



## Oxygenates

# Analysis of trace methanol in 1,3-butadiene

## Application Note

Energy & Fuels

### Authors

Agilent Technologies, Inc.

### Introduction

The Lowox adsorbent provides very high retention for oxygenated compounds. The methanol elutes after  $n\text{-C}_{14}$ , allowing this component to be measured at low levels in a range of hydrocarbon streams. A typical application of trace methanol in 1,3-butadiene is shown here. Methanol has to be measured usually as low as 5 ppm. Normally this application is run on a TCEP column, but on TCEP the methanol co-elutes with the 4-vinylcyclohexene. With the Lowox column, the methanol is retained much more and is well separated from the 4-vinylcyclohexene, as shown in the chromatogram.

The reproducibility on quantification of this method is within 5%. As well as butadiene, methanol can also be measured in ethylene and propylene. The high maximum temperature of 350 °C, with virtually no bleed makes the Lowox column widely applicable. Other  $\text{C}_1 - \text{C}_5$  oxygenated compounds can also be separated as the selectivity of the Lowox is also very high, see Application note 1362.

If lower levels have to be measured, a pre-separation on an Agilent CP-Sil 5 CB precolumn is advised. Oxygenates can be quantified at ppb level in complex hydrocarbon ranges.

To obtain a small injection band a 0.1 x 50 cm deactivated fused silica was placed before the Lowox column.



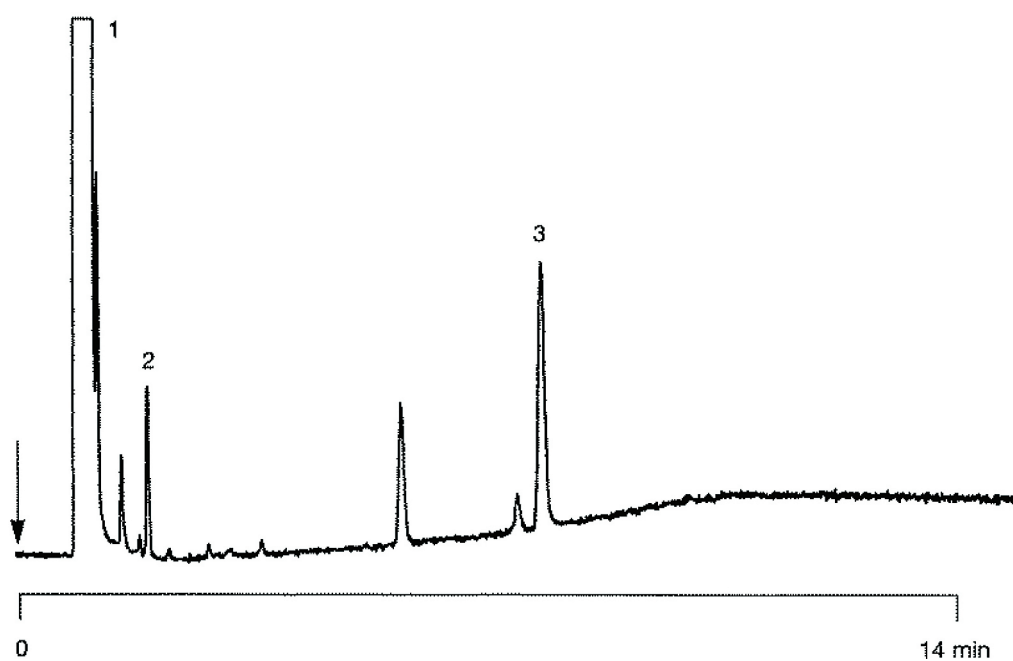
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## Conditions

Technique : GC-wide-bore  
Column : Agilent Lowox 0.53 mm fused silica PLOT  
(Part no. CP8587)  
Temperature : 175 °C (2 min) → 275 °C, 10 °C/min  
Carrier Gas : He, 420 kPa (4.2 bar, 60 psi)  
Injector : Split via Valco valve  
Detector : MSD  
Sample Size : ca 0.1 µL liquid commercial 1,3-butadiene  
Concentration Range : ca 20 ppm

## Peak identification

1. 1,3-butadiene
2. 4-vinyl-1-cyclohexene
3. methanol



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