

Application

Note
80

Highly Reproducible Capillary GC Analyses of Polyunsaturated FAMES Using a Guaranteed Performance SPB™-PUFA Column

The SPB-PUFA capillary column is designed for the reproducible analysis of fatty acid methyl esters. It complements the more polar polyethylene glycol column, and provides a "truer" carbon number elution pattern.

Key Words:

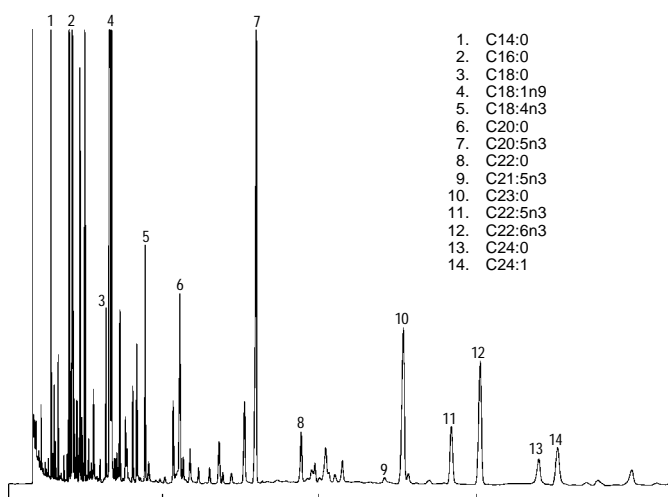
- polyunsaturated fatty acids
- capillary GC
- polyalkylene glycol

Traditionally, polyethylene glycol (PEG) type columns have been used to analyze marine fish and animal organ fatty acid methyl esters (FAMES). These sample types contain even carbon numbered, straight chain FAMES with single and multiple *cis* double bonds. The polar PEG columns elute the various FAMES according to carbon chain length and degree of unsaturation, with minimal to no overlap of the carbon chains.

The bonded phase SPB-PUFA capillary column is based on a polyalkylene glycol (PAG) type polymer. This specially tested, guaranteed performance column provides a "truer" carbon number elution pattern of *cis*-, *cis*-methylene interrupted FAMES with no overlap of the carbon chain lengths. Each unsaturated FAME elutes on the PAG column prior to its next saturated even carbon numbered FAME counterpart.

Figure A. Menhaden Oil Test Mix

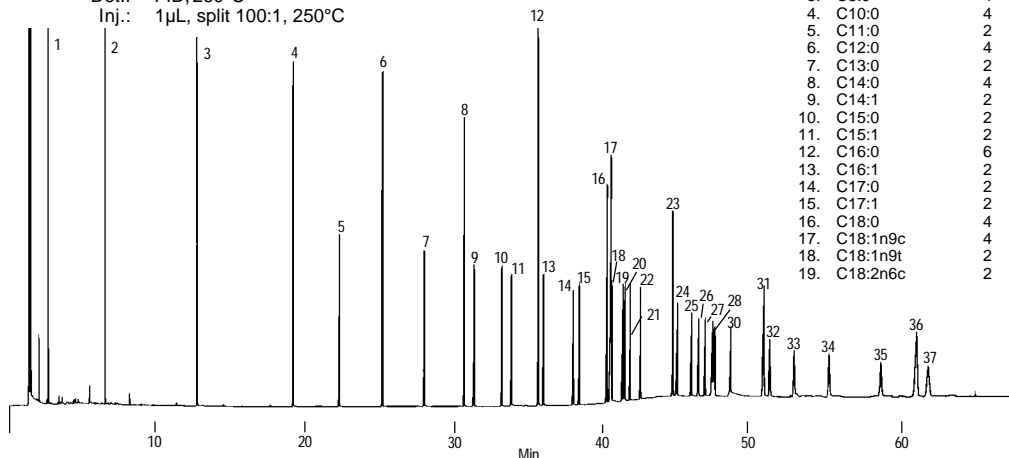
Column: SPB-PUFA, 30m x 0.25mm ID x 0.25µm film
Cat. No.: 24314
Oven: 210°C isothermal
Carrier: helium, 30cm/sec, 210°C
Det.: FID, 260°C
Inj.: 250°C, split 100:1



794-0658

Figure B. Supelco™ 37 Component FAME Mix

Column: SPB-PUFA, 30m x 0.25mm ID x 0.25µm film
Cat. No.: 24314
Oven: 50°C (2 min) to 220°C at 4°C/min, hold 15 min
Carrier: helium, 30cm/sec, 205°C
Det.: FID, 260°C
Inj.: 1µL, split 100:1, 250°C



