Zebron™
GC Columns

ZB-FAME

The Fast FAME GC Column

- Reduce traditional run times up to 75%
- Improve separation of cis/trans FAME isomers
- Suitable with AOAC, AOCS, and IOC methods

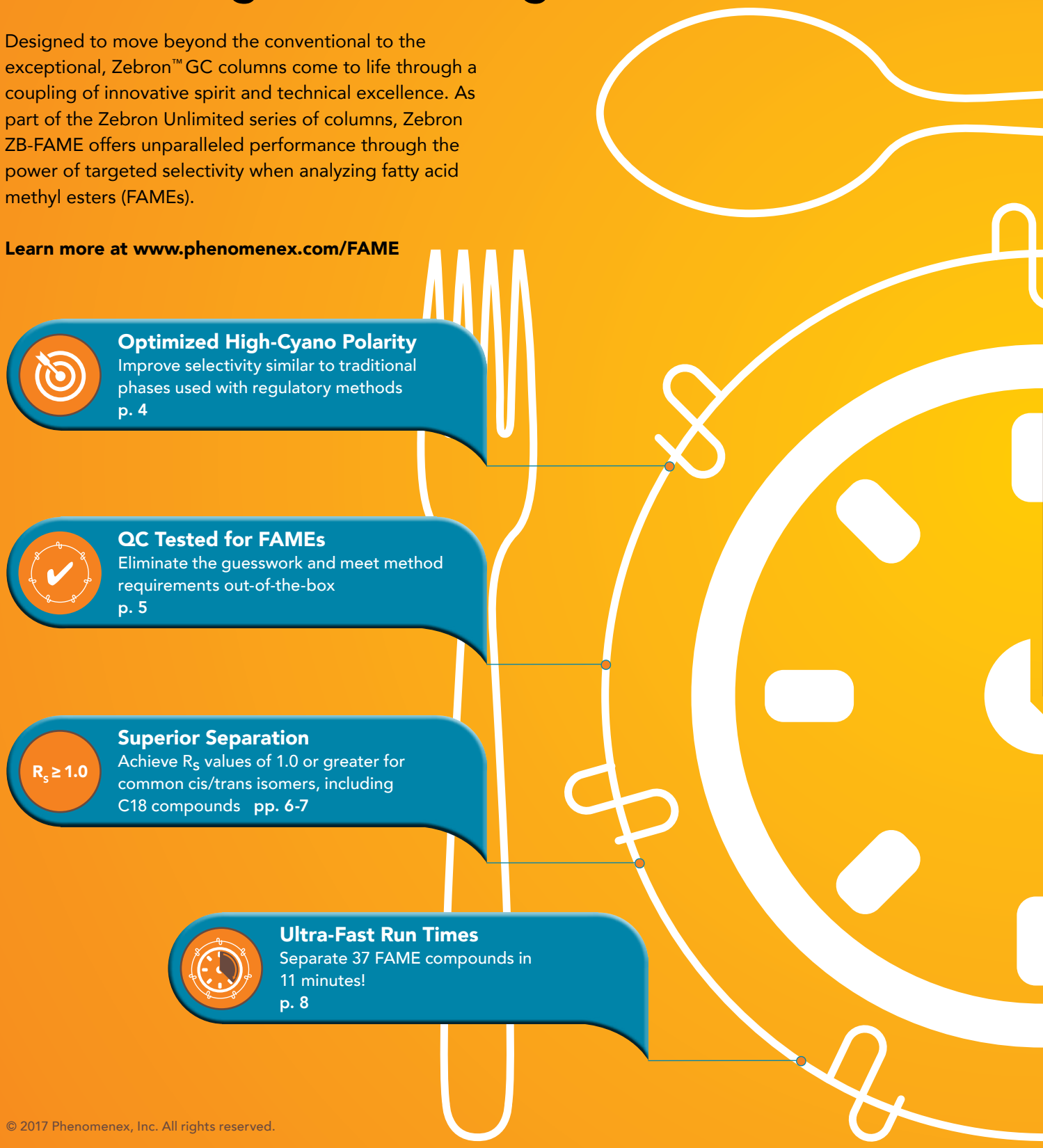
phenomenex®
. . . breaking with tradition℠

www.phenomenex.com/FAME

ZB-FAME
Accelerating FAME Testing

Designed to move beyond the conventional to the exceptional, Zebron™ GC columns come to life through a coupling of innovative spirit and technical excellence. As part of the Zebron Unlimited series of columns, Zebron ZB-FAME offers unparalleled performance through the power of targeted selectivity when analyzing fatty acid methyl esters (FAMEs).

Learn more at www.phenomenex.com/FAME



Optimized High-Cyano Polarity
Improve selectivity similar to traditional phases used with regulatory methods
p. 4

QC Tested for FAMEs
Eliminate the guesswork and meet method requirements out-of-the-box
p. 5

Superior Separation
Achieve $R_S \geq 1.0$ values of 1.0 or greater for common cis/trans isomers, including C18 compounds pp. 6-7

Ultra-Fast Run Times
Separate 37 FAME compounds in 11 minutes!
p. 8

Zebron™
GC Columns

FAMEs From Wide-Ranging Matrices by GC/FID

Your Analysis, Unlimited

Part of the award-winning Zebron GC column family

pp. 16-17

Build Your Own FAME Testing Kit

Select a customized GC solution that works for you

pp. 18-19

Optimized High-Cyano Polarity

FAME separations require the use of high polarity columns for adequate resolution of cis/trans isomers. Zebron™ ZB-FAME is an optimized high-cyanopropyl (G48) chemistry that provides the polarity that you need, while remaining compatible with AOAC, AOCS, and IOC regulatory methods.

Stable to 280 °C
Temperature stable phase allows for contaminant bake out and improved lifetime!

Targeted Selectivity Similar* To:

- Supelco® SP™-2560
- Supelco SP-2380
- Supelco SP-2330
- Agilent® CP-Sil 88

Elution Order for 37 FAME Standard

Peak	Compound	ID
1	Butanoic Acid Methyl Ester	C4:0
2	Hexanoic Acid Methyl Ester	C6:0
3	Octanoic Acid Methyl Ester	C8:0
4	Decanoic Acid Methyl Ester	C10:0
5	Undecanoic Acid Methyl Ester	C11:0
6	Dodecanoic Acid Methyl Ester	C12:0
7	Tridecanoic Acid Methyl Ester	C13:0
8	Myristic Acid Methyl Ester	C14:0
9	Myristoleic Acid Methyl Ester	C14:1 cis 9
10	Pentadecanoic Acid Methyl Ester	C15:0
11	cis-10-Pentadecenoic Acid Methyl Ester	C15:1 cis 10
12	Hexadecanoic Acid Methyl Ester	C16:0
13	Palmitoleic Acid Methyl Ester	C16:1 cis 9
14	Heptadecanoic Acid Methyl Ester	C17:0
15	cis-10-Heptadecenoic Acid Methyl Ester	C17:1 cis 10
16	Stearic Acid Methyl Ester	C18:0
17	Elaidic Acid Methyl Ester	C18:1 trans 9
18	Oleic Acid Methyl Ester	C18:1 cis 9
19	Linolelaidic Acid Methyl Ester	C18:2 trans 9,12
20	Linoleic Acid Methyl Ester	C18:2 cis 9,12
21	γ-Linolenic Acid Methyl Ester	C18:3 cis 6,9,12
22	α-Linolenic Acid Methyl Ester	C18:3 cis 9,12,15
23	Arachidic Acid Methyl Ester	C20:0
24	cis-11-Eicosenoic Acid Methyl Ester	C20:1 cis 11
25	cis-11,14-Eicosadienoic Acid Methyl Ester	C20:2 cis 11,14
26	Heneicosanoic Acid Methyl Ester	C21:0
27	cis-8,11,14-Eicosatrienoic Acid Methyl Ester	C20:3 cis 8,11,14
28	Arachidonic Acid Methyl Ester	C20:4 cis 5,8,11,14
29	cis-11,14,17-Eicosatrienoic Acid Methyl Ester	C20:3 cis 11,14,17
30	Behenic Acid Methyl Ester	C22:0
31	Erucic Acid Methyl Ester	C22:1 cis 13
32	cis-5,8,11,14,17-Eicosapentaenoic Acid Methyl Ester	C20:5 cis 5,8,11,14,17
33	cis-13,16-Docosadienoic Acid Methyl Ester	C22:2 cis 13,16
34	Tricosanoic Acid Methyl Ester	C23:0
35	Lignoceric Acid Methyl Ester	C24:0
36	Nervonic Acid Methyl Ester	C24:1 cis 15
37	cis-4,7,10,13,16,19-Docosahexaenoic Acid Methyl Ester	C22:6 cis 4,7,10,13,16,19

