Global Analyser Solutions

High Purity Analyser

- ASTM D8098
- ppb permanent gases in

  C2 and C3 hydrocarbon streams
- Using Pulsed Discharge Detector (PPD, PDHID)

Get ready for ***tomorrow's analytics***

Trace analysis of permanent gases in C2 and C3 hydrocarbon products by GC-PDD according to ASTM D8098

This method covers the determination of hydrogen, nitrogen, oxygen, methane, carbon monoxide, and carbon dioxide in the parts per billion mole (nmol/mol) to parts per million mole (µmol/mol) range in C2 and C3 hydrocarbons

Instrumentation

The trace gas analyser is configured using a Thermo Trace GC1600 with Pulsed Discharge Detector (PDD or PDHID), 2 purged diaphragm valves and 3 separation columns. The 10 port valve injects the sample and backflushes the matrix compound using column 1. CO_2 is separated on column 2, and elutes to the PDD via restriction R. H_2, O_2, N_2, CH_4 and CO are temporary isolated and separated using column 3 and subsequently detected.

The used columns are:

1. Rt-Qbond, 30 m × 0.53 mm
2. Rt-Qbond, 30 m × 0.53 mm
3. Rt-MSieve 30 m × 0.53 mm

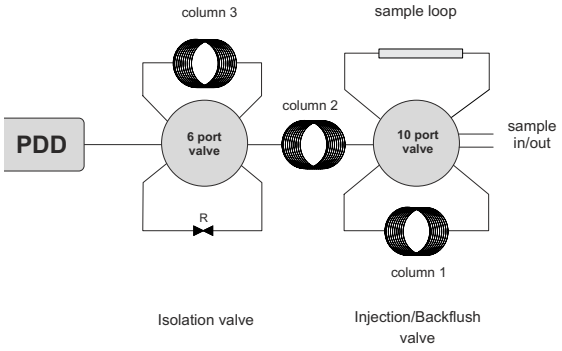

Figure 1 ASTM D8098 Analyser diagram

Very leak-tight diaphragm valves | Low maintenance

Ultra-durable diaphragm valves with an internal purge option offer low maintenance and a very low background level, providing the best possible sensitivity and dynamic range. The valves are mounted in a separately heated valve compartment to ensure stable performance.

Excellent analytical performance

The GAS ASTM D8098 analyser shows excellent analytical performance. See the data below and the chromatogram (figure 2).

Repeatability: < 0.5-3% RSD (depending on concentration)

Linearity: > 0.98

Runtime: 7 minutes

Detection limit (s/n=3*noise):

H_2	< 20 ppb
O_2	< 10 ppb
N_2	< 10 ppb
CH_4	< 10 ppb
CO	< 20 ppb
CO_2	< 10 ppb

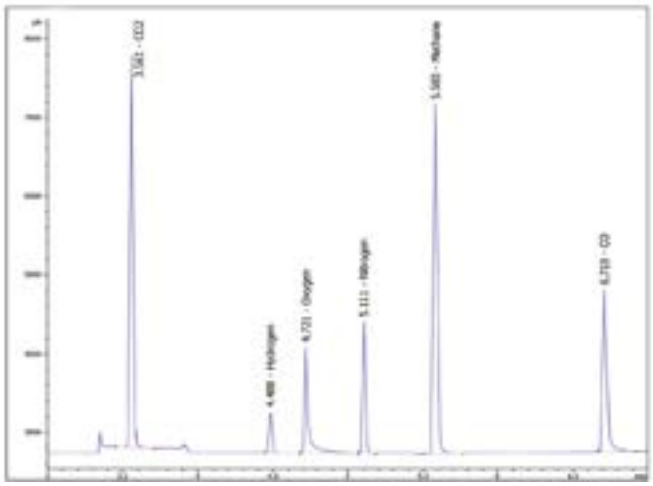

Figure 2 Chromatogram ASTM D8098 analyser

Figure 3 ASTM D8098 analyser is based on Trace GC1600 (left), and is also available on CompactGC$^{4.0}$ (right).

Conclusion

The High Purity Analyser from GAS fully complies with the requirements of ASTM D8098 for the analysis of trace levels of permanent gases in C2 and C3 hydrocarbon products.