

FATTY ACID METHYL ESTER ANALYSIS

Instrumentation, application expertise,
services and support

Fat / Lipides 4.5 g*

% Daily Value

Saturates / saturés 2.5 g
+ Trans / trans 0 g





INTRODUCTION

FAMEs (Fatty Acid Methyl Esters) and FAEEs (Fatty Acid Ethyl Esters) are derived by the transesterification of fats with alcohol, and are present in edible food sources and also in biodiesel products. Sources of FAMEs and FAEEs are vegetable oils, animal fats and waste cooking oils.

FAMES/FAEEs Analysis

Gas chromatography (GC) is commonly used for FAMES analysis due to its high resolution, sensitivity, and ability to separate and identify individual fatty acids within a mixture. The process begins by extracting the fatty acids from a sample and converting them into their methyl ester derivatives through esterification. These derivatives are then injected into the GC which then separates the individual FAMES compounds based on their chemical properties. A profile of the fatty acid composition in the sample is then provided.

Depending on the sample matrix and the target compounds, the SCION 8300 / 8500 GC offers a flexible configuration. The most common configurations include a selection of the following:

- Autosampler
- S/SL
- PTV
- FID
- SQ MS
- FAME Column

Nutritional quantification

FAMES Analysis is the main technique for the quantification and characterization of fats and oils in food products, and for their accurate nutritional labelling. This can be achieved using the relevant SCION Instruments solutions detailed in this publication.

Biodiesel Performance

A mixture of different FAMES, which have characteristics that are closer to those of fossil diesel fuels than pure vegetable oils, is commonly referred to as Biodiesel. For biodiesel to be used as a motor fuel or blended with petroleum diesel, it must conform to standard specifications, which can be validated using the relevant FAMES analysis solutions from SCION Instruments detailed in this publication.

FAMES Analysis by GC – GOED Recommended Equipment

SCION Instruments were named the recommended equipment for Fatty Acid Methyl Ester (FAMES) analysis by The GOED, the Global Organisation for EPA and DHA Omega-3 Fatty Acids.

Guidance documents released in June 2020 mentioned SCION Instruments 436 GC, predecessor to the 8300 GC, with PTV as the recommended equipment for getting optimal results for analysis of fatty acids.

The document states:

“Recovery of long-chain unsaturated compound is the most challenging a GC can do. One recommendation to attain optimal analytical recovery is to reduce losses of EPA, DHA, and other polyunsaturated fatty acids during the GC-FID analysis to a minimum, in particular by using the best injector system that avoids thermal cracking and selective evaporation (discrimination). Achieving near 100% recovery has also been demonstrated to continue to minimise inter-laboratory variability. Near 100% recover has been achieved using GC-FID by SCION Instruments 436-GC Gas Chromatograph”¹

SCION offers specialist support to Test Laboratories with FAMES applications, providing a range of laboratory products, broad application expertise, and market leading testing and analysis instrumentation, combined with full technical support, training, installation and maintenance services.

In addition, we offer completely customised analysis solutions fully tailored to your specific FAMES Testing requirements.

Industry Choice Inlet for FAMES Analysis

To obtain optimal analytical recovery of the FAMES components, the choice of the inlet system is critical. It requires an inlet that prevents selective evaporation and reduces thermal cracking to a minimum. The unique design of the SCION PTV inlet achieves these things, thereby preventing losses of polyunsaturated fatty acids such as DHA and EPA. The SCION PTV is recognized by the industry as the go-to inlet for the analysis of FAME composition and is able to achieve near 100% recovery.



1. <https://goedomega3.com/storage/app/media/technical%20reports/TGD%202020%2006%2029.pdf>

SAMPLE STORAGE AND PREPERATION

Balances and Weighing Solutions

Precisa Gravimetrics are a Swiss manufacturer and designer of weighing solutions based near Zurich. Established in 1935, Precisa has a long history of design, manufacture and assembly of electronic weighing equipment to the highest standards.

The range of product solutions from Precisa are:

- Laboratory balances with a range from 5 decimal place to 1 g readability solutions suitable for many applications
- Industrial Weighing Solutions for capacities up to 60 kg and readabilities of 1 g

In addition to the provision of weighing equipment, we also hold ISO 17025 UKAS accreditation (UK only) and ISO 9001 (for the production in Dietikon) certification for the on-site service and calibration of all makes and models of balances with our team of field based engineers.

Temperature Control Solutions

Froilabo SAS is a French company with over 100 years experience of manufacture and design of temperature control solutions.

For environmental testing and analysis, laboratories have to store a wide range of samples including vegetables, soil, mammalian, etc. These must be kept at low temperature to maintain perfect biological and chemical properties and guarantee a relevant analysis. Very low temperature protects the structure of proteins, enzymes or other macro molecules that have a positive impact on the quality of analysis. Storing these samples at very low temperatures allow them to be kept for many weeks and in some cases several years before analysis.

