

Trace Carbonyl Sulfide in Propylene by GC-SCD according to ASTM D5303

Test method ASTM D5303 covers the determination of traces of carbonyl sulfide (COS) in propylene. It is applicable to COS concentrations from 0.5 mg /kg to 4.0 mg /kg (parts per million by mass).

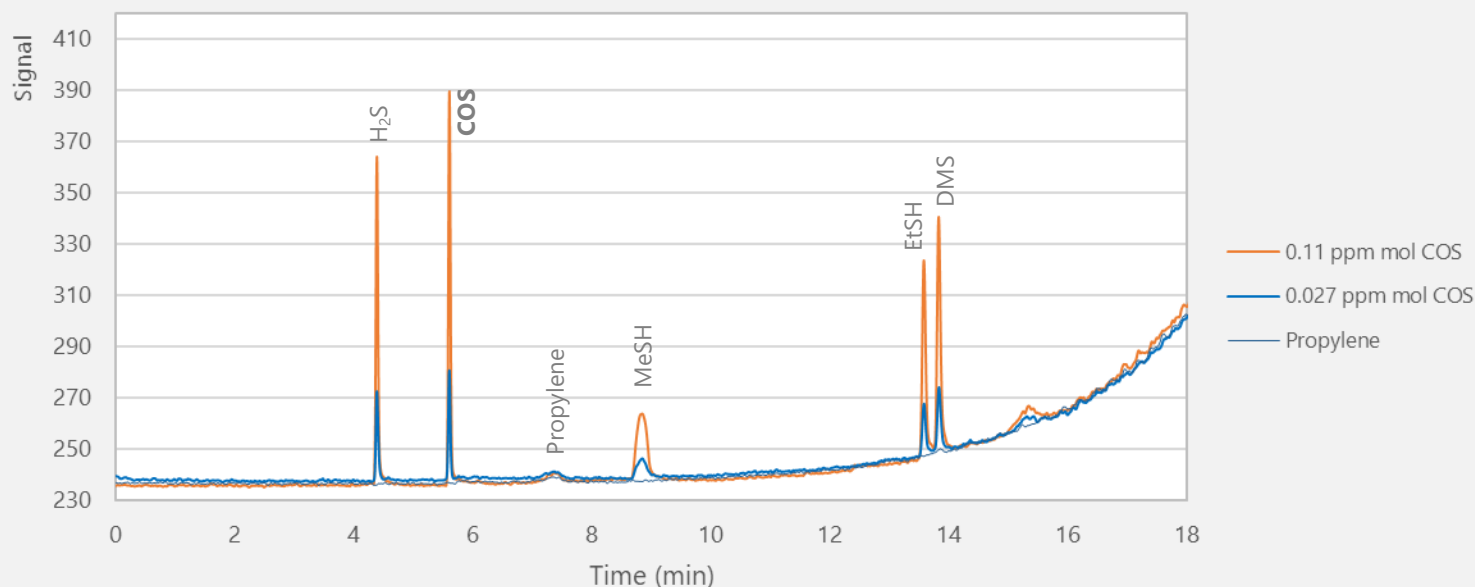
This application highlight shows the performance of the “**AC D5303 application**” using the SeNSE².

The analyzer is configured with a direct gas sample introduction (no split inlet) and a dedicated 60m capillary column capable of completely separating COS from propylene.

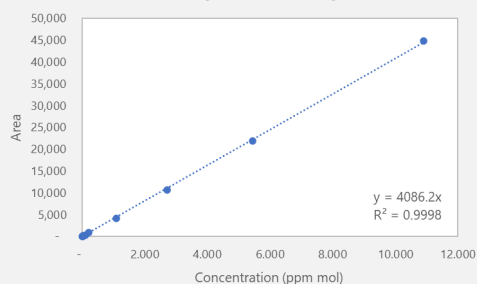
PAC has been able to achieve a quantification limit (10* noise) of less than 10 ppb mol COS, which is about 15 µg COS/kg propylene. This is significantly lower than the <1 mg/kg as listed in ASTM D5273 for polymer grade propylene.



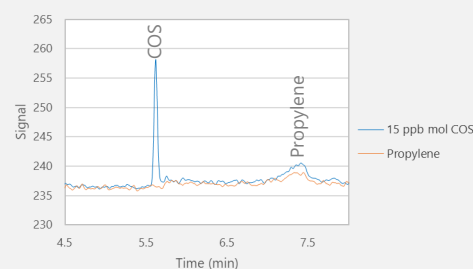
COS (and other sulfur components) in propylene



Carbonyl sulfide linearity



15 ppb mol carbonyl sulfide in propylene



Conclusion:

This analyzer has been thoroughly tested for compliance to ASTM D5303, and meets and exceeds the method requirements, as shown in the table below:

ASTM D5303		
	method specification	analyzer specification
Limit of Quantification µg COS / kg propylene	<30	< 15
Working range mg COS / kg propylene	0.5 - 4.0	0.02 - 10
Detector sensitivity	<0.15 pg S / sec (with oxygen as oxidant)	

The SeNSE² chemiluminescence detector has an excellent sensitivity, long-term stability and equimolarity. Its great performance, and as part of AC by PAC factory-tested and performance-guaranteed analyzer, makes it a highly reliable detector to specifically identify and quantify COS in propylene at very low ppb level.