Baseline Instability in GC

This Information Applies To: *Agilent GC Systems*

Issue

Baseline instability that is not reproducible across multiple runs can be introduced at different points including sample introduction, separation, and the detector. The baseline instability causes integration problems, which can lead to inaccurate quantitative or qualitative results.

Baseline rises reproducibly, are normal for ramped temperature programs. The change in baseline will be consistent across multiple runs and multiple days, and will not impact negatively on analytical results.

Other chromatographic problems are identified in Basic Troubleshooting for GC Systems . Regular maintenance of your instrument in accordance with the recommended maintenance schedule will reduce the incidence of chromatography problems.

Background

Over time sample deposits can accumulate in the analytical pathway and slowly leach out during subsequent sample analyses (see Figure 1) causing an inconsistently baseline across the run time. Baseline instability may or ay not be associated with high background noise: Excessive Background Noise in GC .

Figure 1. Baseline instability

1. Normal background after baseline subtraction, 2. Baseline instability

Resolution

Possible sources of baseline instability include:

Possible source of contamination	Solution
Gas leak	Test all gas lines for leaks. If the baseline instability coincided with a change in gas cylinder, start at the gas cylinder end of the gas lines
Low quality or contaminated gas supply	Check to see if the baseline instability coincided with a change in gas cylinder. Change the gas cylinder and flush the gas lines for sufficient time for the gas volume in the lines to be completely purged
Septum bleed or degradation	Replace the septum. Use an Agilent high-quality septum appropriate for your inlet temperature. See Replacing the Inlet Septum for Split/Spitless and Multimode Inlets
Inlet liner dirty	Replace the inlet liner. Use an Agilent inlet liner appropriate for your injection volume, solvent, and injection mode
Gold seal dirty	Replace the gold seal. See How to Replace the Gold Seal on the Split/Splitless (S/SL) Inlet for an Agilent GC
Inlet contamination	Clean or Bake out the inlet. See How to Bake-out the Split/Splitless Inlet (S/SL) on Agilent GC Systems

2. **Analytical column**

⚠ **Caution**: Do not exceed the manufacturer recommended maximum column temperature limit as it will damage your column.

Possible source of contamination	Solution
Incompletely conditioned column	Bake out the column. Limit the bake-out for 1 to 2 hours or until the baseline is stable
Column contamination	Bake out the column. Limit the bake-out for 1 to 2 hours or until the baseline is stable Trim the column: Remove 0.5 to 1 m from the front of the column

Detector

Detector leak	Leak test the detector fittings

If these procedures have not resolved the baseline instability problem, contact Agilent Technical Support.

Learn how to effectively troubleshoot your Agilent GC System:
GC-0GEN-1001e - Gas Management Best Practices
GC-0GEN-1012s - GC Inlets Theory and Operation **e-learning courses available from Agilent education**

Was this helpful?

Still Need Assistance?

Contact Support

Ask the Community