From their manufacturing operations in Europe, the portfolio of Froilabo products supplied include:

- Ultra-Low Temperature (ULT) Freezers -86 °C in both upright and horizontal forms. Volumes from 175 Litres to 1000 Litres for -80 °C solutions
- Ventilated laboratory ovens from 60 – 714 Litres and temperatures up to 250 °C
- A range of Incubators with static, refrigerated and circulatory models in the range with volumes ranging from 60 – 714 Litres
- Plasma Blast Freezers enabling rapid freezing of samples from ambient to < -80 °C within a few hours



Company Profile

Designed and manufactured in Switzerland, Precisa offer a range of high precision metrology and weighing solutions.



precisa.com



Company Profile

Froilabo has facilities in France and Romania and specialises in temperature control equipment including ULT Freezers, Incubators and Lab Ovens.



froilabo.com



SAMPLE ANALYSIS – GC APPLICATIONS

Determination of Fatty Acid Methyl Esters in Edible Argan Oil

Edible Argan Oil is prepared from roasted argan kernels, whose pressing obtains argan oil that has a golden color and is known as one of the most nutritional oils in the world. As a result consumer demand has increased with supply reducing. Argan oil is now one of the rarest and most expensive oils available.

There has been a growing demand for the analysis of oils, fats and fat containing food products especially surrounding the edible oils market. The most common analysis of such products are the determination of fatty acid methyl esters (FAMES), including cis-and trans isomers and omegas. ISO-12966 (4) specifies the method for the determination of FAMES by capillary gas chromatography. The method covers FAMES from C8 to C24 and can be applied to crude, refined and hydrogenated fats/oils which are derived from both animal and vegetable sources, not including dairy or milk products. SCION Instruments have developed a method, using ISO-12966 (4) specifications, for the determination of 37 FAMES using base esterification for sample preparation.

Table 1: GC Parameters

Parameter	Settings
Injector	240°C, 1:10 split
Column	SC37301 SCION-FAME 100m x 0.25mm x 0.2µm
Oven programme	100°C (1.65min), 3°C/min to 200°C, 2°C/min to 240°C (5 mins)
Carrier	He 2.4mL/min
FID	260°C

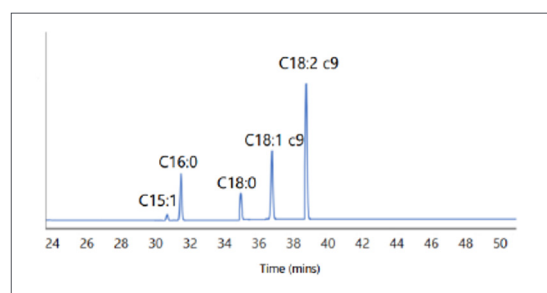


Figure 1: Chromatogram of argan oil

A SCION 456 GC, predecessor to 8500 GC, with FID was used for the determination of 37 FAMES in culinary argan oil. Following complete separation of all 37 target compounds, the six argan oil samples were analyzed. Peak identification was automated using the retention times from the reference standard, using CompassCDS software. The analytical conditions are shown in Table 1, and Figure 1 shows an example chromatogram, scaled to show only the section containing identified FAMES. System Configuration

- GC-FID with S/SL injector
- **SC37301** SCION-FAME 100m x 0.25mm x 0.20µm

Application Note - Key Learning Points

- See the differences in FAMES composition between commercially available edible oils which highlights the need for testing.
- Read on for full instrument method conditions and sample prep information to make testing as stress free as possible

To access our more detailed information for the above solution, please scan the QR code provided below to access our technical Application Note.



Determination of Fatty Acid Methyl Esters in Olive Oil using GCSQMS

The determination of Fatty Acid Methyl Esters (FAMES) is a commonly performed analysis, to determine the quality of extra virgin olive oil (EVOO). Natural EVOO is made by pressing or centrifuging olives, without exposing the olives to any chemical processing. A way of producing cheaper olive oil is to mix them with cheaper oils, such as sunflower oil and refined olive oils. This mixing with refined olive oils results in a divergent fatty acid content in the end product.

The determination of fatty acids for quality control in EVOO's is performed by Gas Chromatography (GC). Therefore, the fatty acids need to be trans esterified into FAMES because of the thermally stable volatile behaviour of these compounds.

Table 2: SCION GC 8500 configuration

GC Part	Settings
Injector	Temperature 220°C Split ratio 10:1
Injection Volume	2.0 µL
Liner	SCION 1177 4 mm 5/SL Focus
Column	SCION-FAME 100m x 0.25mm x 0.2µm
Carrier Gas	Helium 1.5mL/min, constant flow mode
Oven Program	100°C (hold 4.0 min), 3°C/min to 240°C (hold 6.33 min)
Detector	Flame Ionization Detector Temperature 250°C Air: 300 mL/min Hydrogen: 30 mL/min Make up (N ₂): 25 mL/min
Run Time	57 min
Software	Compass