guarantee

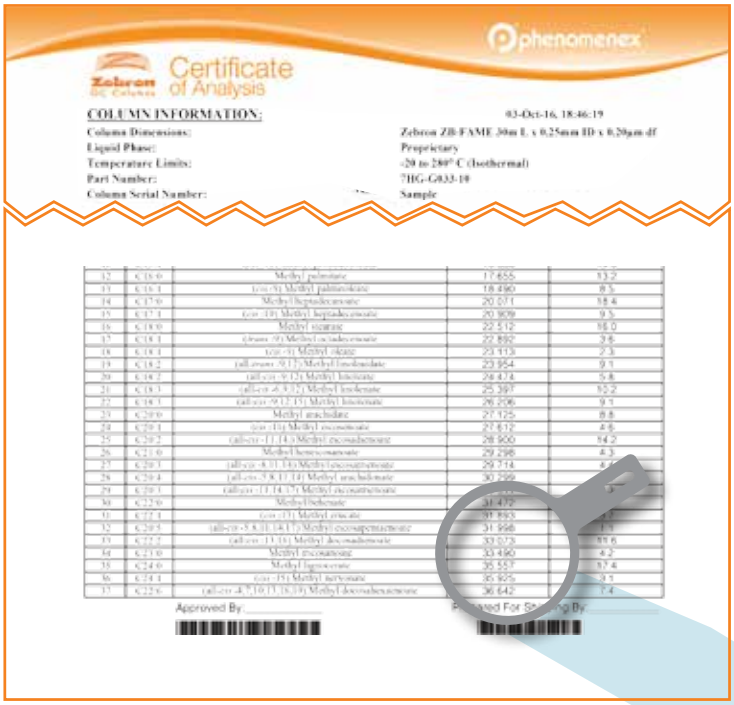
If Zebron GC products do not provide you with equivalent or better separations as compared to a competing product of the same phase, same geometry, and comparable dimensions, return the product with comparative data within 45 days for a FULL REFUND.

*Not exact equivalent, selectivity may differ.

QC Tested For FAMEs

Every Zebron™ ZB-FAME column is individually QC tested with specific compounds for FAMEs analysis to take the guesswork out of meeting method requirements. Your column is GUARANTEED to perform for 37 FAME isomers out-of-the-box!

We QC Test For The Compounds You Analyze



How Does Our QC Test Benefit You?

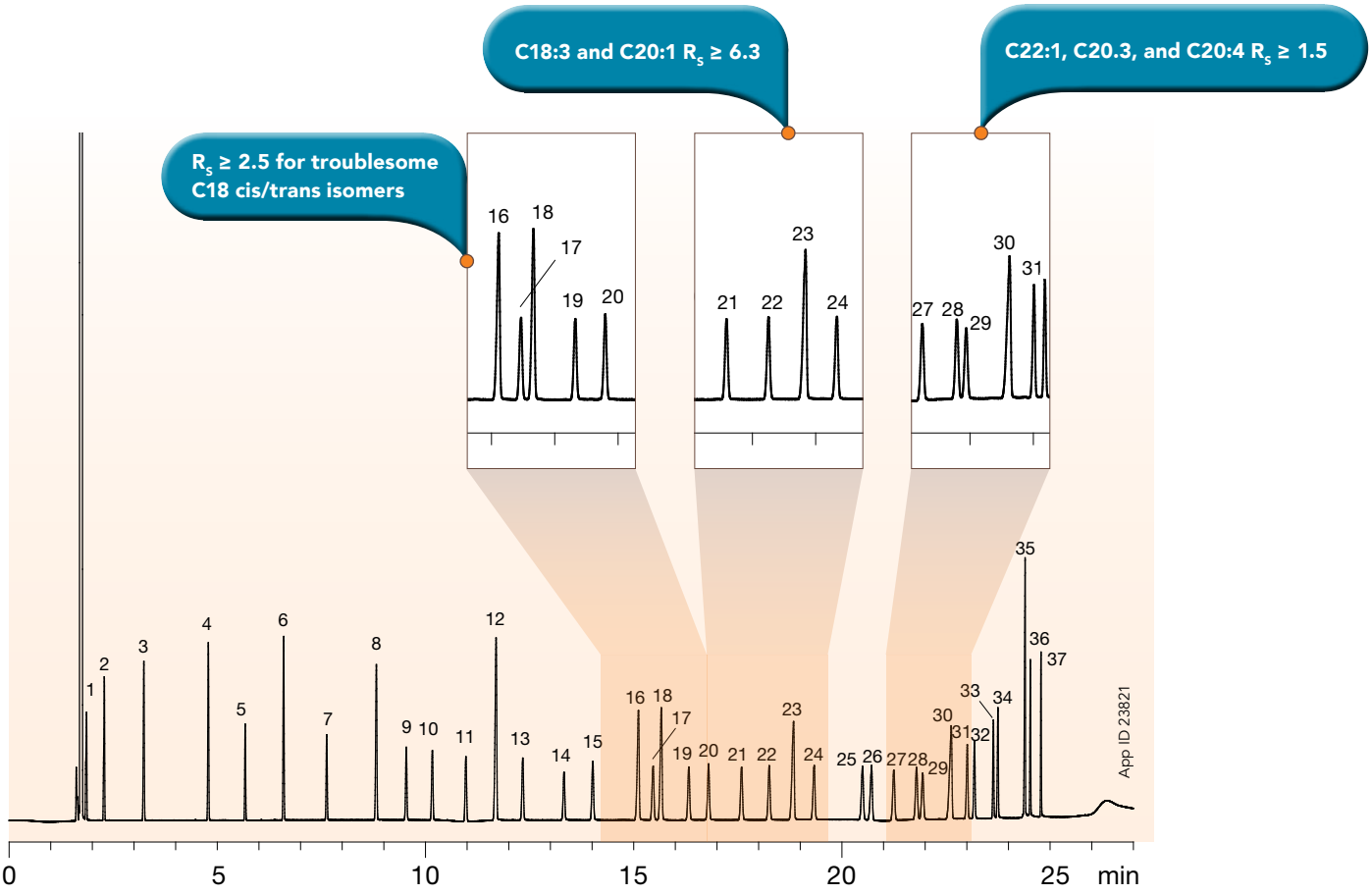
Test Probe	The FAME Advantage	Quality Measure
37 FAMEs Standard	We separate difficult isomers with a R_s of 1.0 or greater to guarantee that every ZB-FAME column provides optimal resolution.	**Separation**
	We test for a full range of FAME analytes to ensure every ZB-FAME column offers reproducible selectivity.	**Selectivity**
Bleed	Zebron columns provide low bleed for maximum sensitivity and stability for any detection method.	**Stability**
Temperature	Our 280 °C test ensures that ZB-FAME can undergo bakeouts for improved column lifetime.	**Lifetime**

Baseline Separation of Common Isomers

Food and dietary standards require separation of cis/trans fatty acids. Zebron™ ZB-FAME is able to separate from C4 to C24 with resolution of specific cis/trans fatty acids.

