


TIPS TO MAXIMIZE HS-GC PERFORMANCE



PerkinElmer GC 2400 and HS 2400

Headspace Gas Chromatography (HS-GC) instrument performance is dependent upon proper operation, use of the correct consumables, and following manufacturer guidelines. Here we show a list of some of the best and worst practices during set-up and maintenance of your HS-GC. Adhere to these guidelines to maximize your instrument's performance potential and ensure your laboratory's data quality meets your exacting specifications.

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- ✓ Whenever possible, use recommended PerkinElmer sample vials, caps, and septa to avoid damage to the instrument and/or loss of sample materials
 - ✓ Ensure correct cap septa are used for your application and method temperature. If septa are used above their temperature rating, they will introduce contaminants
 - ✓ For proper vial sampling, ensure to consult the instrument's user manual regarding recommended needles (only PerkinElmer supplied needles can be used on the HS 2400 sample head needle assembly)
 - ✓ To improve analytical performance and extend column lifetime, use moisture, hydrocarbon, and oxygen filters, in this order, installed on the carrier gas line close to the inlet of the HS to minimize the level of impurities in the carrier gas. Filters should be installed vertically with an upward flow of gas through the filter's sorbent packing
 - ✓ Use filtered helium, hydrogen or nitrogen gas with purity of $\geq 99.999\%$
 - ✓ Use only dry hydrocarbon free compressed air for combustion gas for optimum FID performance
 - ✓ Always have carrier gas flow through the column before heating to avoid column damage
 - ✓ Establish and adhere to a routine preventative maintenance schedule for replacing consumables to avoid unplanned instrument downtime (e.g. GC inlet septa, liners, HS O-rings, needle seals, and gas filters)
 - ✓ Observe the maximum filling volume of 15 mL for liquid samples when using 22 mL sample vials to prevent vial rupture due to excess pressure build-up
 - ✓ Use only felt tip pens to mark sample vials, or barcode labels provided by PerkinElmer. Adhesive labels may jam in the oven
 - ✓ Regularly leak check all gas fittings and column fittings
 - ✓ Ensure recommended column length in injector/detector for optimum performance

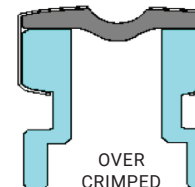
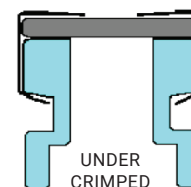


Do's

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- ✓ Check the safety closure for reliable tightness after sealing the sample vial. Adjust vial crimper as needed. A sealed vial cap should be hard to turn by hand when properly sealed. If a vial leak is suspected, due to wrong crimping operation, fill and seal a vial with 5 mL of acetone or methanol. Submerge the capped end of the vial in a beaker of hot water and check for bobbles around the vial cap.

EXAMPLES



Don'ts

- ✗ Do not heat column oven above maximum column temperature to avoid column damage
- ✗ Do not use labels or etching tools on vials. Adhesive labels may jam in the oven
- ✗ Do not heat column prior to purging with carrier gas, to avoid column damage
- ✗ Do not leave the end of the detectors (FID, MS, etc) open in the oven. It is important to note that an explosion hazard could develop if the base of the FID is left open, the FID hydrogen gas is left on, and the oven door is closed
- ✗ Do not heat headspace vials to within 20 °C of the solvent's boiling point in static headspace, to prevent vial rupture from excess pressure build up