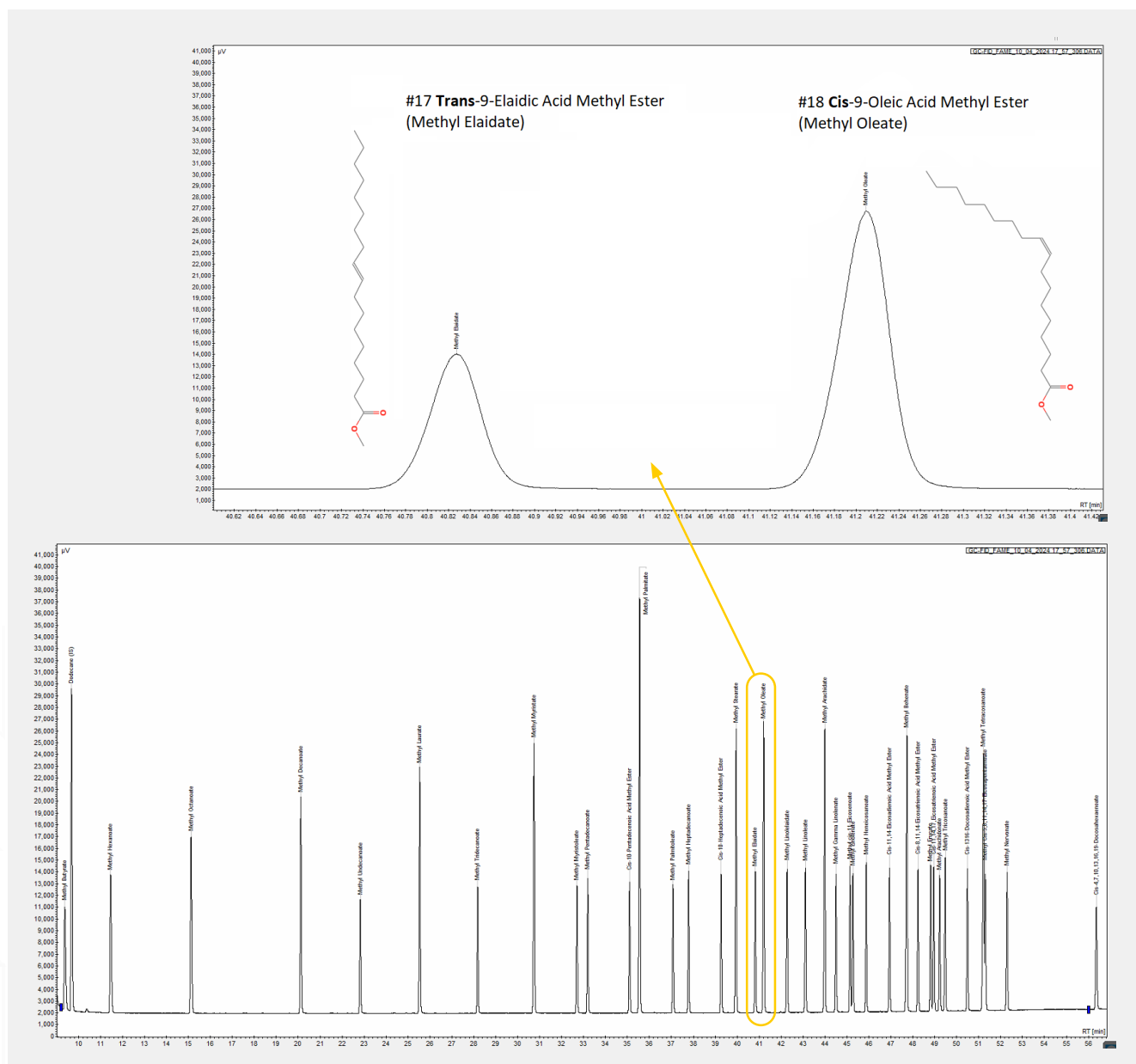


Figure 2: TIC chromatogram of the FAME-standard

This results in a more reliable analysis. In the transesterification process free and bonded fatty acids react with an alcohol in the presence of a catalyst, forming a mixture of FAMES compounds and an alcohol. The composition of FAMES compounds in EVOO can say much about the quality and origin of the olive oil, which makes this analysis very valuable for quality control.

Using GC with Mass Spectrometry (MS) from SCION Instruments, the quantification and qualification of FAMES within EVOO's can be easily achieved. This application can be performed on either the SCION Instruments 8300 GC or 8500 GC platform with 8700 Single Quad Mass Spectrometer (SQ MS) and the SCION 8400PRO Autosampler.

A SCION-FAMES column is used for obtaining the best separation of the cis and trans-isomers of most FAMES's.

System Configuration

- GC-MS (SQ) with S/SL and 8400Pro Autosampler
- **SC37301** SCION-FAME 100m x 0.25mm x 0.2µm

Application Note - Key Learning Points

- Learn how to test for fatty acid methyl esters in olive oil using GC-MS SQ
- With this method the quality of your olive oil can be determined; the composition of FAMES components in olive oil can say much about how the olive oil is processed (natural, chemical or blended with cheaper vegetable oils)
- Achieve good resolution results with our SCION-FAMES column, that is capable to separate Trans and Cis isomers
- See the advantages of using MS spectral libraries such as NIST, which contains over at least 37 FAMES compounds allowing for easy identification of unknowns in your olive oil samples

To access our more detailed Application Notes for the above solution, please scan the QR code below.



