

DSC Q2000 Instruction sheet (created on 8 July 2019)

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A) Preparing the Instrument

1. Turn on (only main valve) the N₂ gas cylinder. The purge gas should indicate 50 ml/min (recommended flow rate) on the “signal display pane” in the Q series 2000 software which can be found in the TA Instrument explorer located on the desktop.
2. On the main menu click “Control”, “Event” and “On”. This will turn on the RCS cooling unit.
3. Go back to “Control”, and click on “Go To Stand By Temp.”. This will equilibrate the DSC cell at 40 °C.
4. Let the RCS and the system warm up for 15-30 min. (Meantime you can prepare your samples and the run). The temperature should read 40 °C on the “signal display pane” after the warm up period. If not please let me know.

Do NOT open the lid if the cell temp is below 40 °C.

B) Setting up the run

1. If you run TGA Q500 before you probably familiarize already with the software. However there are few things to watch for.
2. Make sure you in the “Experiment View”. In the “**Summary**” tab page, enter the sample information, (The **mode** should be “**Standard**”)
 - a) Enter the *Sample Name*,
 - b) pan type (ex. Al, T0 Al and T0 Al hermetic)
 - c) Enter the *Sample Size* in mg
 - d) Enter *Pan No.* for sample pan (1-50) and for reference pan (1-5)
 - e) Check *Pan Mass*, and then **enter the weights of the sample** and the *reference empty pans*.
 - f) Enter any *Comments* (optional)
 - g) Enter a *Data File Name* using this location
.... desktop\DSC Q2000\Supervisor\User\filename.001
3. “**Procedure**” tab page and in the “Test” pull down menu choose the type of experiment you want to perform. Anything that you choose, except Custom, will automatically give you a preset Method (depending on the Test you choose) where you can enter the experimental conditions, such as heating rate, final temp, etc. In the Custom menu you have to go to the “Editor” to select your segment tasks (please see me for more details).
4. In the “**Notes**” tab page enter the operator name, and Extended Text (in case you need to add more info). **Do not adjust the Mass Flow Control Settings**. They should be set as recommended by TA Instrument, which is Sample Purge Flow: 50 ml/min

5. If you doing a sequence, click on “**Append**” and repeat the step 2 above. In the sequence window you should see two runs. The one highlighted is the one that you can edit.

C) Preparing and Running the sample

DO NOT DECOMPOSE SAMPLES IN THE DSC CELL!!

- Run TGA to determine the decomposition temperature → **Stay below that Temp.**
- Make sure bottom of pans stay clean
- Use lids
- Assembled pans with tweezers. The body oils from your hands can give erroneous data.

We have few types of pan, Aluminum, T zero Aluminum, High Volume pans, etc. Each has its own advantages and disadvantages. Each pan is composed of lid and pan bottom, O-ring for High volume pans. Therefore for each type of pan an “Encapsulating Press” uses a corresponding set of die. Instead of describing the 3 ways, I would rather show it to you during your training. The choice of the pan is based mainly on the nature of your sample and the TGA run.

1. Weight the empty pan (lid, bottom) and write down the number. Load your sample onto the pan. Seal the pan using the appropriate die press. Weight the cramped pan and get the sample weight.
2. Load the autosampler with your sealed sample. Use the reference that is already in the autosampler. Make sure you get the weight of the reference. Use the same No. positions as you selected in the *Pan number* and *Reference number* in the **Summary** page.
3. Go to “Control” → “Autosampler” → “Reset”. This will reset the autosampler.
4. Be sure you at 40 °C and Go to “Control” → “Lid” → “Open”. Check if there are pans inside the cell. If yes, use tweezers to carefully remove the pans. For reference pan, put it back on the tray. For sample pan please discard it.
5. Click on the “Start” button (green triangle) to start the run. The sample will be load. After the run is complete the sample will be unload (only when the Cell Temp. is at 40 °C).

D) Closing

1. When finish, turn off the cooling system (control → event → off).
2. Close the N₂ gas cylinder, main valve only. Leave the software, computer and instrument on.
2. **DON'T FORGET TO FILL UP THE LOG BOOK!**