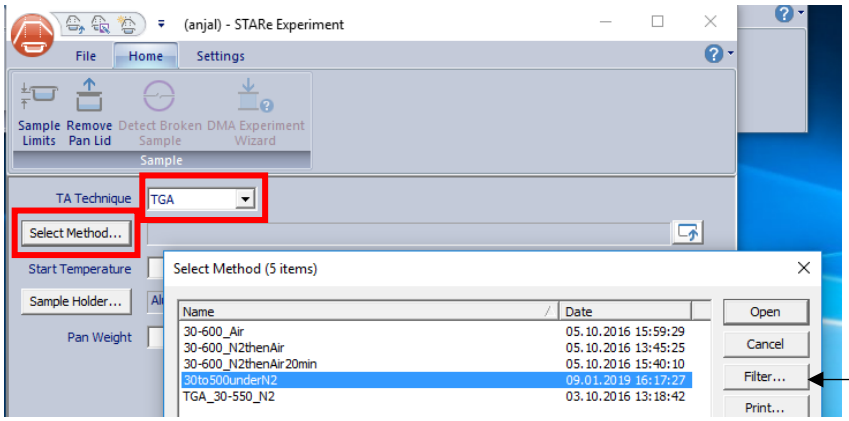
e. Save your method using a descriptive name



3. Program your measurement
    a. Open the experiment window

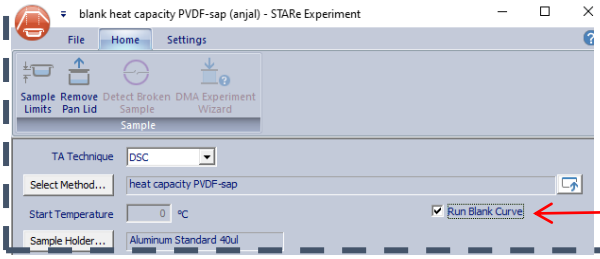


    b. Select your technique and method



To select a method from a different user, change the Filter settings

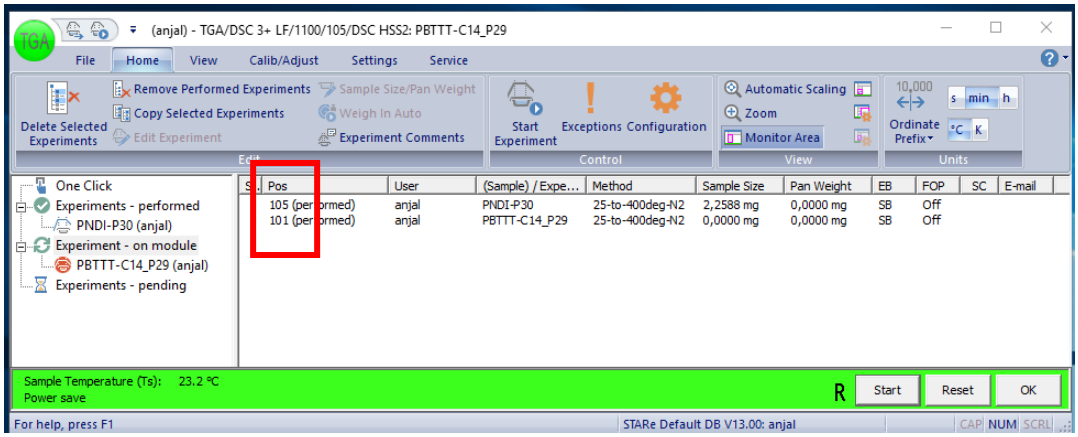
i. IF you included “Subtract Blank Curve” in your method, you should run a blank (an empty crucible) first. Tick the “Run Blank Curve” box, prepare an empty crucible, and program the run as described further below.
For all following measurements with the same method, this blank curve will be automatically subtracted from the result.