Determination of Free Glycerol Content in Fatty Acid Methyl Esters (FAMES) and Biodiesel According to EN- 14106

EN-14106 specifies a gas chromatographic method for determining the free glycerol content in Fatty Acid Methyl Esters (FAME), which are commonly used in biodiesel production.

Biodiesel is produced from oils such as vegetable oils, used cooking oils and animal fats - the fuel is produced by a process called transesterification.

The oils and fats are converted into biodiesel and glycerol by reaction with an alcohol (usually methanol) in the presence of strong base such as potassium hydroxide or sodium hydroxide. The strong base behaves as a catalyst for the reaction – alkoxides are also increasingly used within the industry.

Glycerol is formed as a by-product and separated from the biodiesel during the production process. However, traces of glycerol can be found in the final biodiesel product. In higher concentrations, glycerol has a negative effect on fuel behaviour and performance.

System Configuration

- GC-FID with S/SL injector
- SCION PLOT Q 10m x 0.32 x 0.10 μm

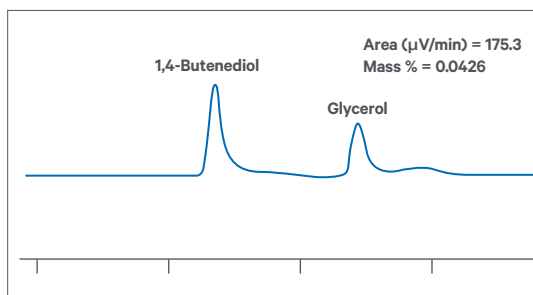


Figure 3: Biodiesel sample with area and mass %

Application Note - Key Learning Points

- Learn the sample preparation and instrument parameters required to ensure compliance with European standards EN-14106 and EN-14214
- Learn why testing Biodiesel is important to ensure quality of the product allowing for high performance and regulatory compliance

To access our more detailed Application Notes for the above solution, please scan the QR code provided below.



Analysis of Free and Total Glycerin in B-100 Biodiesel Methyl Esters (ASTM D6584)

The determination of free and total glycerin in pure biodiesel (B100) is crucial for assessing its quality and ensuring optimal engine performance.

The American Standard, ASTM D6584, is the standard test method commonly used for the quantitative determination of free and total glycerin content in Fatty Acid Methyl Esters (FAMES), typically intended for pure biodiesel or as a blending component for domestic and diesel fuels.

Free and bonded glycerin content serves as an indicator of biodiesel quality, with low total glycerin levels ensuring efficient oil conversion, and high glycerin and glyceride levels potentially leading to injector deposits, clogged fuel systems, and poor cold weather operation.

Application Note - Key Learning Points

- Learn the sample preparation and instrument parameters required to ensure compliance with ASTM D6584
- Learn why testing Biodiesel is important to ensure quality of the product allowing for high performance and regulatory compliance

To access our more detailed Application Notes for the above solution, please scan the QR code provided below.



System Configuration

- 8300 GC-FID (high temp) with COC injector (LCO₂ cooling)
- **SC38613** SCION-Glycerides
10m x 0.32mm x 0.10µm Inert Steel w/ Ret. Gap

