Agilent Thermal Conductivity Detector Troubleshooting

This Information Applies To: *Agilent 8890/8860/7890/7820/6850/6890 GC Systems with TCD (Thermal Conductivity Detector)*

Issue

Problems observed with thermal conductivity detector (TCD) results can have different underlying causes.

Resolution

Check that the TCD settings are within the recommended range, then assess the instrument for the following errors/problems:

Hardware Fault Error No signal and/or the GC front panel screen displays Front/Back Detector Error.

Cause: Filament is open (burnt out)
Fix: Replace the TCD detector cell. Contact Agilent Technical Support.

High background causing poor sensitivity

Cause: Contamination of the gas flow system
Fix:

1. Check gases are of 99.999% purity / 5.0 grade
2. Check column is installed correctly (see Capillary Column Installation Quick Reference Guide)
3. Leak test the inlet (see Troubleshooting a Leak in a Split/Splitless Inlet and How to Run and Interpret the Inlet Leak and Restriction Test for the Agilent 7890/8860/8890 GC Systems)
4. Leak test the TCD
5. Bake out the TCD

Drifting or wandering baseline

Cause: Some drift is normal in temperature programmed analyses, but should be reproducible between runs. To determine if the drift is greater than normal compare with established baseline.
Fix:

1. Check heaters/ sensors to verify there's no active faults: Power cycle the instrument to start a self-check of all thermal heated zones. Any detected faults will be reported on screen
2. Leak test the inlet (see Troubleshooting a Leak in a Split/Splitless Inlet and How to Run and Interpret the Inlet

Ringing on Peak Tail

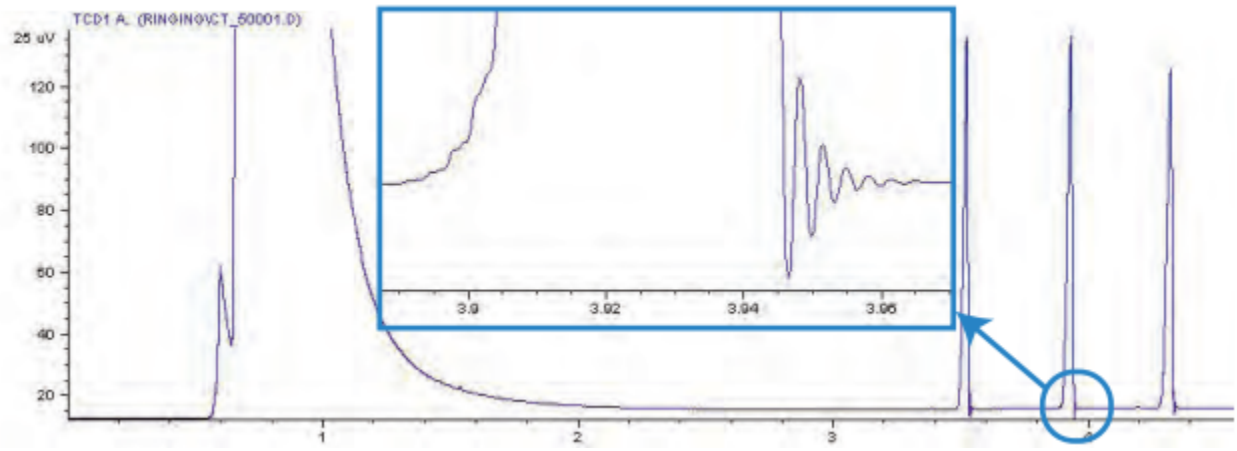

Figure 1. Ringing at peak tail

Cause: The sampling rate for the detector is set to equal to or less than 5 Hz (which is the switching rate of the solenoid valve). For more information on sampling rate see Agilent GC Detector Sampling (Data) Rate
Fix: Change the sampling rate to greater then 5 Hz.

Tip: Calibration curves must be re-established after any changes to the sampling rate. In some cases, methods may require re-validation.

Noise/Spikes in Baseline

Causes include:

1. A Valve (Sampling or Switching types) in the GC column flow path switching causing a pressure / flow disturbance
2. Power problems, including poorly grounded power
3. Inconsistent gas quality, pressure, or flow being delivered to the GC, gas generators are more prone to supply problems that gas cylinder supplied gas
4. Rapid ambient pressure changes in the area of the GC, e.g., air-conditioning fans cycling on/off or opening a door between areas with an intentional pressure difference.
5. Faulty electronics board.

Fix: Contact Agilent Technical Support for further assistance.

Learn how to effectively operate and troubleshoot your Thermal Conductivity Detector (TCD):
GC-0GEN-1013s - GC Detectors Theory and Operation
GC-7890-2281r - Agilent 7890 Series GC Thermal Conductivity Detector (TCD) Troubleshooting **e-learning courses available from Agilent education**

Still Need Assistance?

Contact Support

Ask the Community