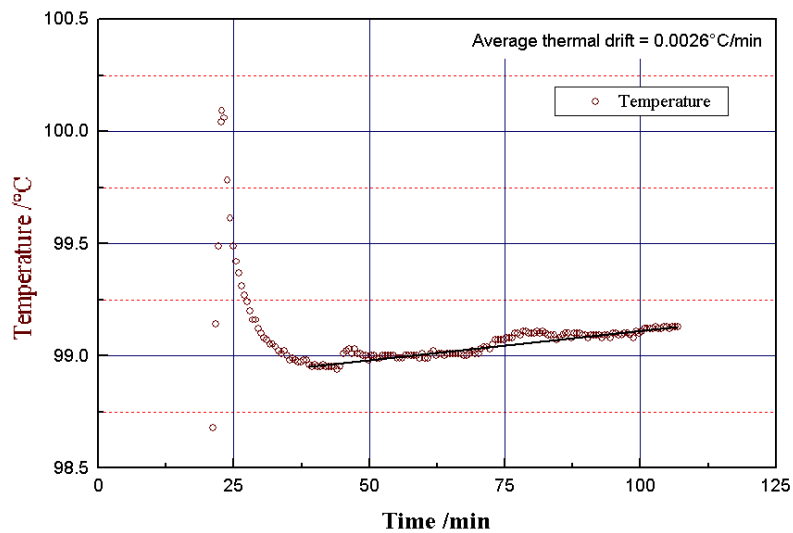


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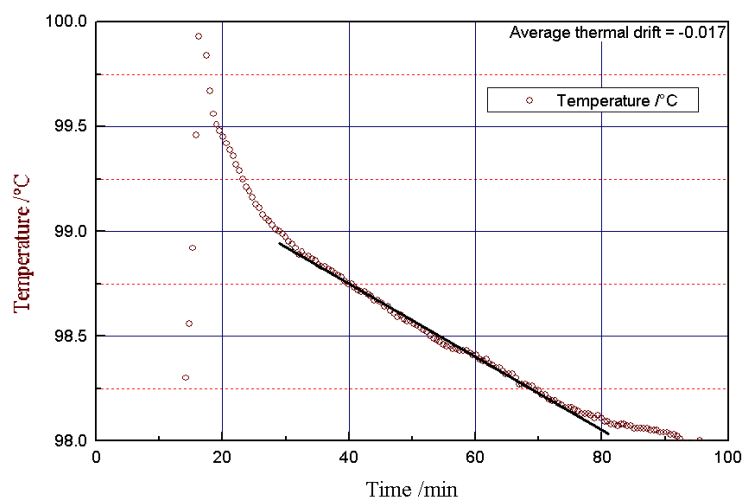
### Correction and measurement of thermal drift on the THT Accelerating Rate Calorimeter.

Subsequent to a “high sensitivity” calibration and prior to sample testing it may be prudent to carry out a drift check to verify the calibration by measuring thermal drift. Drift checks can quickly and easily check that the instrument has been adequately calibrated for the accuracy required. Drift checks are always run with an empty bomb and measure the change in calorimeter temperature as a function of time.

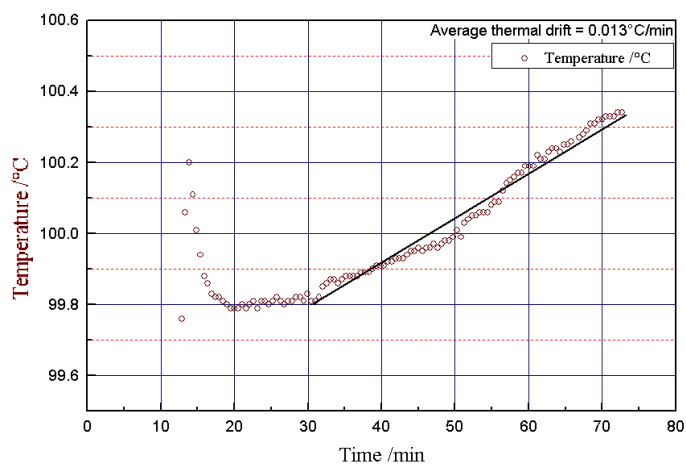
An example of a drift check is shown below. This check was carried out after calibration at  $0.005^{\circ}\text{C}/\text{min}$ .



In order to check the effect of the calibration values on the observed thermal drift, 0.050°C was manually added to each of the calibration points and the drift check was repeated. The results of this experiment are shown below.



The reverse experiment was then performed with 0.005°C being subtracted from the calibration values. The results of this experiment are shown below.



These results show that at 100°C a change in the calibration offset of 0.05°C will give a change in thermal drift of approximately 0.015°C/min. It is important to note that the correction must be applied in the opposite direction of change required (i.e. add to the calibration value to reduce the upward drift).

This is a similar situation to the original CSI ARC where a change in the calibration offset of 1µV would change the drift by 0.01°C/min. The direction of the change applied in this case is in the same as the correction required (i.e. add to the calibration value to increase the upward drift).