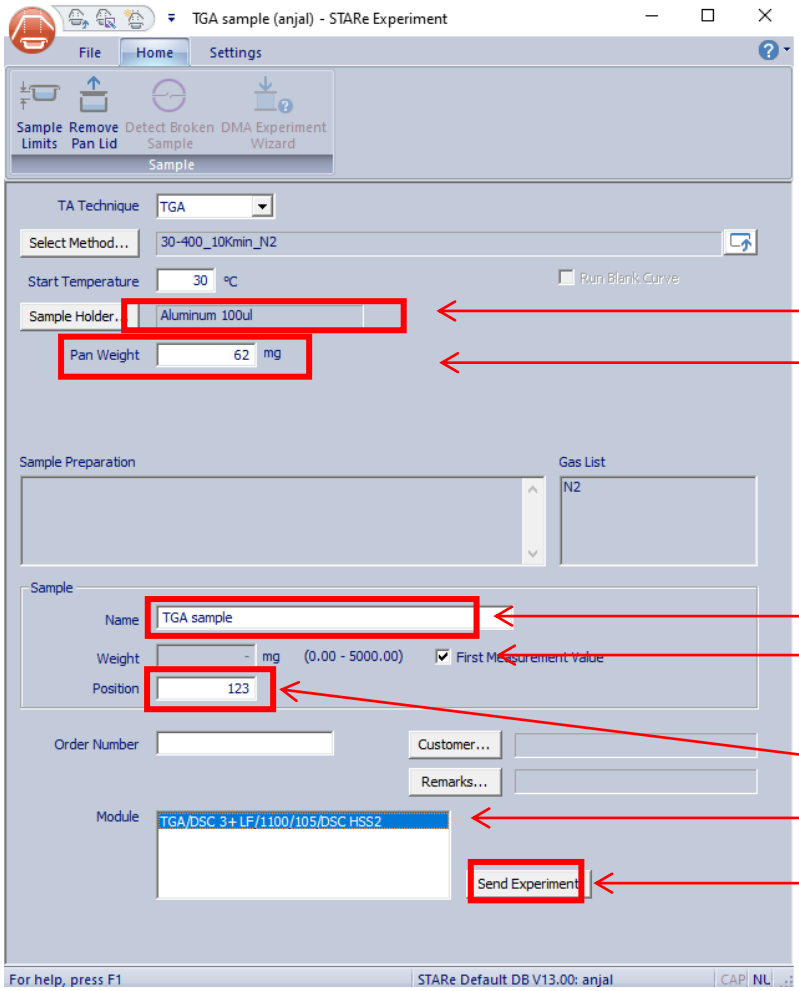
For blank curve measurement

    c. Sample preparation: Wear gloves.
    d. Weigh the empty pan and insert its weight in the Experiment window (see steps 1-2 below).
    e. Place 1 – 10 mg of your material into the crucible.
    Use as little material as possible to avoid overflow during heating.

f. Place your sample crucible in the sample carousel. Make sure you pick a position which is different from the running experiment – this can be checked in the TGA module window:



g. Setting up the experiment:



