

## Gases

# Analysis of decomposition gases from explosives (1,3,3-trinitroazetidine, TNAZ)

## Application Note

Homeland Security

### Authors

Agilent Technologies, Inc.

### Introduction

A single PLOT column separates a large number of gases which are formed during the decomposition of explosives. The narrow-bore Agilent PoraPLOT Q column allows direct coupling to a mass spectrometer and dramatically improves the analytical capabilities for compositional analyses of decomposition gases. This single column system is able to simultaneously separate and detect  $N_2$ ,  $CO$ ,  $CO_2$ ,  $NO$ ,  $N_2O$ ,  $H_2O$ ,  $HCN$  and cyanogen.



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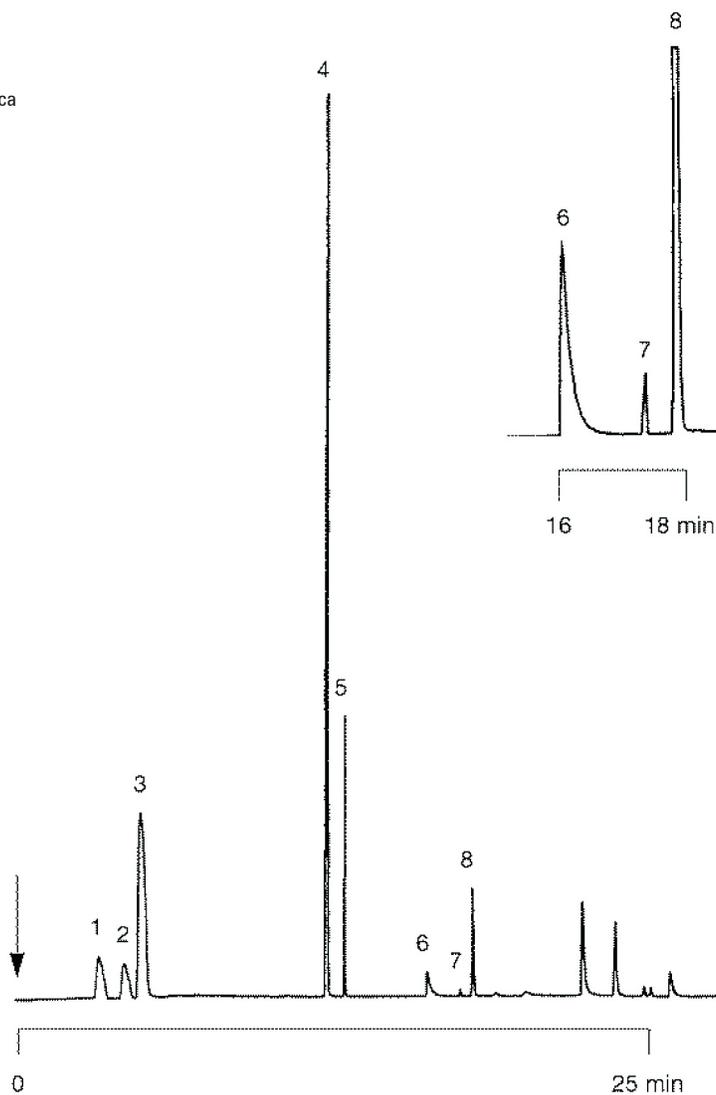
## Conditions

Technique : GC-capillary  
Column : Agilent PoraPLOT Q, 0.25 mm x 25 m fused silica  
PLOT (df = 8  $\mu$ m) (Part no. CP7549)  
Temperature : -80 °C (5 min)  $\rightarrow$  150 °C, 15 °C/min  
Carrier Gas : He, 1.2 mL/min  
Injector : Valve/Split, split ratio approx. 1:15,  
T = 100 °C  
Detector : MS, TIC,  
T = 180 °C  
Sample Size : 100  $\mu$ L  
Concentration Range : 0.39 mg TNAZ sample

Courtesy : Dr. James L. Smith, University of Rhode Island,  
Department of Chemistry, USA

## Peak identification

1. nitrogen
2. carbon monoxide
3. nitric oxide (NO)
4. carbon dioxide
5. nitrous oxide (N<sub>2</sub>O)
6. water
7. cyanogen (C<sub>2</sub>N<sub>2</sub>)
8. hydrocyanic acid (HCN)



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