$R_s \geq 1.0$

Completely Resolve AOAC Critical Pairs



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: 37 FAME standard as shown on page 4

Separate Detailed C18 Compounds

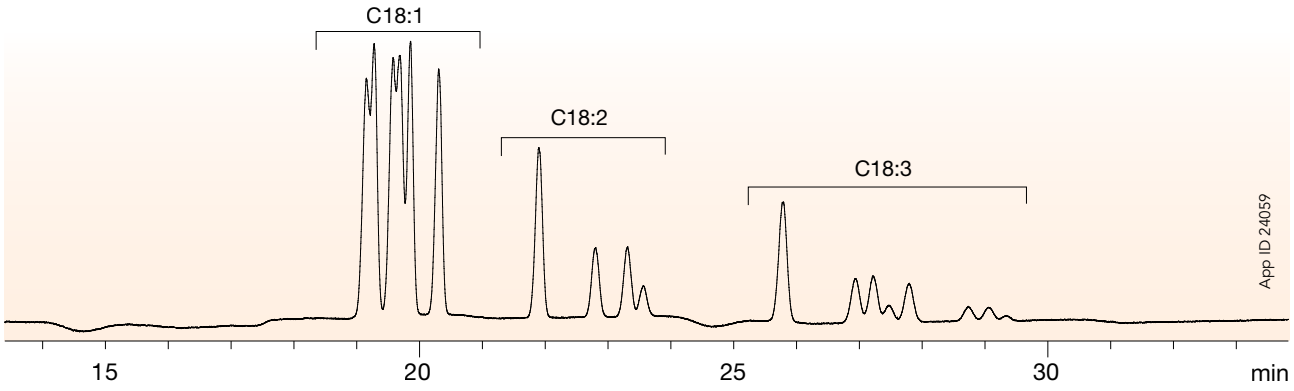
Due to regulatory guidelines around trans fat content in food, detailed analysis of specific FAMEs isomers is commonly performed. The below methods demonstrate this testing using a 60 meter Zebron™ ZB-FAME column.

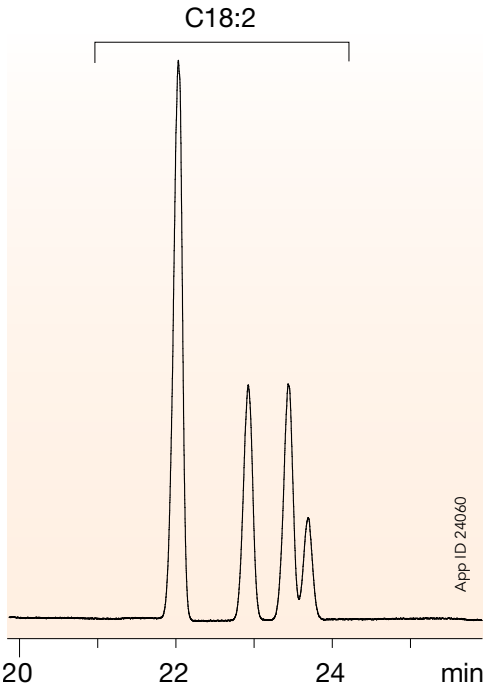
$R_s \geq 1.0$

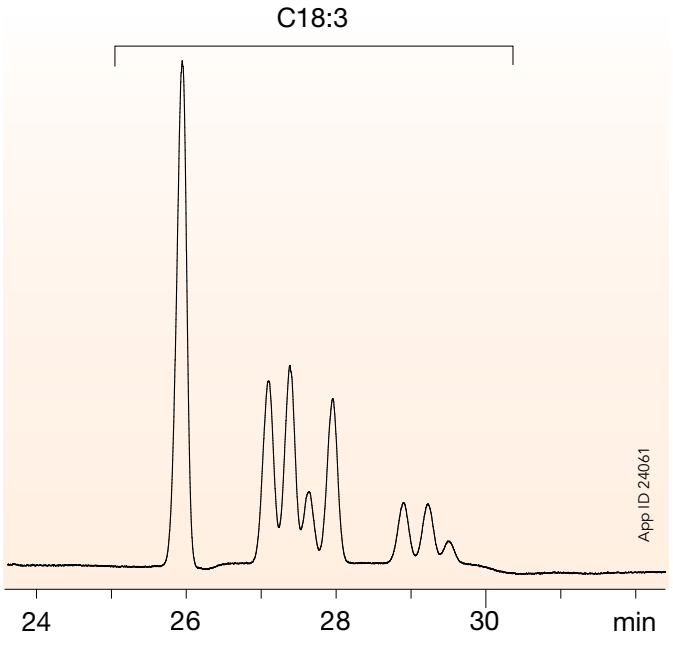
Analysis of C18:1, C18:2, and C18:3

Conditions for all separations:

Column: Zebron ZB-FAME
Dimensions: 60 meter x 0.25 mm x 0.20 µm
Part No.: 7KG-G033-10
Injection: Split 50:1 @ 240°C, 1 µL
Carrier Gas: Helium @ 30 cm/sec (constant flow)
Oven Program: 160°C (isothermal)
Detector: FID @ 260°C
Recommended Liner: Zebron PLUS Single Taper with Wool
Liner Part No.: AG2-0A11-05 (for Agilent® systems)
Sample: As listed. For full peak identification, visit www.phenomenex.com/DetailedFAME



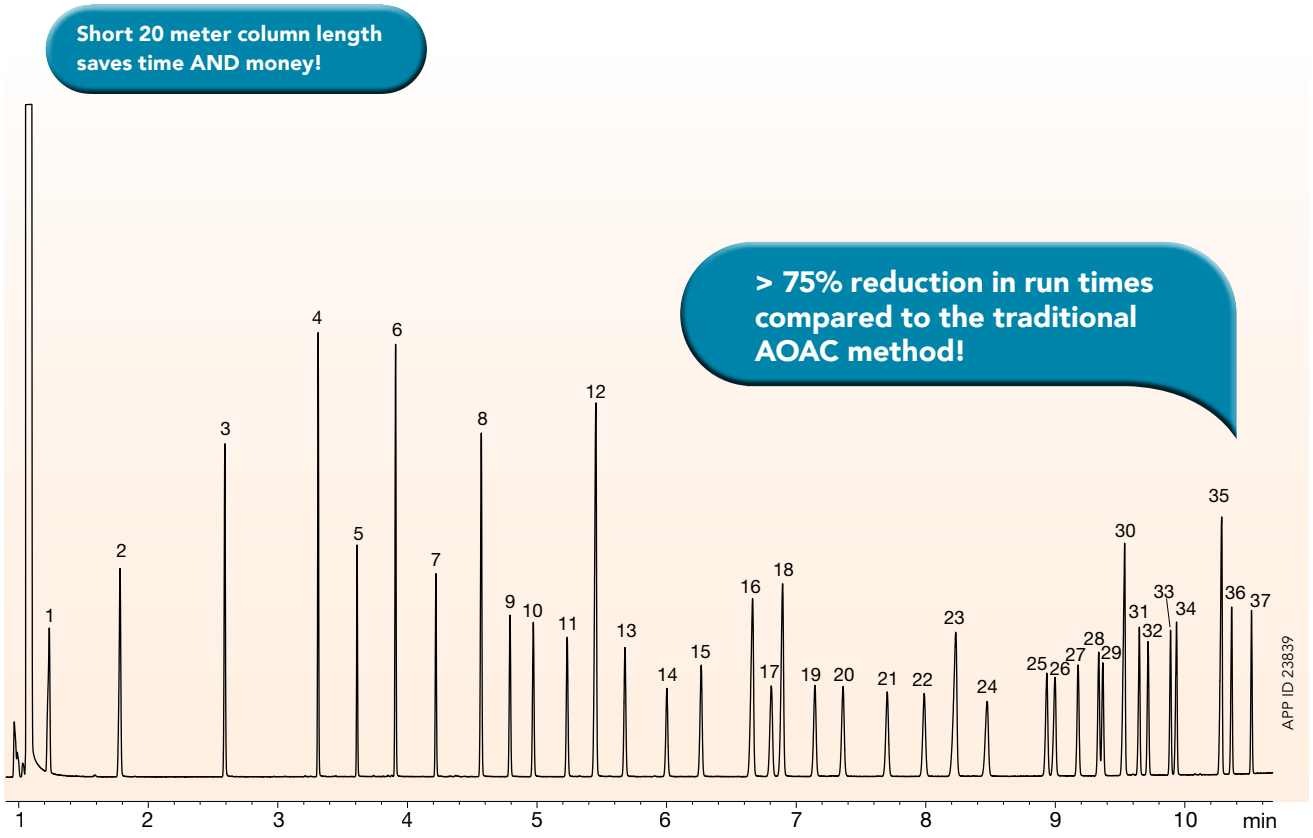




Twice The Runs, Half The Time

Traditionally, cis/trans FAME separations require the use of long (100 meters or more) columns and can run up to 60 minutes, resulting in a bottleneck to higher productivity. Zebron™ ZB-FAME provides targeted selectivity that allows for reduced column length – run times as short as 11 minutes without compromising your results!