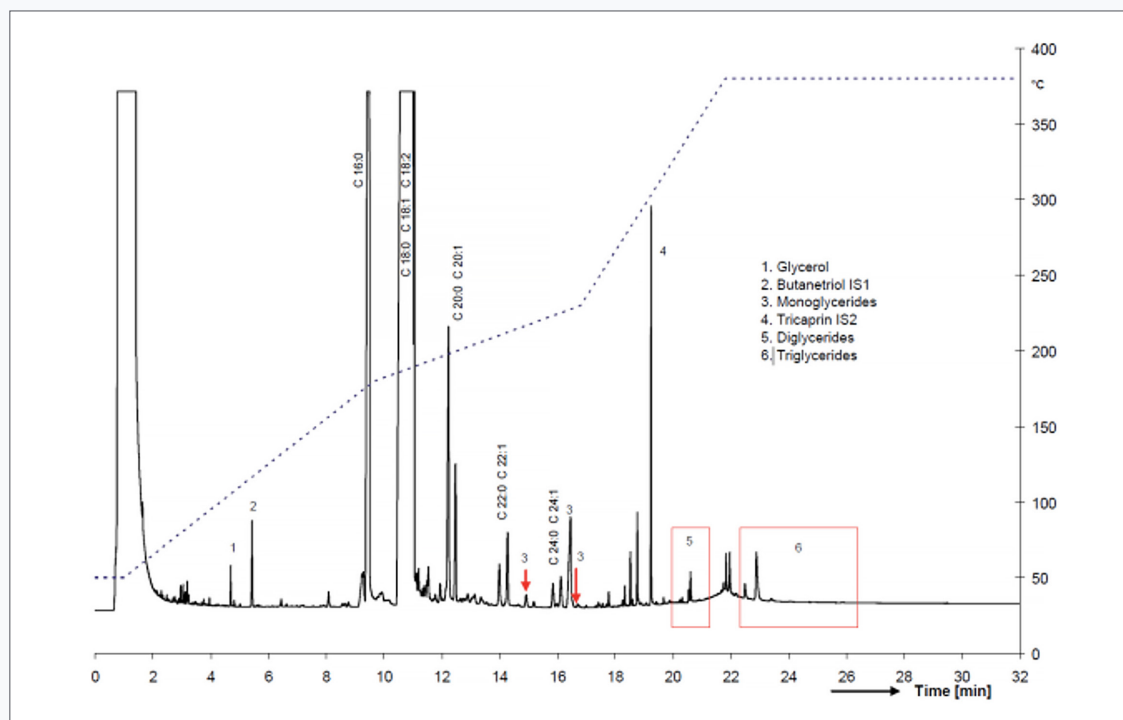


Figure 4: Example chromatogram of a typical B-100 biodiesel sample made from rapeseed oil (with extra glycerol and triglycerides added) after a derivatizing reaction with MSTFA. Peaks of interest are separated from the complex matrix which consists mainly of the C18 and C16 FAMES and other minor compounds, like sterols.

Determination of Total FAMES and Linolenic Acid Methyl Esters in Biodiesel According to EN 14103

For biodiesel to be used as a motor fuel or blended with petroleum diesel, it must conform to standard specifications one of which is EN 14103.

EN 14103 is a standard method for determination of esters and linolenic acid methyl ester and can be applied to biodiesel analysis. EN 14103 requires GC analysis with a split/splitless (S/SL) or a programmable temperature vaporizing (PTV) injector and a wax column for a detailed separation of FAMES. This standard is used to verify that the ester content of Fatty Acid Methyl Esters (FAMES) is greater than 90% and that the linolenic acid content is between 1% (m/m) and 15% (m/m) consistent with EN 14214 specifications. This method is suitable for FAMES which contains methyl esters between C14 and C24.

When the correct GC parameters are met, a typical chromatogram is obtained, as shown in Figure 5.

System Configuration

- 8300 GC-FID with S/SL
- **SC32423** SCION-WAXMS 30m x 0.25mm x 0.25 μ m

Application Note - Key Learning Points

- Learn the sample preparation and instrument parameters required to ensure compliance with EN 14103
- Learn why testing Biodiesel is important to ensure quality of the product allowing for high performance and regulatory compliance

To access our more detailed Application Notes for the above solution, please scan the QR code provided below.

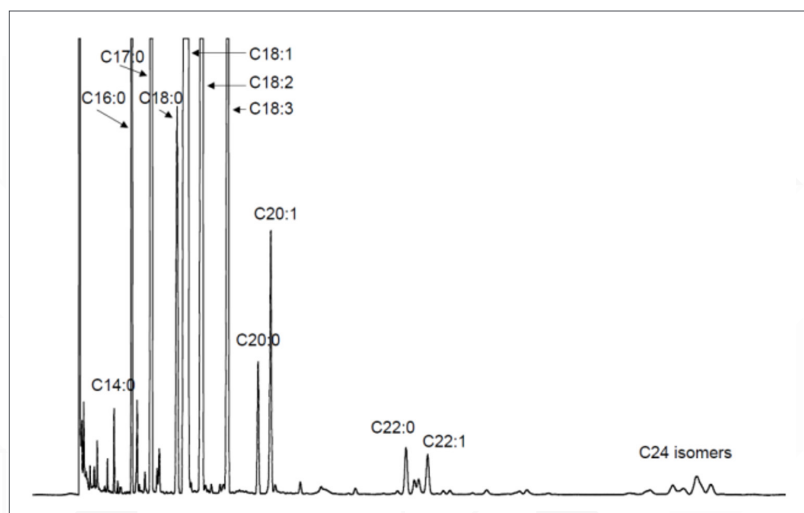


Figure 5: Biodiesel Chromatogram



Determination of Methanol Content in Biodiesel (EN-14110)

The purpose of the European Standard EN 14110 is to determine the methanol content of Fatty Acid Methyl Esters (FAMES) intended for use as pure biodiesel or as a blending component for domestic heating fuels and diesel fuels.

The method is applicable for a concentration range from 0.01 % (m/m) to 0.5 % (m/m) methanol.

Requirements stated in EN 14214:2003 are <0.2 % (m/m) methanol (MeOH)

The EN 14110 method is not applicable to mixtures of FAMES that contain other low boiling components. For this application note the analysis was conducted using the internal standard method which was appropriate for manual headspace analysis. The analysis can be automated using a headspace sampler. The internal standard used was Isopropyl Alcohol (IPA).

