



## **TRACE SULFUR COMPOUNDS ANALYSIS**

SULFUR SPECIES IN NATURAL GAS, NATURAL GAS LIQUIDS, LIQUID PETROLEUM GASES, LIGHT PETROLEUM LIQUIDS, AND CONDENSATES.





SGS oil & gas laboratories support exploration, production, processing and refining customers with a broad range of trace sulfur compound analysis testing capabilities for natural gas, natural gas liquids (NGL), liquid petroleum gases (LPG), light petroleum liquids, and condensates. Trace sulfur compounds are detected at ppb and ppm levels. When needed, detailed sulfur molecular speciation is available.

Many sulfur compounds are corrosive, damaging infrastructure, inhibiting and destroying catalysts employed in downstream processing, and impart undesirable odors to products. The ability by SGS to speciate sulfur compounds in various petroleum liquids is useful in controlling sulfur compounds in finished products and is frequently more important than the ability to simply measure total sulfur content alone.

Gas chromatography with sulfur chemiluminescence detection provides a rapid means of identifying and quantifying sulfur compounds in petroleum feeds and products. Examples include sulfur compounds in monomers such as ethylene and propylene; solvents including paraffins, benzene, toluene and xylenes, and fuels such as natural gas, LPG, gasoline, kerosene, jet, and diesel.

**TRACE SULFUR SPECIES ANALYSIS IN NATURAL GAS, NATURAL GAS LIQUIDS, LIGHT PETROLEUM LIQUIDS, & CONDENSATES**

### **SULFUR COMPOUND ANALYSIS METHODS:**

- Sulfur compounds in natural gas and gaseous fuels by gas chromatography and chemiluminescence (ASTM D5504). Detection limit of 0.1 ppm
- Sulfur compounds in light petroleum liquids by gas chromatography and sulfur selective detection, detection limit of 100 ppb (ASTM D 5623). Modified test methods may achieve trace detection limits of 20 ppb
- Sulfur compound analysis in LPG (liquid petroleum gas), run by ASTM D-5623

### **SULFUR SPECIES COMPOUNDS DETECTED INCLUDE:**

- Hydrogen Sulfide (H<sub>2</sub>S)
  - Carbonyl Sulfide (COS)
  - Methyl Mercaptan
  - Ethyl Mercaptan
  - Dimethyl Sulfide (DMS)
  - Carbon Disulfide (CS<sub>2</sub>)
  - Isopropyl Mercaptan
  - tert-Butyl Mercaptan
  - n-Propyl Mercaptan
  - Ethylmethyl Sulfide
  - sec-Butyl Mercaptan
  - Thiophene
  - Isobutyl Mercaptan
  - Diethyl Sulfide
  - n-Butyl Mercaptan
  - Methyl tert-Butyl Sulfide
  - Methyl Disulfide
  - 2-Methyl-Thiophene
  - 3-Methyl-Thiophene
  - Tetrahydrothiophene
  - Ethyl Methyl Disulfide
  - Diethyl Disulfide Thiophenol
  - Benzo[b] Thiophene
  - Methylbenzothiophenes
  - Dimethylbenzothiophenes
  - Diphenyl Sulfide
  - Dibenzothiophene
- And others...

### **DETECTION OF SULFUR COMPOUNDS PRESENT AFTER THE INDUSTRIAL PROCESS:**

Certain odorous sulfur compounds, such as ethyl mercaptan, tetrahydrothiophene, and occasionally thiophene are intentionally added to propane for use as warning agents in the detection of LPG leaks. We can detect sulfur compounds in these liquids, in concentrations as low as 20 ppb, to assure the quality of the added odorant.

Testing and reporting are rapid, upon receipt of samples.

### **CONTACT INFORMATION:**

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