

## Description

The following are standard operating procedures for the TGA Q5000 IR. This instrument is used for various thermo-analytical measurements such as DSC, TGA, and DTA. Sample masses often vary from approximately 0.5-20 mg, depending on operation mode. Sample types vary and may include loose powders, thin pellets, metal chunks, and others.

## Before starting:

Pinch Hazard, Possible Hot Temperature Hazard (Method-dependent), Make sure that your fingers are not between the furnace and the stand when closing the furnace.



- 1) **Be sure to be wearing PPE (personal protective equipment) such as gloves, eye protection, and lab coat upon entering the lab.**
- 2) Always before performing a TGA run, make sure unknown substance has not fallen inside the furnace. In the case that something does fall inside the furnace, PLEASE do NOT perform any tests and DO NOT try to take it out. The inside of the furnace can get damaged by sharp objects. Notify immediately the responsible user.
- 3) Ensure that instrument is on by touching the touch screen above sample loading stage. If the instrument is not on, please use the powder button in the back of the instrument to turn it on.
- 4) Check gas lines connected to Room 109. Make sure you can see appropriate flow settings on rotameter.
- 5) Make sure that argon gas is always flowing the instrument (usually set to 50 mL/min) to protect the instrument's furnace.
- 6) Never open the furnace if the temperature is above 50 °C.

## Instrument Operation

1. Using tweezers, take appropriate crucible and place it on the sample loading stage.
2. Click on "Control" on the instrument touch screen and select "Load Sample". The machine should automatically load the crucible.
3. After loading, Click on the "furnace" picture on the touch screen and click "apply". The furnace should close automatically. **NOTE: Do Not place your hands near the furnace while it is closing** as your hands may get pinched.
4. Tare the mass of the crucible using the computer software and the machine should automatically unload the sample on to the sample loading stage.
5. **Be sure to be wearing PPE (personal protective equipment) such as gloves, eye protection, and lab coat.**
6. Place crucible on counter and carefully load (0.5 – 20 mg) powder into the crucible.
  - a. Be aware of powder sensitivity and handle with care. For highly sensitivity materials, load powder in a controlled environment on to the crucible (fume hood, glove box, etc.)
7. Carefully, place the crucible back on the sample loading stage and repeat steps 2 and 3.

8. Begin setting up the computer software settings and input desired temperature program.
9. After setting up software, be sure to select auto program to start the experiment or press “run” to start the experiment.

## **After measurement (Extraction of the samples from the instrument)**

Samples that have been heated should be properly disposed of in powder waste containers available in the lab.