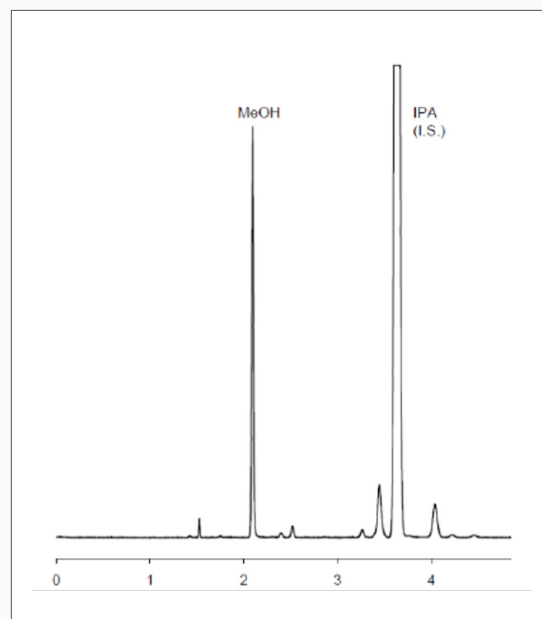


Figure 6: Example chromatogram of a Summer Grade Biodiesel containing some unknown volatiles besides Methanol.

System Configuration

- 8300 GC-FID with S/SL
- **SC32423** SCION-1, 30m x 0.32mm x 4 μ m

Application Note - Key Learning Points

- Ensure compliance with EN 14110
- Optimal sensitivity by varying headspace temperature, sampling time, inlet split flow and sample amount injected

For more detailed information about this application, please scan the QR code provided below.



FAMES - SUGGESTED CONSUMABLES

Part	Part Number
10 μ L fixed needle syringe, 5 cm, 0.47 mm OD, 26 g conical needle	41312133
BTO Septa 9 mm, pk/50	CR298713
15% Graphite/85% Vespel Ferrule 1/16" with 0.4 mm hole pk/10	41312148
15% Graphite/85% Vespel Ferrule 1/16" with 0.5mm Hole PK/10	41312149
15% Graphite/85% Vespel Ferrule 1/16" With 0.8mm Hole PK/10	41312150
SCION-FAMEs column 100m x 0.25mm x 0.20 μ m	SC37301
SCION-WAXMS 30m x 0.25mm x 0.25 μ m	SC32423
SCION-624MS 30m x 0.32mm x 1.8 μ m	SC32594
SCION-1 30m x 0.32mm x 4 μ m	SC32423
SCION-Glycerides 10m x 0.32mm x 0.10 μ m	SC38613



SAMPLE ANALYSIS INSTRUMENTATION

SCION Instruments

SCION Instruments manufactures a range of chromatography and mass spectrometry instrumentation for a broad range of FAMES testing and analyses applications.

The key instrumentation for many of these are the flexible SCION 8300 GC and 8500 GC's which can be configured with a range of sampling devices and detectors, including single and triple quadrupole mass spectrometers (8700 SQ MS and 8900 TQ MS). In combination with the SCION LC6000 HPLC, SCION Instruments offer a complete solution for all your FAMES testing requirements.



The SCION 8300 GC

The SCION 8500 GC

SCION 8300 GC - Gas Chromatograph

The ideal gas chromatograph for many applications that saves space without compromise on performance, productivity and functionality. Capacity for 2 injectors, 1 detector, plus a mass spectrometer makes the SCION 8300 GC a perfect match for your analyses.

Highlights:

- Compact footprint of only 32 cm (12.6") wide
- Fast ramping oven (170°C/minute)
- Two channel architecture, with up to 2 injectors and 2 detectors (including MS)
- 10" High resolution full-colour touchscreen, 16 languages supported
- Electronic flow control (EFC), 3 channels 0.001psi resolution
- Full automation capabilities through CompassCDS software and autosampler

SCION 8500 GC - Gas Chromatograph

The SCION 8500 GC is versatile and offers flexibility. Supporting three injector and four detector positions (including the mass spectrometer) with full independent access, this makes the SCION 8500 GC the ideal platform for all your FAMES test and measurement applications. It is the perfect GC for any analytical challenge due to the wide array of options for configuration.

Highlights:

- Ultimate flexibility/configurability.
- Fast ramping over (150°C/minute)
- Three channel architecture, with up to 3 injectors and 4 detectors (including MS)
- 10" High resolution full-colour touchscreen, 16 languages supported
- Electronic Flow Control (EFC), up to 21 channels at 0.001psi resolution.
- Flexibility to add samplers, valves, valve oven, backflush and column switching capabilities, etc. Programmed and controlled and through CompassCDS

SCION
INSTRUMENTS

Company Profile

Based in the Netherlands, SCION Instruments are a global leader in Gas and Liquid Chromatography equipment and solutions.



scioninstruments.com

Autosamplers

8400Pro and 8410Pro

Regardless of sample type or throughput, there are two autosampler options (8400Pro and 8410Pro) to meet your requirements for accuracy & precision. Each can be tailored to meet specific sampling needs and workloads. Third party samplers for Thermal Desorption and Purge & Trap are easily integrated.

Highlights:

8400Pro Autosampler

- Capacity: 100 x 2 ml vial sample capacity

8410Pro Autoinjector

- Capacity: 10 x 2ml + 6 x 5ml + 5x 10ml vials

Both variants offer:

- Dual injection access
- Dual or duplicate injection capability
- Three solvent wash
- Sample tray heating or cooling
- Large solvent vial, Flowcell, SPME options

Versa Automated Headspace Sampler

Static headspace is one of the most popular techniques for gas chromatography due to its versatility for analysing volatile organic compounds (VOCs) in a complex variety of matrices. This is because it eliminates tedious sample preparation steps, as well as prevents contamination problems that are common to other sample introduction techniques. The Versa is the perfect solution for applications which require all the advantages of headspace analysis, available to fit any budget.

