

APPLICATIONS

Fast Analysis of Alcohol-Based Sanitizers by GC-FID using Zebron™ ZB-WAXPLUS™ GC Columns

Ramkumar Dhandapani and Rola El abaji
Phenomenex, Inc., 411 Madrid Ave., Torrance, CA 90501 USA

Overview

Hand sanitizer consumer products typically come in the form of liquid or gel and are thought to be generally effective at killing microorganisms and decreasing infectious agents on our hands. Alcohol-based sanitizers are most common, with versions that contain 60% to 95% alcohol. These versions typically contain some combination of isopropyl alcohol, ethanol (ethyl alcohol), and/or n-propanol.

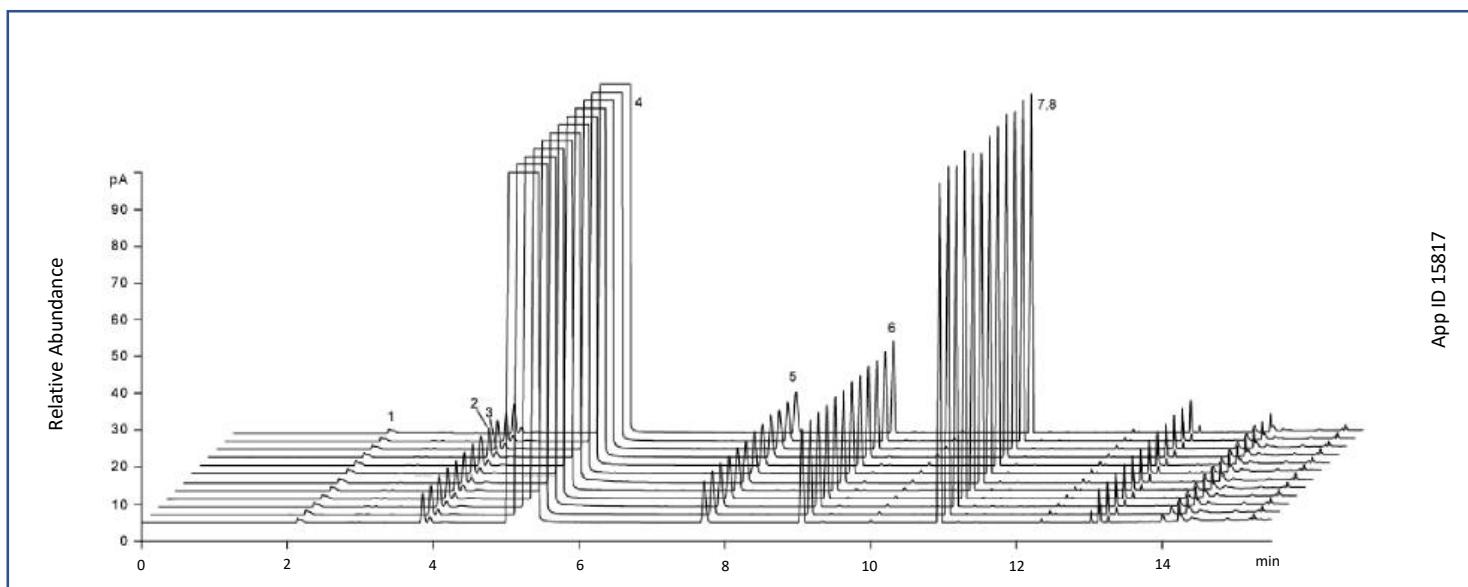
Presented in **Figure 1** is the separation of alcohols commonly tested for in alcohol-based sanitizers including methanol, ethanol, propanol and butanol, on a 100% aqueous stable ZB-WAXPLUS GC column. In addition to the fast 15-minute separation, high injection-to-injection reproducibility can be noticed for this challenging aqueous matrix. This high-throughput separation example employed a high percentage ethanol to mimic alcohol-based sanitizer. **Figure 2** represents separation of trihydric alcohols, such as glycerols, that are added as moisturizer in some versions of hand sanitizers. A run time of less than 15 minutes is extremely helpful for faster testing and expedited batch release based on the GC test results.

GC-FID Conditions

Column: Zebron ZB-WAXPLUS
Dimension: 30 meter x 0.25 mm x 0.25 μ m
Part No.: [7HG-G013-11](#)
Injection: 30:1 @ 140 °C, 0.2 μ L
Recommended Liner: Zebron PLUS Single Taper Z-Liner™
Liner Part No.: [AG2-4B13-05](#); [AG2-0A13-05](#)
Carrier Gas: Helium @ 1.4 mL/min (constant flow)
Oven Program: 35°C for 5 min to 85°C @ 10°C/min to 200°C @ 25°C/min for 1 min
Detector: Flame Ionization (FID) @ 200 °C
Sample:

