

TGA baseline drift and precision

Why is drift and precision data important?

A properly designed TGA instrument should be based on a reliable thermobalance:

- A low baseline drift under temperature scanning conditions is highly desirable for these experiments allowing large sample mass variations that do not require buoyancy effect corrections (baseline subtraction)
- A high baseline drift precision is required to ensure both repeatable measurements and bias-free data for these small sample mass variation experiments when baseline subtraction is necessary

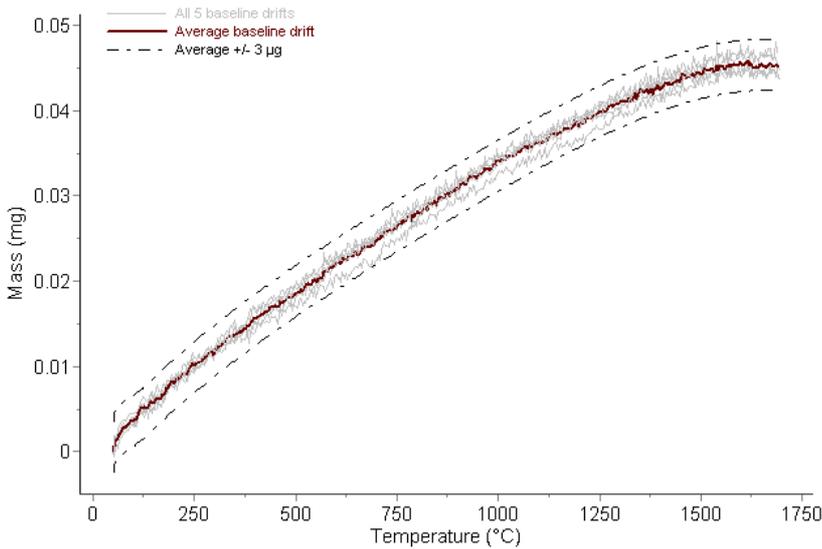


Figure 1

Test #	Drift up to 1000 °C (µg)	Drift up to 1700°C (µg)
1	35	49
2	34	45
3	34	45
4	35	45
5	33	47
Average	34	46

Table 1

Experimental conditions

Five repeated experiments were performed from 50 °C up to 1700 °C at a rate of 10 °C/min under helium flow of 20 mL/min. For these experiments, 170 µL alumina crucibles were used. These experiments were conducted using Setaram’s **Highest Versatility balance**.

Results

The TGA signal baseline drift values at 1000 and 1700 °C for each 5 experiments were determined. Their averages were 34 µg and 46 µg respectively. Figure 1 shows an overlay of the raw experimental data in gray, and of their average in red. The dashed lines depict a +/- 3 µg precision area within which the 5 baselines are included.

Conclusion

The THEMYS balances benefit from the combination of a low baseline drift even up to the highest temperatures and a best-in-class precision better than +/- 3µg over the whole temperature range.

Note that these results were obtained under true, real-laboratory life conditions, and with a crucible that is representative of what is used during experiments.

SETARAM Instrumentation thermobalances are designed specifically for thermal analysis applications, and not just adapted from existing laboratory balances.

THEMYS
RT to 1750°C



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