794-0660

Figure C. PUFA Standard

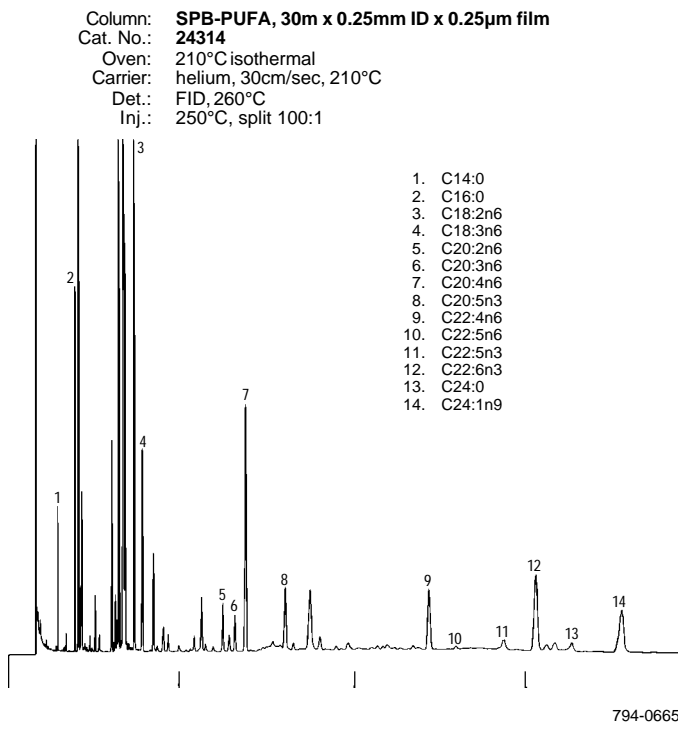
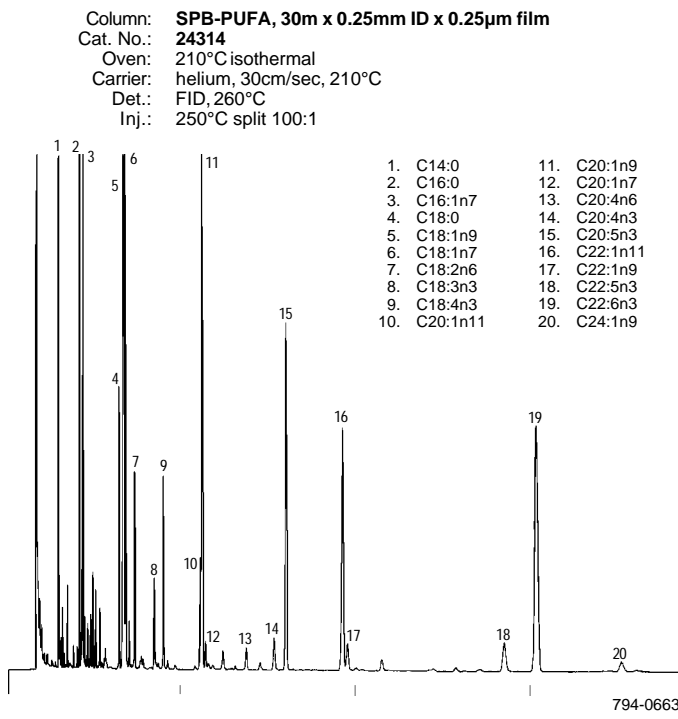


Figure D. Cod Liver Oil FAMES



One particular FAME, methyl docosahexaenoate (C22:6n3) — which as the free acid has been shown to exert positive effects on atherosclerosis — typically elutes on a PEG column directly after the next saturated even carbon number FAME, methyl lignocerate (C24:0), and very close to methyl nervonate (C24:1). An SPB-PUFA column, however, elutes C22:6n3 *before* C24:0 (Figures A-C).

In an analysis of cod liver oil FAMES (Figure D), the SPB-PUFA column provided a true separation of C22:6n3 from C24:1n9 — a difficult separation with a PEG column.

The SPB-PUFA column is an ideal tool for confirmation analyses of FAME samples. This column produces an elution pattern that more closely follows carbon chain length. The key FAMES of many foods can be easily and efficiently identified.

Ordering Information:

SPB-PUFA Fused Silica Capillary Column

30m x 0.25mm ID x 0.2µm film **24314**

C18 cis/trans FAME Isomer Individual Solutions

Each 10mg/mL in heptane.

cis-6-Octadecenoic acid methyl ester	47198
trans-6-Octadecenoic acid methyl ester	47199
cis-7-Octadecenoic acid methyl ester	46900-U
trans-7-Octadecenoic acid methyl ester	46901
cis-9-Octadecenoic acid methyl ester	46902
trans-9-Octadecenoic acid methyl ester	46903
cis-11-Octadecenoic acid methyl ester	46904
trans-11-Octadecenoic acid methyl ester	46905-U
cis-12-Octadecenoic acid methyl ester	46906
trans-12-Octadecenoic acid methyl ester	46907-U
cis-13-Octadecenoic acid methyl ester	46908
trans-13-Octadecenoic acid methyl ester	46909
cis-15-Octadecenoic acid methyl ester	46953
trans-15-Octadecenoic acid methyl ester	46954
cis-9,12-Octadecadienoic acid methyl ester	46950-U
trans-9,12-Octadecadienoic acid methyl ester	46951-U
cis-9,12,15-Octadecatrienoic acid methyl ester	46952-U

C18 cis/trans FAME Isomer Mixes

Each 10mg/mL in methylene chloride.

Linoleic Acid Methyl Ester Isomer Mix
 cis/trans isomers of 9,12-octadecadienoic acid methyl ester **47791**

Linolenic Acid Methyl Ester Isomer Mix
 cis/trans isomers of 9,12,15-octadecatrienoic acid methyl ester **47792**

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Fused silica columns manufactured under HP US Pat. No. 4,293,415.

Contact our Technical Service Department
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 for expert answers to your questions.

Note 80

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