37 FAMEs In A Short 11 Minute Run



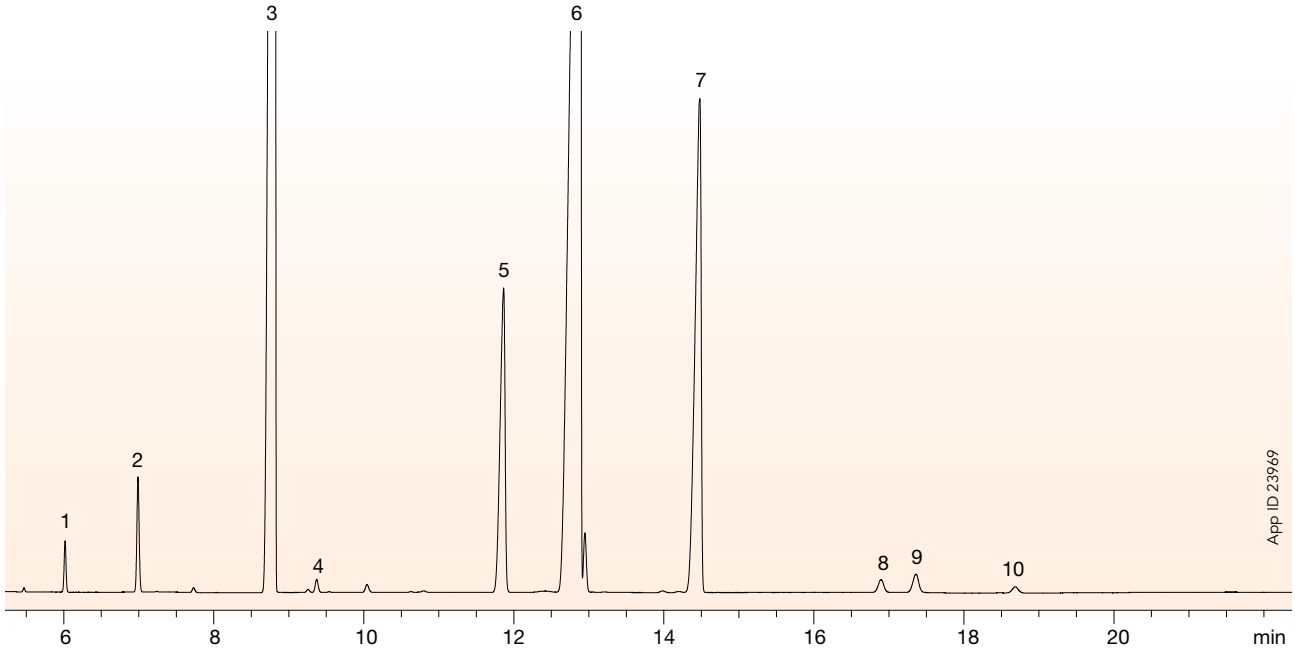
Column: Zebron ZB-FAME
Dimensions: 20 meter x 0.18 mm x 0.15 µm
Part No.: 7FD-G033-05
Injection: Split 100:1 @ 250°C, 1 µL
Carrier Gas: Helium @ 1.0 mL/min (constant flow)
Oven Program: 80°C for 1.5 min to 160°C @ 40°C/min to 185°C @ 5°C/min to 260°C @ 30°C/min
Detector: FID @ 260°C
Recommended Liner: Zebron PLUS Single Taper Z-Liner™
Liner Part No.: AG2-0A13-05 (for Agilent® systems)
Sample: 37 FAME standard as shown on page 4

Imagine what you could do with all the extra time...

- Find your inner Nirvana
- Look at pictures from your 2006 trip to Hawaii
- Be an overachiever – bake out your column and prepare for another run
- **Wonder why other people are still running a 60 min FAME application!!!**

Palm Oil

Palm oil's balanced ratio of saturated and unsaturated fatty acids makes it suitable for use in a variety of food products including frying oil and margarine, making it one of the most widely traded fats and oils. As a heavily imported and exported product, analytical testing of palm oil is important to ensure its quality and safety.



Extraction and Derivatization Protocol:

1. Strata® Si-1 Tube, 2 g/12 mL (Part No.: 8B-S012-KDG) on a vacuum or positive pressure manifold
2. Wash cartridge with 6 mL of hexane
3. Load oil solution (0.2 g of oil in 3.8 mL of hexane)
4. Elute with 5 mL hexane/ethyl acetate (87:13)
5. Evaporate eluate under a steady stream of nitrogen
6. Reconstitute with 0.4 mL of hexane
7. Add 200 µL of 2 M potassium hydroxide in methanol to purified oil solution
8. Cap tube and vortex
9. Wait 5 minutes
10. Add 2 mL of Milli-Q® water, vortex
11. Allow solution to settle then transfer top layer to Q-sert vial for GC analysis

Column: Zebron™ ZB-FAME
Dimensions: 60 meter x 0.25 mm x 0.20 µm
Part No.: 7KG-G033-10
Injection: Split 100:1 @ 240°C, 1 µL
Carrier Gas: Helium @ 1.2 mL/min (constant flow)
Oven Program: 180°C isothermal
Detector: FID @ 240°C
Recommended Liner: Zebron PLUS Single Taper with Wool
Liner Part No.: AG2-0A11-05 (for Agilent® systems)
Sample:
1. C12:0
2. C14:0
3. C16:0
4. C16:1 cis 9
5. C18:0
6. C18:1 cis 9
7. C18:2 cis 9,12
8. C18:3 cis 9,12,15
9. C20:0
10. C20:1 cis 11

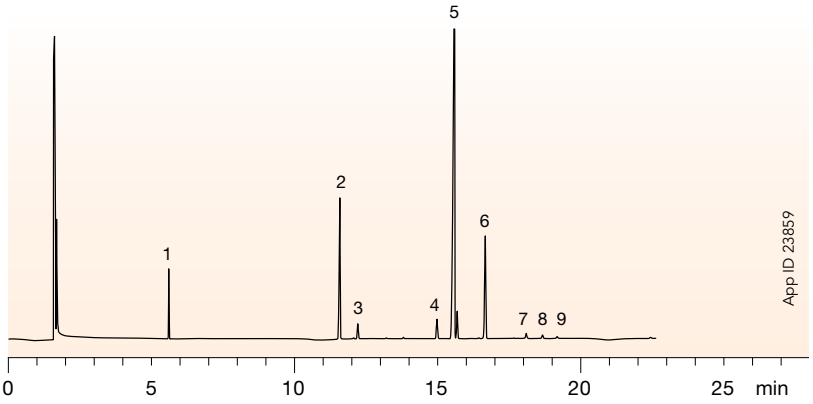
Olive Oil

One of the most popular applications around the world has been optimized using Zebron™ ZB-FAME! The high-cyano phase chemistry meets requirements for IOC olive oil testing methods, while providing an opportunity for improved productivity. Achieve good results on ZB-FAME using the standard 60 meter dimension – or save time and money by switching to a 30 meter column!

