AGILENT GAS CHROMATOGRAPHY AND SULFUR-SELECTIVE DETECTION

ANALYSIS OF SULFUR COMPOUNDS ACCORDING TO ASTM D5623

There are many ways to measure sulfur in petrochemical products. Each technique has its own strengths. The new Agilent 8355 Sulfur Chemiluminescence Detector has been designed to fulfill and exceed all testing requirements for sulfur, especially with its:

- Linear response
- Nonquenching performance
- Excellent LOD/LOQ
- Ease-of-use
- Uptime readiness

Gas chromatography with sulfur chemiluminescence detection (SCD) provides fast identification and quantification of sulfur compounds in petroleum feeds and products. Examples include sulfur compounds in monomers such as ethylene and propylene, in solvents such as paraffins, benzene, toluene, and xylenes, and in fuels such as natural gas, LPG, gasoline, kerosene, jet, and diesel.

Most sources of light hydrocarbons contain sulfur compounds. If these compounds are present in elevated amounts, then serious problems could occur, such as corrosions and noxious off gassing. These impurities can greatly affect the quality and value of the final product. Being able to test for sulfur accurately, reliably, and at any given moment, is critical to the petrochemical industry.

The Agilent 7890B GC, with its integrated 8355 SCD, delivers sensitivity, selectivity, and linear responses for low-level sulfur analysis to ASTM D5623 criteria, as this gasoline example shows.

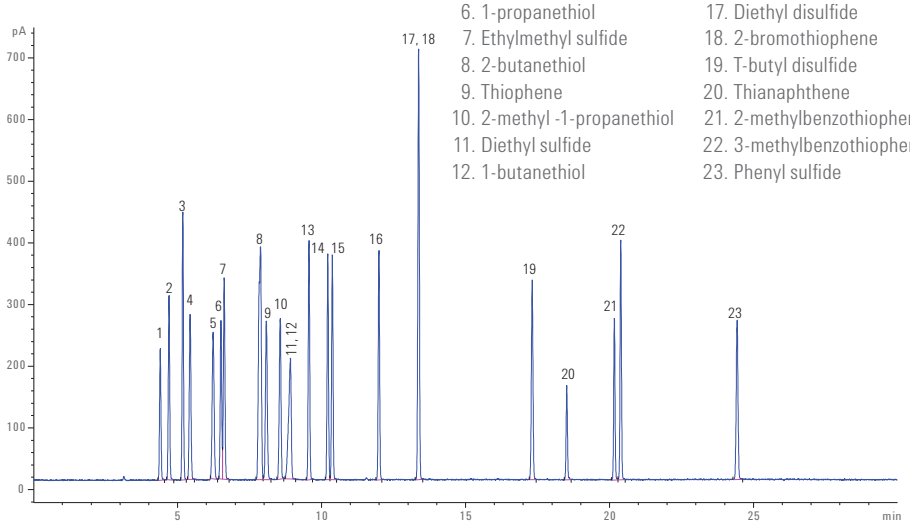
GC Conditions

Columns:	Agilent J&W DB-Sulfur SCD or DB-1 are suitable
Liner:	Ultra Inert, low pressure drop, wool (p/n 5190–2295)
Inlet:	275 °C
Injection:	Split 10:1, 1 µL injected
Flow rate:	Constant flow, He carrier gas, 2.0 mL/min
Oven:	40 °C (1 min), ramp 10 °C/min to 250 °C 8 min)

SCD Conditions

Base:	250 °C
Furnace:	800 °C
Air flow (oxidation):	60 mL/min
Oxygen flow (ozone gen):	40 mL/min
H_2 flow (oxidation/lower):	38 mL/min
H_2 flow (oxidation/upper):	8 mL/min

1. Ethanethiol
2. Dimethyl sulfide
3. Carbon disulfide
5. 2-methyl -2-propanethiol
6. 1-propanethiol
7. Ethylmethyl sulfide
8. 2-butanethiol
9. Thiophene
10. 2-methyl -1-propanethiol
11. Diethyl sulfide
12. 1-butanethiol
13. Dimethyl disulfide
14. 2-methylthiophene
15. 3-methylthiophene
16. 3-chlorothiophene
17. Diethyl disulfide
18. 2-bromothiophene
19. T-butyl disulfide
20. Thianaphthene
21. 2-methylbenzothiophene
22. 3-methylbenzothiophene
23. Phenyl sulfide



This chromatogram demonstrates performance by showing 23 sulfur standards in isooctane detected at 1 ppm. The Agilent 7890B GC and integral 8355 SCD delivers the ultimate in sulfur analysis with enhanced 'walk-up' readiness. By reimaging the entire analyzer from injection to detection, the Agilent 8355 SCD has set new levels of expectation for sulfur chemiluminescence detectors.

For more information,
contact your Agilent Representative
at **www.agilent.com/chem/contactus**
or learn more about the Agilent 8355 SCD
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