1: Double check that you are using the correct crucible

2: Weigh your empty sample pan and insert the weight

3: Name your sample

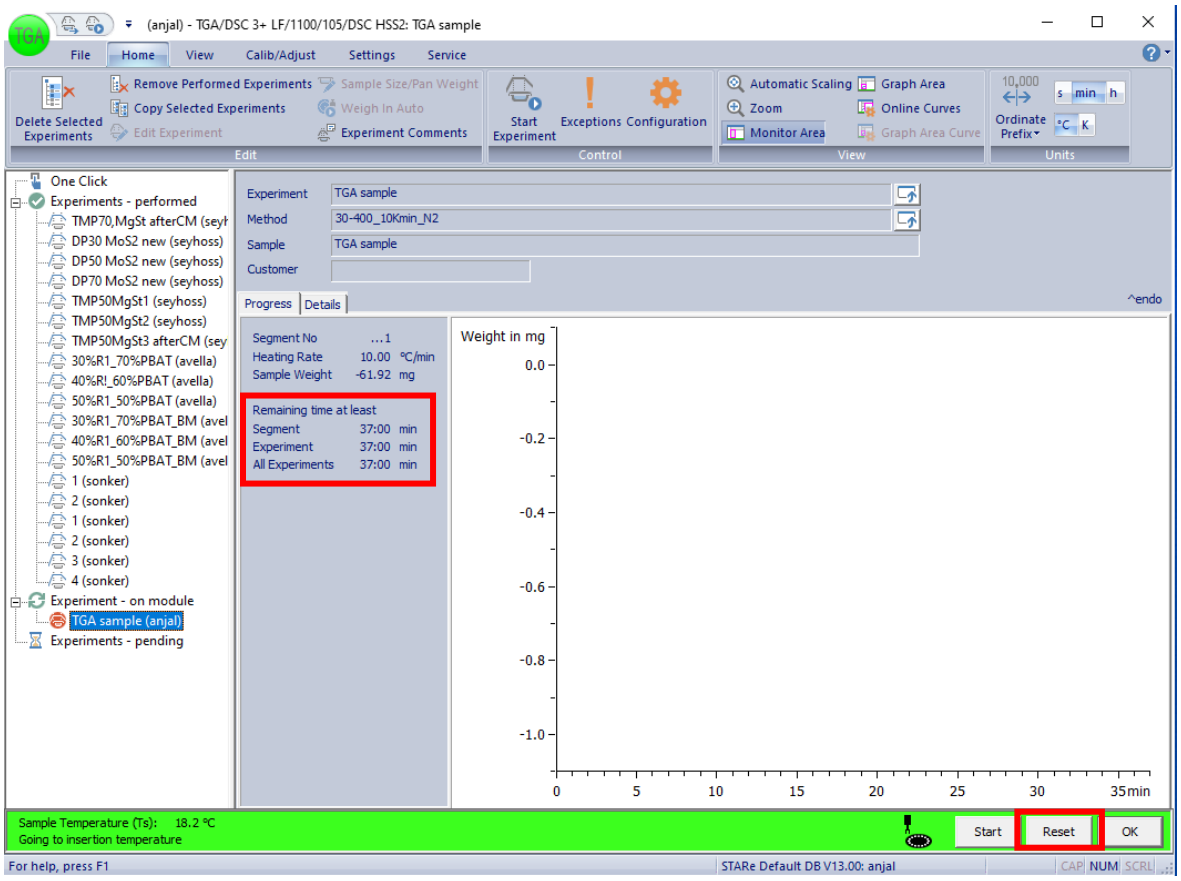
4: Tick this box for automatic sample weight measurement