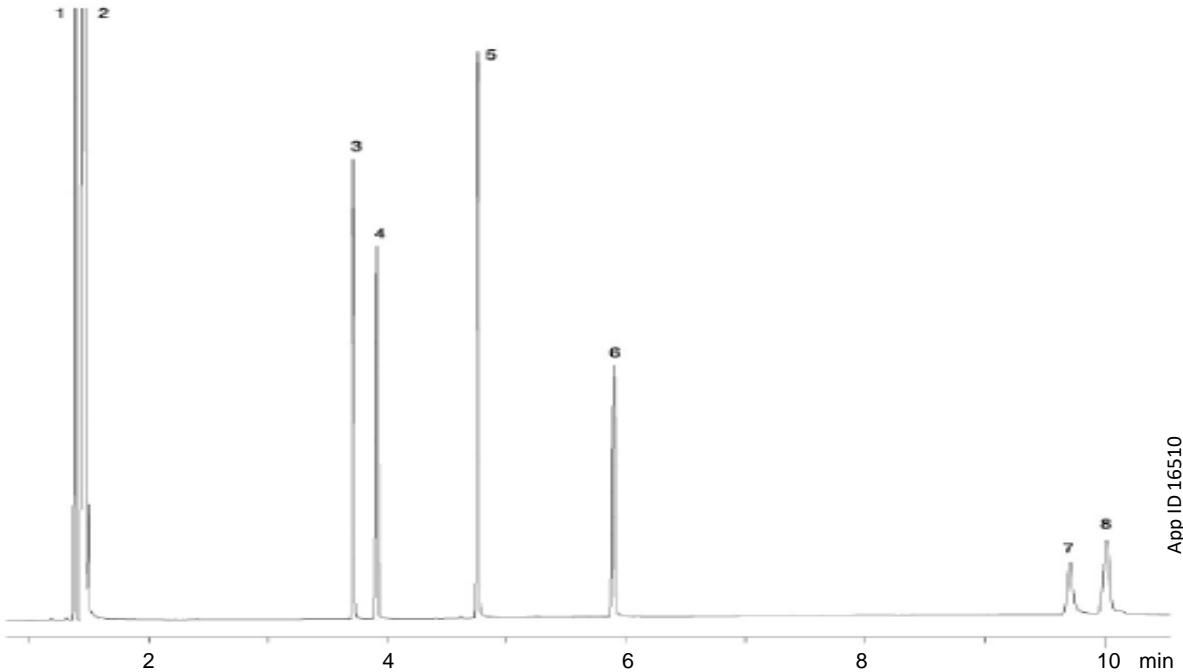
1. Acetaldehyde
2. Ethyl acetate
3. Methanol
4. Ethanol
5. Propanol
6. Isobutanol
7. 2-Methylbutanol
8. 3-Methylbutanol

Figure 1: Separation of Alcohols in Aqueous Matrix in Less than 15 Minutes on a Zebron ZB-WAXPLUS GC Column



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Figure 2: Separation of Glycerol in Less Than 11 Minutes on a Zebron ZB-WAXPLUS GC Column



GC-FID Conditions

Column: Zebron ZB-WAXPLUS
Dimension: 30 meter x 0.25 mm x 0.25 µm
Part No.: [7HG-G013-11](#)
Injection: Split 20:1 @ 225 °C, 0.5 µL
Recommended Liner: Zebron PLUS Single Taper Z-Liner
Liner Part No.: [AG2-0A13-05](#)
Carrier Gas: Helium @ 3 mL/min (constant flow)
Oven Program: 80 °C to 180 °C @ 20 °C/min for 20 min
Detector: Flame Ionization (FID) @ 250 °C
Sample:

1. Benzene
2. Acetonitrile
3. 1,2-Propanediol
4. Ethylene glycol
5. 1,3-Propanediol (internal standard)
6. Diethylene glycol
7. Glycerol
8. Triethylene glycol



APPLICATIONS

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Australia
t: +61 (0)2-9428-6444
auinfo@phenomenex.com

Austria
t: +43 (0)1-319-1301
anfrage@phenomenex.com

Belgium
t: +32 (0)2 503 4015 (French)
t: +32 (0)2 511 8666 (Dutch)
beinfo@phenomenex.com

Canada
t: +1 (800) 543-3681
info@phenomenex.com

China
t: +86 400-606-8099
cninfo@phenomenex.com

Denmark
t: +45 4824 8048
nordicinfo@phenomenex.com

Finland
t: +358 (0)9 4789 0063
nordicinfo@phenomenex.com

France
t: +33 (0)1 30 09 21 10
franceinfo@phenomenex.com

Germany
t: +49 (0)6021-58830-0
anfrage@phenomenex.com

India
t: +91 (0)40-3012 2400
indiainfo@phenomenex.com

Ireland
t: +353 (0)1 247 5405
eireinfo@phenomenex.com

Italy
t: +39 051 6327511
italiainfo@phenomenex.com

Luxembourg
t: +31 (0)30-2418700
nlinfo@phenomenex.com

Mexico
t: 01-800-844-5226
tecnicomx@phenomenex.com

The Netherlands
t: +31 (0)30-2418700
nlinfo@phenomenex.com

New Zealand
t: +64 (0)9-4780951
nzinfo@phenomenex.com

Poland
t: +48 (12) 881 0121
pl-info@phenomenex.com

Portugal
t: +351 221 450 488
ptinfo@phenomenex.com

Singapore
t: +65 800-852-3944
sginfo@phenomenex.com

Spain
t: +34 91-413-8613
esinfo@phenomenex.com

Sweden
t: +46 (0)8 611 6950
nordicinfo@phenomenex.com

Switzerland
t: +41 (0)61 692 20 20
swissinfo@phenomenex.com

Taiwan
t: +866 (0) 0801-49-1246
twinfo@phenomenex.com

United Kingdom
t: +44 (0)1625-501367
ukinfo@phenomenex.com

USA
t: +1 (310) 212-0555
info@phenomenex.com

All other countries
Corporate Office USA 
t: +1 (310) 212-0555
info@phenomenex.com

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