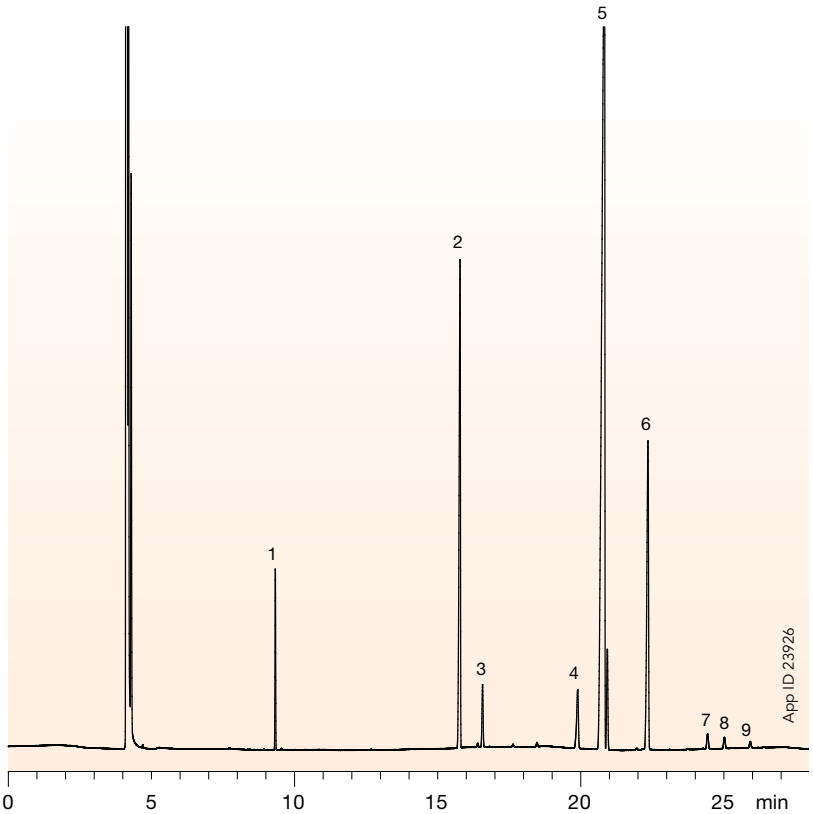
Regular Olive Oil

A) 30 meter x 0.25 mm x 0.20 µm (Part No. 7HG-G033-10)

30 meter column shortens traditional run times!



B) 60 meter x 0.25 mm x 0.20 µm (Part No.: 7KG-G033-10)



Comparative separations may not be representative of all applications.

Extraction and Derivatization Protocol:

1. Strata® Si-1 Tube, 1 g/6 mL (Part No.: 8B-S012-JCH) on a vacuum or positive pressure manifold
2. Wash cartridge with 6 mL of hexane
3. Load oil solution (0.12 g of oil in 0.5 mL of hexane)
4. Elute with 10 mL of hexane/diethyl ether (87:13)
5. Evaporate eluate under a steady stream of nitrogen
6. Dissolve purified oil residue in 1mL of heptane
7. Add 0.1 mL of 2N potassium hydroxide in methanol to purified oil solution
8. Cap tube and shake vigorously for 15 seconds
9. Leave to separate until upper layer becomes clear
10. Extract upper layer for GC analysis

Conditions for all separations, except where noted:

Column: Zebron ZB-FAME
Dimensions: As listed
Injection: Split 50:1 @ 240°C, 1 µL
Carrier Gas: Helium @ 1.2 mL/min (constant flow)
Oven Program: A) 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
B) 100°C for 2 min to 165°C @ 10°C/min to 200°C @ 1.5°C/min to 280°C @ 15°C/min for 1 min
Detector: FID @ 260°C
Recommended Liner: Zebron PLUS Single Taper with Wool
Liner Part No.: AG2-0A11-05 (for Agilent® systems)
Sample: Analytes are diluted 5:1 in heptane

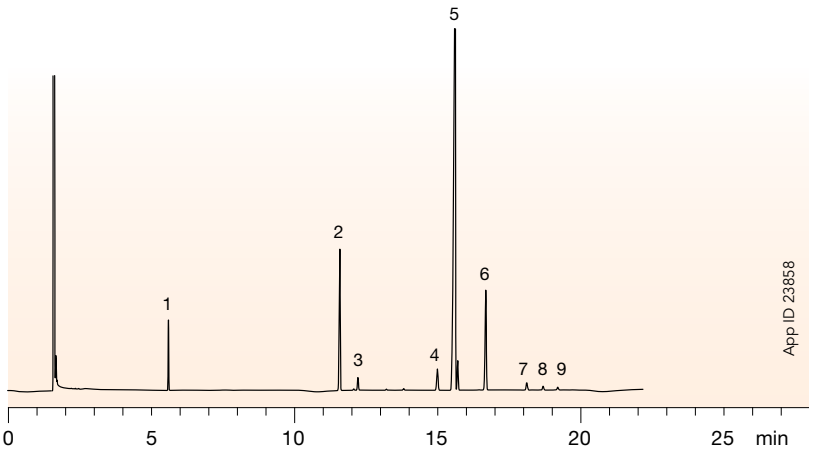
1. C11:0*
2. C16:0
3. C16:1 cis 9
4. C18:0
5. C18:1 cis 9
6. C18:2 cis 9,12
7. C18:3 cis 9,12,15
8. C20:0
9. C20:1 cis 11

*internal standard

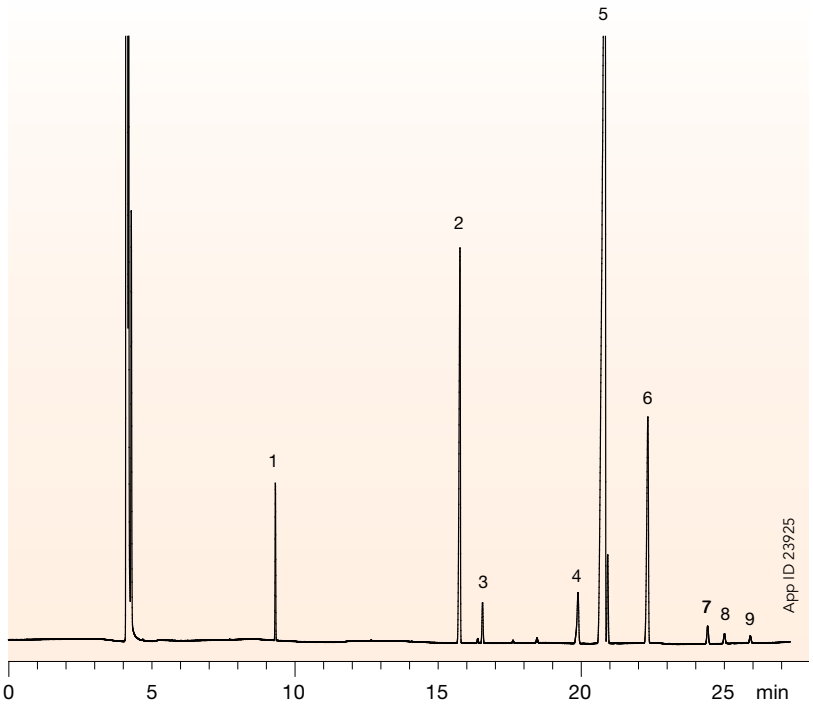
Extra Virgin Olive Oil

A) 30 meter x 0.25 mm x 0.20 µm (Part No. 7HG-G033-10)

Reduce run times with a 30 meter column!



B) 60 meter x 0.25 mm x 0.20 µm (Part No.: 7KG-G033-10)



Comparative separations may not be representative of all applications.

Extraction and Derivatization Protocol:

1. Strata® Si-1 Tube, 1 g/6 mL (Part No.: 8B-S012-JCH) on a vacuum or positive pressure manifold
2. Wash cartridge with 6 mL of hexane
3. Load oil solution (0.12 g of oil in 0.5 mL of hexane)
4. Elute with 10 mL of hexane/diethyl ether (87:13)
5. Evaporate eluate under a steady stream of nitrogen
6. Dissolve purified oil residue in 1mL of heptane
7. Add 0.1 mL of 2N potassium hydroxide in methanol to purified oil solution
8. Cap tube and shake vigorously for 15 seconds
9. Leave to separate until upper layer becomes clear
10. Extract upper layer for GC analysis

Conditions for all separations, except where noted:

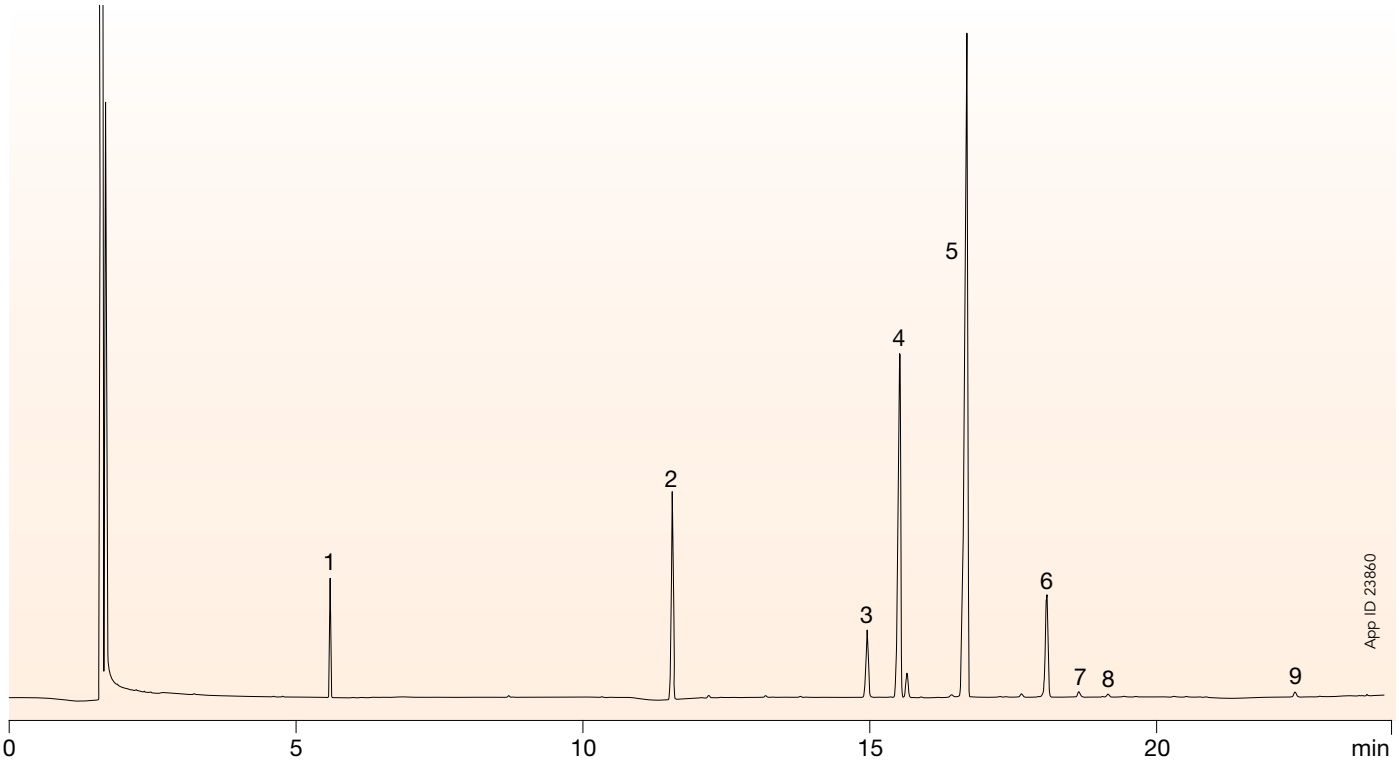
Column: Zebron™ ZB-FAME
Dimensions: As listed
Injection: Split 50:1 @ 240°C, 1 µL
Carrier Gas: Helium @ 1.2 mL/min (constant flow)
Oven Program: A) 100°C for 2 min to 140°C @ 10°C/min to 190°C @ 3°C/min to 260°C @ 30°C/min for 2 min
B) 100°C for 2 min to 165°C @ 10°C/min to 200°C @ 1.5°C/min to 280°C @ 15°C/min for 1 min
Detector: FID @ 260°C
Recommended Liner: Zebron PLUS Single Taper with Wool
Liner Part No.: AG2-0A11-05 (for Agilent® systems)
Sample: Analytes are diluted 5:1 in heptane

1. C11:0*
2. C16:0
3. C16:1 cis 9
4. C18:0
5. C18:1 cis 9
6. C18:2 cis 9,12
7. C18:3 cis 9,12,15
8. C20:0
9. C20:1 cis 11

*internal standard

Soybean Oil

Soybean oil is used in a multitude of foods, such as salad dressings, baked goods and fried foods. The below method using a short Zebron™ ZB-FAME column effectively separates difficult C18 cis/trans isomers quickly and accurately.



Extraction and Derivatization Protocol:

1. Strata® Si-1 Tube, 1 g/6 mL (Part No.: 8B-S012-JCH) on a vacuum or positive pressure manifold
2. Wash cartridge with 6 mL of hexane
3. Load oil solution (0.12 g of oil in 0.5 mL of hexane)
4. Elute with 10 mL of hexane/diethyl ether (87:13)
5. Evaporate eluate under a steady stream of nitrogen
6. Dissolve purified oil residue in 1 mL of heptane
7. Add 0.1 mL of 2N potassium hydroxide in methanol to purified oil solution
8. Cap tube and shake vigorously for 15 seconds
9. Leave to separate until upper layer becomes clear
10. Extract upper layer for GC analysis

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: Analytes are diluted 5:1 in heptane

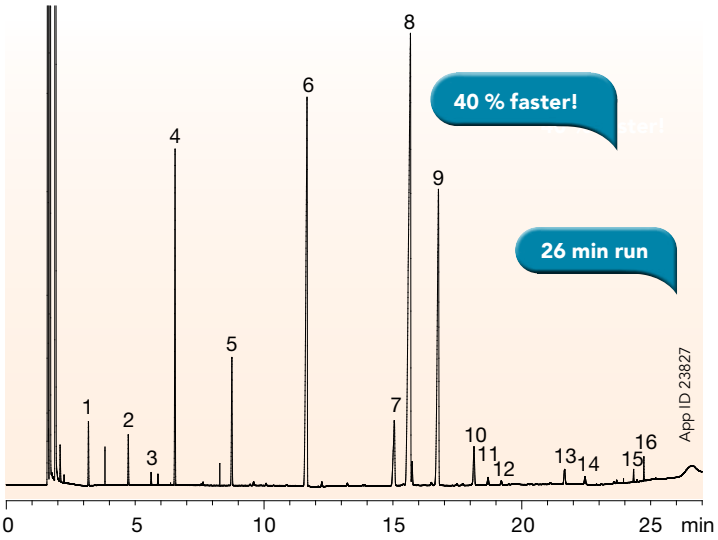
1. C11:0
2. C16:0
3. C18:0
4. C18:1 cis 9
5. C18:2 cis 9,12
6. C18:3 cis 9,12,15
7. C20:0
8. C20:1 cis 11
9. C22:0

Powdered Infant Formula

Infant formula, like human milk, contains a variety of fatty acids. Using Zebron™ ZB-FAME, 16 fatty acids were successfully separated in a 40 % faster run compared to a traditional column used for the analysis.

Zebron ZB-FAME

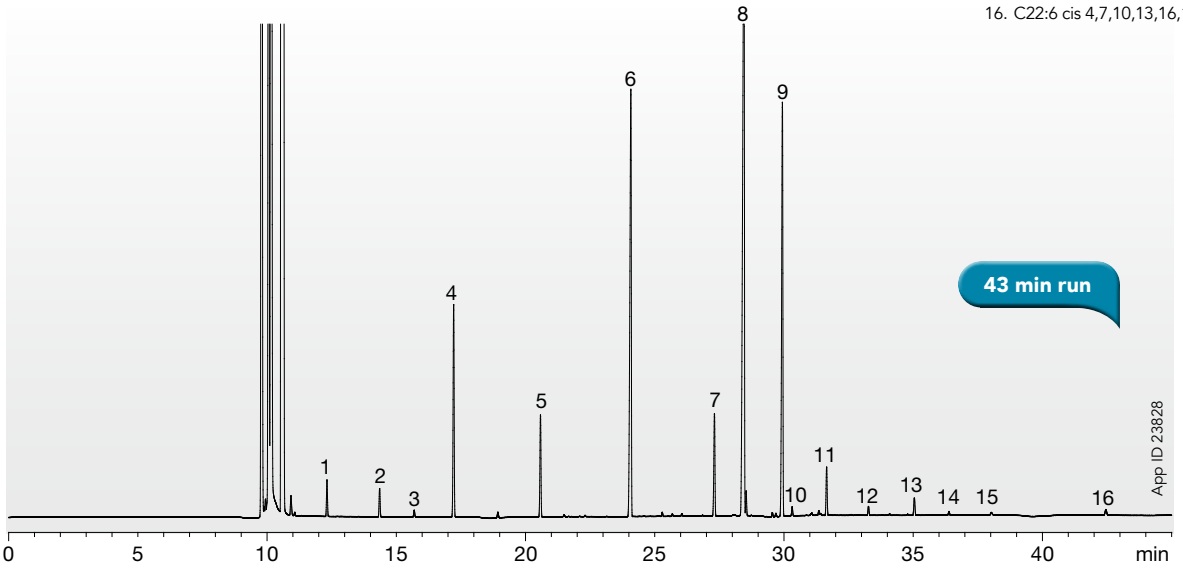
A) 30 meter x 0.25 mm x 0.20 µm (Part No.: 7HG-G033-10)



Vs.