5: Sample position + 100

6: Select module TGA/DSC3+

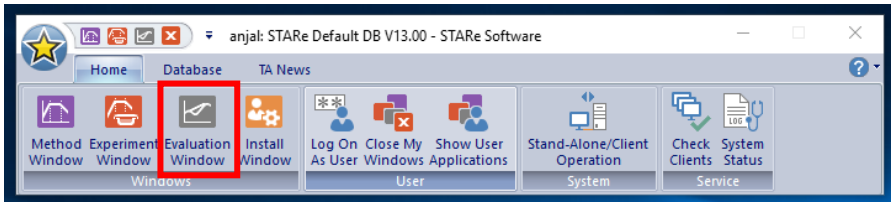
7: Send the experiment

4. Note that you can cancel the run at any time by pressing Reset in the TGA module window.

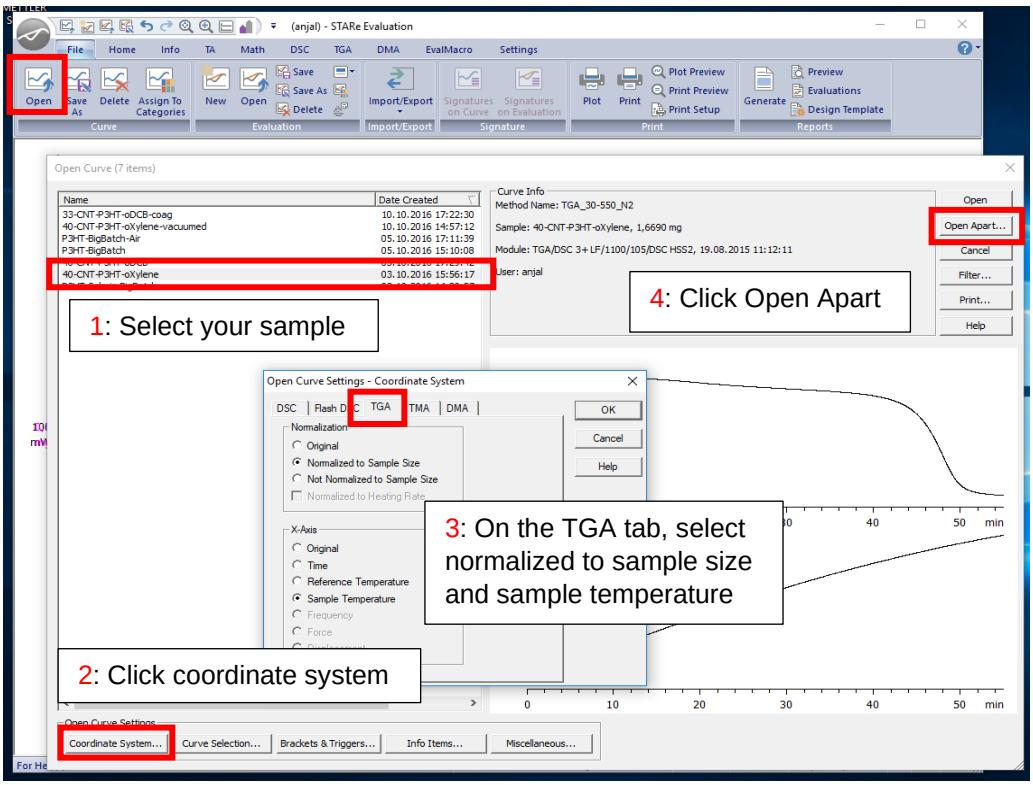


5. Fill in the logbook. Check the run time for your experiment/s in the module window, and add 30-40 minutes (use your experience) for cooling after each run.

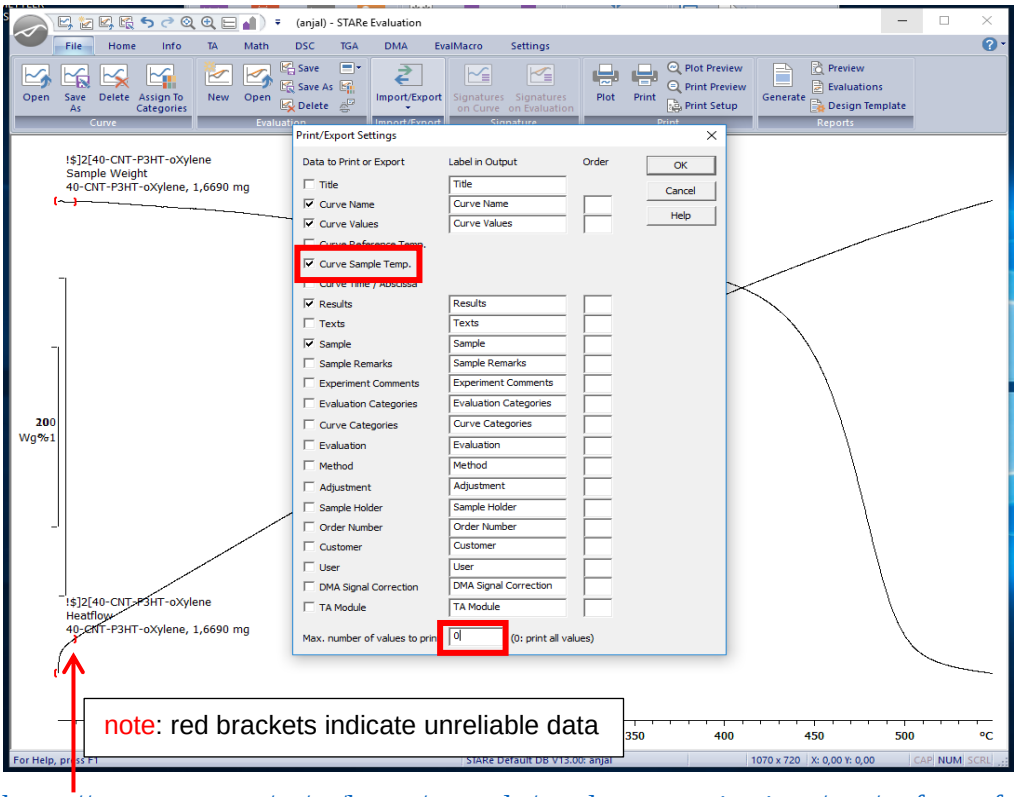
6. After the run - Export your data
    a. Open the Evaluation Window



b. In the Evaluation Window, go to File -> Open



c. Select Import/Export -> Export other format -> Select .txt format. In the pop up dialogue box, tick the box for Curve Sample Temp. and set the Max. number of values to print to “0” (!).



The evaluation software is available for free download from Mettler Toledo:

https://www.mt.com/se/sv/home/perm-lp/product-organizations/ana/ta-freesoftware.html