Highlights:

- Small on size but big on value.
Only 12" wide (30.5cm)
- 20-position autosampler/single position platen oven
- 22mL vials
- Sample heating to 200°C throughout pathway
- Built-in pressure control to ensure consistent volume for all samples regardless of external conditions
- Inert sample pathway including transfer line, sample needle, and loop provide superior analytical results by eliminating adsorption and reducing carryover
- Automatic leak check and Benchmark test for quick troubleshooting
- Simple method development using Method Optimization Mode (M.O.M.)
- 21 CFR Part 11 Compliant Software



8400 Pro Autosampler

8410 Pro Autoinjector



SCION Versa Automated Headspace Sampler



SCION Instruments HT3 Static and Dynamic Headspace System

SCION Instruments announce the next generation Headspace instrument, the HT3™ Static and Dynamic Headspace System.

Static Headspace analysis is a time-tested and robust technique for the analysis of volatile compounds in almost any matrix. The popularity of the technique is due to Headspace analysis providing a clean, reliable result.

Dramatic improvements in sensitivity are achieved with the Dynamic Headspace option, while maintaining the ruggedness and reliability of a traditional Static Headspace instrument.

Highlights

- Standard integrated 60-position autosampler with 10-position platen heater provides true walk away automation
- Increased sensitivity from 50 to 100 times with the Dynamic Headspace option (compound dependent)
- Removable sample path for trouble-free maintenance
- High temperature capability to 300°C expands range of applications
- Inert sample pathway including transfer line, sample needle and loop provide superior analytical results by eliminating adsorption and reducing carryover
- Automated Leak Check and Benchmark for quick troubleshooting
- Automated method development using Method Optimization Mode (M.O.M.)
- 21 CFR Part 11 Compliant Software
- Built-in Mass Flow Controller ensures consistent flow and pressure for all samples regardless of external conditions



HT3 Static and Dynamic Headspace System



SCION 8700 SQ GC-MS

SCION 8700 SQ MS

Used in combination with the SCION 8300 GC / 8500 GC, the SCION 8700 SQ Single Quadrupole Mass Spectrometer (MS) is designed for today's fast paced analytical laboratory. Innovative design features such as a Lens-Free ion path, heated ion optics and an Extended Dynamic Range (EDR) detector enable the SCION 8700 SQ to deliver accurate quantification and identification on a routine basis, even in complex matrices. As ions pass through a mass spectrometer a significant portion is lost every time they encounter a lens. Due to its unique design the SCION 8700 SQ doesn't have any lenses thus increasing the sensitivity of the instrument by reducing ion losses. Another major advantage of having no lenses the source is the only part to clean, so you can spend more time analysing samples and less time maintaining your instrument.

Highlights:

- Innovative lens-free ion path delivers simplified tuning
- Off axis source and detector increase sensitivity
- Active focusing Q_0
- Dual filament source increases uptime
- Compound-based scanning software

SCION 8900 TQ MS

Used in combination with the SCION 8300 GC / 8500 GC, the SCION 8900 TQ Triple Quadrupole Mass Spectrometer (TQ MS) has a small footprint but does not compromise on quality. Offering superior sensitivity and robustness based on innovative ion optics, and fast and easy method development. Coupled to our outstanding GC instruments, the SCION 8900 TQ MS system defines a new standard of usability for quantitative analysis. The SCION 8900 TQ MS offers a flexible solution for any laboratory.

Highlights:

- Unmatched sensitivity - MRM mode capable of detecting 100 fg OFN for 272>222 with a S/N of >50,000:1.
- Fastest scan rates in the market at 30,000 Da/s
- Innovative lens-free ion path delivers simplified tuning for increased efficiency in your laboratory. Fewer statistical ion losses and no charging effects lead more ions from the source to the detector.
- Improved MRM speed of 1000 MRM/s for advanced data capture. High speed electronics – more MRM transitions per run and better sensitivity with more datapoints for each chromatographic peak.
- Low dwell times of 0.5ms allow for capturing more data in your analysis.
- High-performance turbo pump included for rapid time to vacuum and worry-free operation.
- Six orders of magnitude dynamic range (EDR) for precise and accurate results across a wide range of concentrations. The Extended Dynamic Range detector with unique Integrated-Quad design requires just one injection, saving time and resources, and delivering accurate and rapid results.
- Extensive mass range from 1 to 1200 for comprehensive analysis.
- High mass resolution of 0.7-4Da with mass stability of 0.1Da over 48 hours for accurate and consistent results.
- Off-axis source and detector increase sensitivity for detecting even the smallest concentrations of compounds.
- Greater sensitivity - Active-Focusing Q0 uses helium molecules to increase ion transmission.



SCION 8900 TQ GC-MS

Collision cooling lowers the diameter of the ion trajectory and also increases the number of ions which reach the detector.