Supelco® SP™-2560

B) 100 meter x 0.25 mm x 0.20 µm



Extraction and Derivatization Protocol:

1. Weigh out approximately 500 mg of powdered infant formula into a scintillation vial
2. Dissolve (or dilute) sample in 5 mL toluene, then add 6 mL 10 % acetyl chloride solution in methanol
3. Incubate @ 80°C for 2 hours
4. After incubation add 10 mL 10 % Na_2CO_3 solution and centrifuge at 5000 rpm for 5 min
5. Extract organic layer for GC analysis

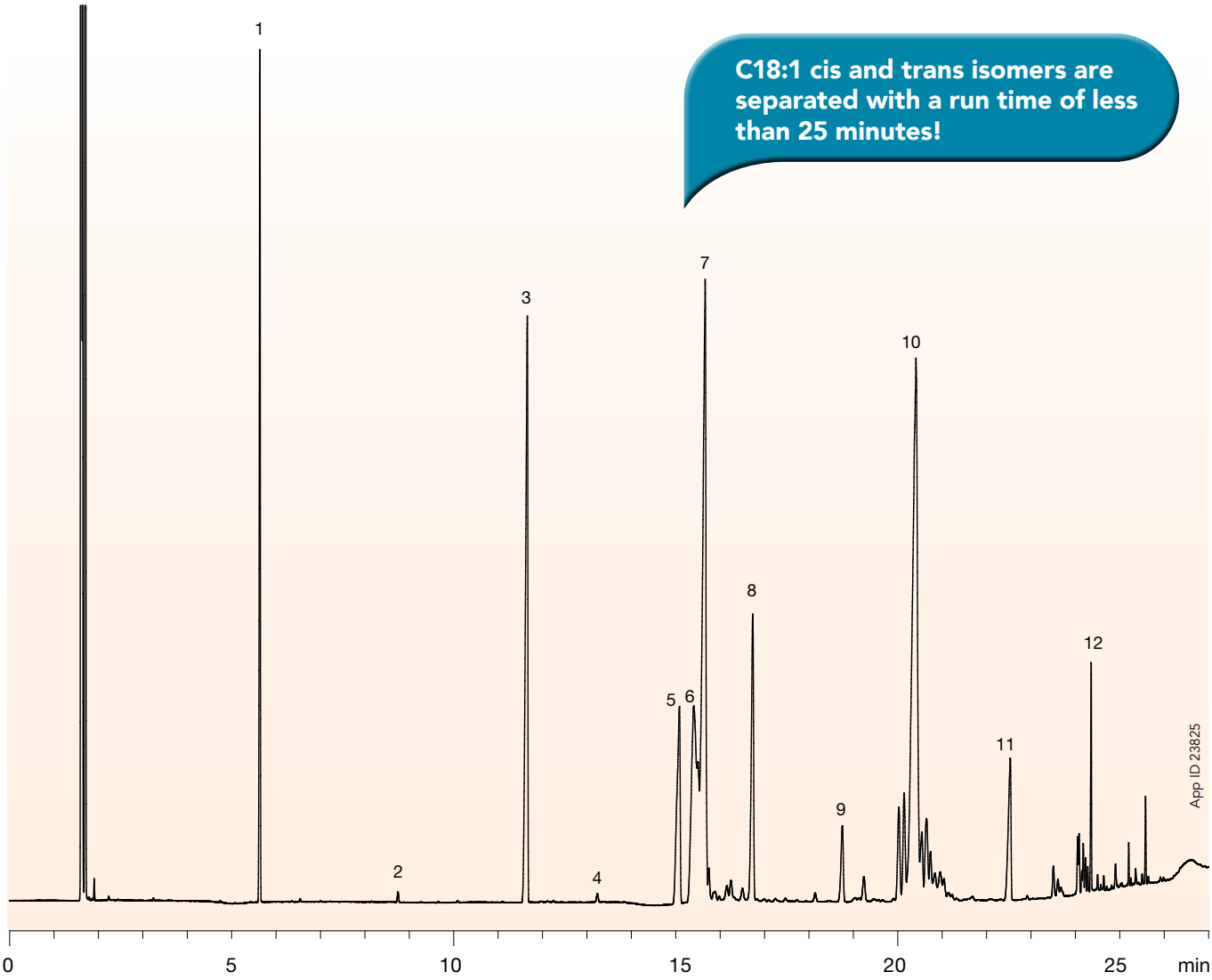
Conditions for both columns:

Dimensions: As listed
Injection: Split 50:1 @ 240°C, 1 µL
Carrier Gas: A) Helium @ 1.2 mL/min (constant flow)
B) Helium @ 20 cm/sec (constant flow)
Oven Program: A) 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
B) 140°C for 5 min to 240°C @ 4°C/min for 15 min
Detector: FID @ 260°C
Recommended Liner: Zebron PLUS Single Taper with Wool
Liner Part No.: AG2-0A11-05 (for Agilent® systems)
Sample:
1. C8:0
2. C10:0
3. C11:0
4. C12:0
5. C14:0
6. C16:0
7. C18:0
8. C18:1 cis 9
9. C18:2 cis 9,12
10. C18:3 cis 9,12,15
11. C20:0
12. C20:1 cis 11
13. C20:4 cis 5,8,11,14
14. C22:0
15. C24:0
16. C22:6 cis 4,7,10,13,16,19

Comparative separations may not be representative of all applications.

Peanut Butter

Comprised of a variety of fats, peanut butter can be analyzed using Zebron™ ZB-FAME in less than 25 minutes without sacrificing separation or peak shape.



Extraction and Derivatization Protocol:

1. Weigh out 100 to 200 mg of peanut butter and place it into a scintillation vial
2. Add 100 mg pyrogallic acid
3. Add 2 mL ethanol followed by 10 mL 8.3 M HCl
4. Incubate at 70°C for 45 min
5. Extract using 2 mL diethyl ether and 2 mL chloroform
6. Blow down extraction liquid
7. Reconstitute in 1 mL toluene and 2 mL 8 % boron trifluoride in methanol
8. Cap reaction mixture, hold @ 100°C for 45 min
9. After reaction, add 5 mL water, 1 mL hexane, and 1 g Na_2SO_4
10. Extract hexane layer for GC analysis

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:

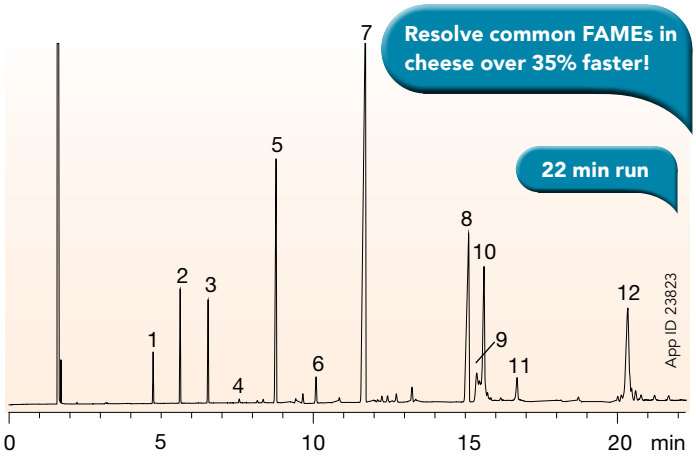
1. C11:0	5. C18:0	9. C20:0
2. C14:0	6. C18:1 trans 9	10. C20:2 cis 11,14
3. C16:0	7. C18:1 cis 9	11. C22:0
4. C17:0	8. C18:2 cis 9,12	12. C24:0

Monterey Jack Cheese

Cheese is comprised of a variety of fats which are commonly analyzed for FAME content. Significantly reduce your run time using Zebron™ ZB-FAME column as compared to traditional FAME methods.

