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\(_2\)O, H\(_2\)O, HCN and cyanogen.
Conditions

Technique: GC-capillary

Column: Agilent PoraPLOT Q, 0.25 mm x 25 m fused silica PLT (df = 8 μm) (Part no. CP7549)

Temperature: -80 °C (5 min) → 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 μL

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 (N₂O)
6. water
7. cyanogen (C₂N₂)
8. hydrocyanic acid (HCN)

www.agilent.com/chem

This information is subject to change without notice.
© Agilent Technologies, Inc. 2011
Printed in the USA
31 October, 2011
First published prior to 11 May, 2010
A01440