

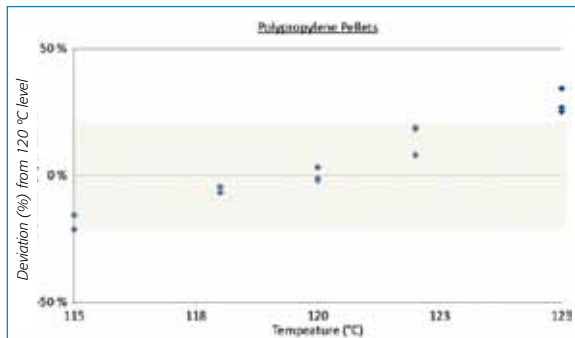
Improving Method VDA 278 Reproducibility through TDS Temperature Calibration

Thermal desorption instruments are widely used for determination of emissions of volatile organic compounds from materials. One technique is direct thermal extraction in which a material sample is placed directly in a thermal desorption tube. An inert gas is supplied under controlled conditions transferring released compounds from the material sample to a GC/MS system.

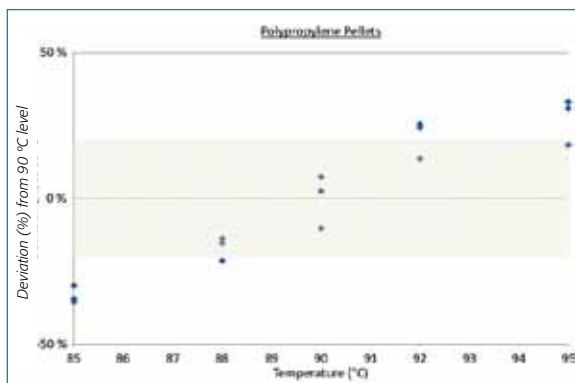
The widely used VDA 278 method for determination of organic emissions from vehicle interior materials is based on direct thermal extraction. When performing direct thermal extraction, the desorption temperature is the most critical method parameter, with even small changes resulting in large variations.

Consequently, temperature precision should be tightly controlled and verified.

The recently developed Temperature Calibration Kit for the Thermal Desorption System (GERSTEL TDS 3) ensures that the user will get the smallest possible desorption tube temperature variation for the set points 90 °C and 120 °C. The calibration is performed through temperature measurements directly in the sample position of the



Temperature induced deviation (%) of VOC emission rates from polypropylene pellets compared to the emission rate obtained at 90 °C (marked grey area represents $\pm 20\%$ criteria, two or three runs were performed at each temperature).



Temperature induced deviation (%) of FOG emission rates from polypropylene pellets compared to the emission rate obtained at 120 °C (marked grey area represents $\pm 20\%$ criteria, two or three runs were performed at each temperature).

TDS in question on site in the customer laboratory. The procedure is performed using the GERSTEL MAESTRO software feature „VDA 278 calibration“: The TDS sample temperature is calibrated by mouse-click at 90 °C and at 120 °C with a resulting deviation smaller than $\pm 1.0\%$.

This ensures that reproducible results can be obtained from instrument to instrument and from laboratory to laboratory.

Suggested Reading

GERSTEL Application Note No. 186, 2016 „Improving Thermal Extraction Method Reproducibility through Instrument Temperature Calibration in the Sample Position“ www.gerstel.com/pdf/AppNote-186.pdf



VDA 278

The VDA 278 method describes Thermal Desorption Analysis of Organic Emissions for the Characterization of Non-Metallic Materials for Automobiles. The emissions are classified as VOCs and SVOCs, determined in two different runs. The SVOCs are described as condensable substances (FOG value). To achieve these results, samples are heated and released compounds are trapped and determined by GC/MS.

In the VDA 278 method, the GERSTEL TDS/TDSA-system is listed as standard system.