

# APPLICATION



## FAMES In Monterey Jack Cheese by GC/FID Using Zebron™ ZB-FAME

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### Overview

Cheese is comprised of a variety of fats commonly tested for fatty acid methyl ester (FAME) content. The following application shows an improved method for FAME extraction and analysis. Run times can be reduced to less than 22 minutes using a short Zebron ZB-FAME GC column.

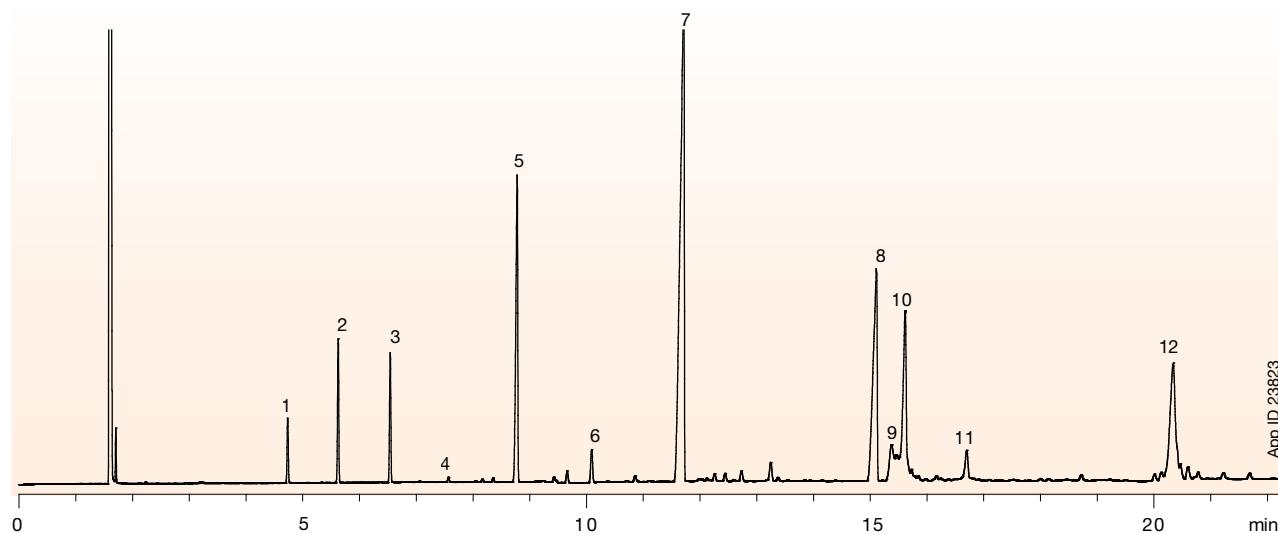


### Extraction and Derivatization Protocol

1. Weigh out 100 to 200mg of cheese and place it into a scintillation vial
2. Add 100mg pyrogallic acid
3. Add 2mL ethanol followed by 4mL deionized water and 4mL NH<sub>4</sub>OH (concentrated)
4. Incubate at 70 °C for 20 min then add 10mL HCl and incubate for an additional 25 min
5. Extract triglycerides using 2mL diethyl ether and 2mL chloroform
6. Blow down extraction liquid
7. Reconstitute in 1mL toluene and 2mL 8% boron trifluoride in methanol
8. Cap reaction mixture, hold at 100°C for 45 min
9. After reaction, add 5 mL water, 1 mL hexane, and 1 g Na<sub>2</sub>SO<sub>4</sub>
10. Extract upper layer for GC analysis

### GC Conditions

Column: Zebron ZB-FAME  
 Dimensions: 30 meter x 0.25 mm x 0.20 μm  
 Part No.: 7HG-G033-10  
 Injection: Split 50:1 @ 240 °C, 1 μL  
 Carrier Gas: Helium @ 1.2 mL/min (constant flow)  
 Oven Program: 100 °C for 2 min to 140 °C @ 10 °C/min  
 to 190 °C @ 3 °C/min to 260 °C @ 30 °C/min for 2 min  
 Detector: FID @ 260 °C  
 Recommended Liner: Zebron PLUS Single Taper with Wool  
 Liner Part No.: AG2-0A11-05 (for Agilent® systems)  
 Sample: 1. C10:0  
 2. C11:0  
 3. C12:0  
 4. C13:0  
 5. C14:0  
 6. C15:0  
 7. C16:0  
 8. C18:0  
 9. C18:1 trans 9  
 10. C18:1 cis 9  
 11. C18:2 cis 9,12  
 12. C20:2 cis 11,14



App ID 23823




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## Ordering Information

### Zebron™ ZB-FAME GC Columns

| Length (m) | ID (mm) | Film (µm) | Temp Limits (°C) | Part No.    | 5m Guardian™ Part No. |
|------------|---------|-----------|------------------|-------------|-----------------------|
| 20         | 0.18    | 0.15      | -60 to 280       | 7FD-G033-05 | —                     |
| 30         | 0.25    | 0.20      | -60 to 280       | 7HG-G033-10 | 7HG-G033-10-GGA       |
| 60         | 0.25    | 0.20      | -60 to 280       | 7KG-G033-10 | —                     |

### Zebron PLUS GC Inlet Liners

| Description  | Dimensions ID x L (mm) | Part No.    | Unit. |
|--|------------------------|-------------|-------|
| <b>For Agilent® or Thermo Scientific® GC Systems</b>                               |                        |             |       |
| Single Taper with Wool   | 4 x 78.5               | AG2-0A11-05 | 5/pk  |
|  |                        | AG2-0A11-25 | 25/pk |

Find more Zebron GC columns and accessories at  
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