Zebron ZB-FAME

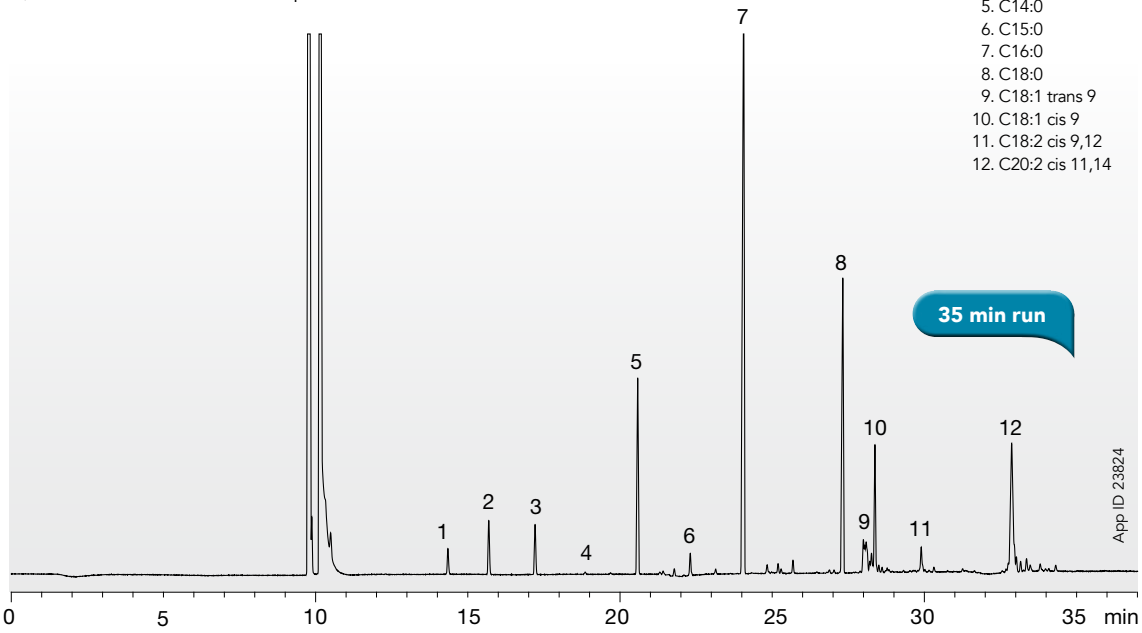
A) 30 meter x 0.25 mm x 0.20 µm (Part No.: 7HG-G033-10)



Vs.

Supelco® SP™-2560

B) 100 meter x 0.25 mm x 0.20 µm



Extraction and Derivatization Protocol:

1. Weigh out 100-200 mg of cheese and place it into a scintillation vial
2. Add 100 mg pyrogallic acid
3. Add 2 mL ethanol followed by 4 mL deionized water and 4 mL NH_4OH (concentrated)
4. Incubate @ 70°C for 20 min then add 10 mL HCl and incubate for an additional 25 min
5. Extract triglycerides using 2 mL diethyl ether and 2 mL chloroform
6. Blow down extraction liquid
7. Reconstitute in 1 mL toluene and 2 mL 8 % boron trifluoride in methanol
8. Cap reaction mixture, hold @ 100°C for 45 min
9. After reaction, add 5 mL water, 1 mL hexane, and 1 g Na_2SO_4
10. Extract upper layer for GC analysis

Conditions for both columns:

Dimensions: As listed
Injection: Split 50:1 @ 240°C, 1 µL
Carrier Gas: A) Helium @ 1.2 mL/min (constant flow)
B) Helium @ 20 cm/sec (constant flow)
Oven Program: A) 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
B) 140°C for 5 min to 240°C @ 4°C/min for 15 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

Comparative separations may not be representative of all applications.

Three Decades of GC Expertise

When you choose Zebron™, you get more than just high quality GC products. You get continued innovation with our dedicated team of GC scientists.

1982

Our Story Starts Here
Phenomenex Founded

1997

Our GC Beginnings
Phenomenex acquired GC manufacturing capabilities from Dr. Robert Wohleb, the "W" of J&W Scientific. We set out to pioneer the development of a new family of GC columns, and went to work making our GC R&D and manufacturing facility in Sutter Creek, CA feel like home.

1998

Birth of Zebron GC Columns
With a wealth of GC manufacturing expertise, our R&D chemists spent countless hours perfecting polymer chemistry, deactivation techniques, and quality processes. In 1998, the original Zebron columns were launched!

2004

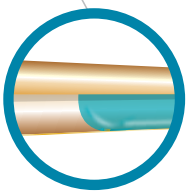
Zebron MS Phases
Low bleed, sensitive performance
- ZB-1ms
- ZB-5ms

2005

ZB-WAX*PLUS*™
100 % water stable

2006

ZB-MultiResidue™ Phases
Targeted selectivity for pesticide screening



Zebron with Integrated Guardian™ Technology
Extend column lifetime and eliminate the potential for leaks

2007

Zebron Inferno™ Phases
Stable to 430 °C

Try the NEW GC Column Finder!

Easily select a column by part number, manufacturer, industry, application or official method in under 1 minute.

www.phenomenex.com/FindGC

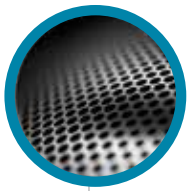
Zebron™ GC Columns

ZB-FAME

The Fast FAME GC Column

ZB-88
Olive Oil and Hydrogenated Oil Analysis

ZB-23
Omega-3 Fatty Acids and Fish Oil Testing



ZB-1XT SimDist
Robust simulated distillation

ZB-SemiVolatiles
Supreme inertness for environmental SVOCs, PBDEs, and PAHs

ZB-5MS*PLUS*™
The next generation of inertness for a wide variety of applications

2009 2010 2011 2012 2014 2015 2016 2017

ZB-Drug-1
For drugs of abuse

ZB-Bioethanol
Fast, 5 minute results

Zebron Easy Seals™
Easy, washerless, leak-tight performance

ZB-CLPesticides Phases
Versatility for chlorinated pesticides by GC/ECD

Zebron PLUS Inlet Liners
Inert, easy install liners for superior sample protection

Septa
Durable, long lasting septa with GuideRight™ holes for less bent needles

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STARTERS

Work up an appetite with our online selection tools.

GC Column Finder

www.phenomenex.com/FindGC

GC Liner Finder

www.phenomenex.com/FindLiner

ENTREE

For a satisfying separation, choose the fast FAME GC column for your analysis.

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	-20 to 280	7FD-G033-05	-
30	0.25	0.20	-20 to 280	7HG-G033-10	7HG-G033-10-GGA
60	0.25	0.20	-20 to 280	7KG-G033-10	-

SIDES

Complement your main course with inert performance from a savory side.

Zebron™ PLUS GC Inlet Liners

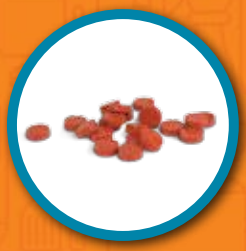
	Description	Application	Dimensions ID x L (mm)	Unit	Part No.
For Agilent® or Thermo Scientific® GC Systems					
	Single Taper Z-Liner™	Semi-volatiles, dirty samples	4 x 78.5	5/pk 25/pk	AG2-0A13-05 AG2-0A13-25
	Single Taper with Wool	Semi-volatiles	4 x 78.5	5/pk 25/pk	AG2-0A11-05 AG2-0A11-25
For PerkinElmer® GC Systems					
	Single Taper Z-Liner	Semi-volatiles, dirty samples	4 x 92	5/pk 25/pk	AG2-2A13-05 AG2-2A13-25
For Shimadzu® 2010 GC Systems					
	Single Taper Z-Liner	Pesticides	3.4 x 95	5/pk 25/pk	AG2-4B13-05 AG2-4B13-25

View all Zebron PLUS liners at www.phenomenex.com/Liners

DESSERT

Choose from even more consumable confections to complete your meal!

Easy Seals™ Inlet Base Seals



Septa

Syringes

Explore hundreds of GC products online at www.phenomenex.com/GC

guarantee

If Zebron GC products do not provide you with equivalent or better separations as compared to a competing product of the same phase, same geometry, and comparable dimensions, return the product with comparative data within 45 days for a FULL REFUND.

ZB-FAME

Zebron™ GC Columns

The Fast FAME GC Column

www.phenomenex.com/FAME

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