- Fully integrated with TASQ software, Target analysis screening quantitation (TASQ) software provides a turnkey data analysis solution for the requirement to screen, confirm and quantify hundreds of compounds in a single analysis.
- MRM Method Builder - Designed by chromatographers, the GCMS 8900 TQ autofill function removes the need to know the MRM transition of an analyte. A simple drag-and-drop of the compound from the factory-installed compound library, which contains more than 3000 MRM transitions, automatically sets up the method and manages the TQ duty cycle.

SCION LC6000 – High Performance Liquid Chromatograph

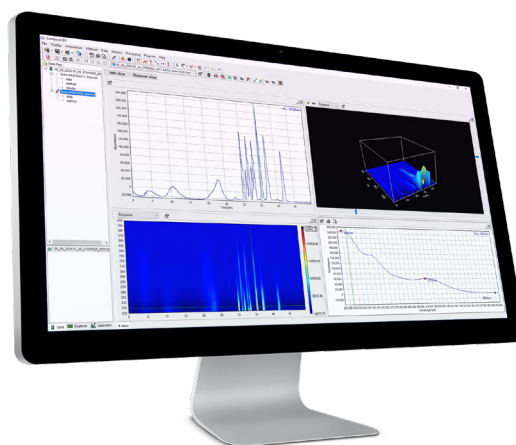
The SCION LC6000 Series High Performance Liquid Chromatograph (HPLC) aims for confidence in results through outstanding life-time performance. A robust design maximises uptime and productivity levels whilst minimises cost of operation. The SCION LC6000 Series offers an array of automation options for workflow optimisation, making our lab experience the best and easiest possible.

Highlights:

- SCION 6100 Quaternary pump high frequency mode offering superior gradient performance and excellent flow rate precision
- SCION 6210/6220 autosamplers provide excellent injection volume precision and ultra low carry over
- SCION 6310/ 6320 Column Ovens help deliver sharp peaks and excellent peak symmetry, 6310 Column oven can accommodate up to 3 x 250mm columns, 6320 column oven can accommodate up to 3 x 400mm or 6 x 150mm columns
- Full range of HPLC columns now available
- Excellent Detector Performance with Ultra Violet, Diode Array Detector, Fluorescence and Refractive Index available



SCION LC 6000



Compass CDS User Interface

Compass CDS – Chromatography Data System

Compass CDS is an industry-proven, feature packed and user friendly networked chromatography data system. This software solution has been developed throughout the last 20 years in response to the requirements of our customer base. Providing an application and information-rich user interface, it is also uniquely customizable. Intuitive, easy-to-use, CompassCDS provides laboratory staff with a powerful tool for a variety of operations in different analytical fields

Highlights:

- User friendly, intuitive and information-rich user interface
- Application-specific plug-ins and add-ons
- Extended custom calculations and reporting
- Multi-vendor GC and LC instrument control
- Scales from local workstation to enterprise-wide client/server installations
- Robust design for 24/7 operations
- Secure, centralized system administration and data management
- Secure, highly configurable and support redundancy
- Seamless integration with LIMS, ELN, LES, SAP/ERP, SCADA/PCS using the Sample Streamer
- Optimized for virtualized environments (VMWare, Hyper-V) and MetaFrame rollouts (Citrix, Window TS, RDP)
- Complies to national and international regulations and guidelines (21CFR11, ISO/IEC 17025)

SERVICE AND SUPPORT

Standard Method Compliant GC Systems

SCION Instruments is unique in our capability to deliver customised solutions to meet your specific analysis requirements.

At the heart of our custom solutions are the versatile 8300 GC / 8500 GC gas chromatography instruments, which we design and manufacture at our own production facility in Goes, Netherlands.

These high performance building blocks are designed to enable extensive customisation. Choose from a wide variety of samplers, valves, valve oven, backflush and column switching capabilities. They can also be paired with our 8700 SQ MS / 8900 TQ MS mass spectrometry instruments, and with a range of autosampler solutions.

We have more than 50 standard, pre-configured systems available to meet a wide variety of applications – built and tested – and ready to meet your analytical needs right out of the box.

And we can tailor a system solution specifically for your unique requirements, building and testing to meet your specific analytical challenges.

Our knowledgeable and highly qualified field staff can help you specify the exact system for your needs, and give you all the support and confidence you need to deploy this in your laboratory and start making immediate progress.



APPLICATION NOTES

To access the applications notes for each of the tests featured in this document, please scan the QR codes provided below.



Analysis of Free and Total Glycerin in B-100 Biodiesel Methyl Esters (ASTM D6584)



Determination of Fatty Acid Methyl Esters in Edible Argan Oil



Determination of Free Glycerol Content in Fatty Acid Methyl Esters (FAMES) and Biodiesel According to EN- 14106



Determination of Total FAMES and Linolenic Acid Methyl Esters in Biodiesel According to EN 14103



Determination of Fatty Acid Methyl Esters in olive oil using GCSQMS



Determination of Methanol Content in Biodiesel (EN-14110)



NOTE: For advice and support with any specific testing requirements, please contact one of our representatives.



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