



**BioFuels**  
**AccuStandard**

**Certified  
Reference  
Standards**

# **BioFuels**

*Glycerin*

*FAME Mixtures*

*FAEE Mixtures*

*Sulfur Standards*

*Physical Standards*

*Wear Metals*

*ASTM & EN Method  
Standards*

*Custom Formulations*

ASTM, EN and other test methods have been developed to monitor the properties (physical and chemical), constituent distribution, impurities and suitability of use.

The source materials that are used to produce these fuels vary from plant oils, ethyl alcohol (usually from corn) and even waste products.

Biodiesel refineries have opened all over the world.

- The Minister for the Environment and Heritage of Australia has signed the Fuel Standard (Biodiesel) in 2006 which sets out the physical and chemical parameters with the associated test methods to determine compliance.
- In Germany the sale of biodiesel in gas stations is over 2 million cubic meters.
- In the USA, some state legislatures have mandated 2% biodiesel content in all diesels sold in those states.

### ASTM D6584 / EN 14105 Free and Total Glycerin in Biodiesel by GC

Compound	Qty./Conc.	Matrix	Cat. No.	Unit
Glycerin	0.5 mg/mL	Pyridine	BF-D-6584-01	2 mL
Monoolein	5 mg/mL	Pyridine	BF-D-6584-02	2 mL
1,3-Diolein	5 mg/mL	Pyridine	BF-D-6584-03	2 mL
Triolein	5 mg/mL	Pyridine	BF-D-6584-04	2 mL
(S)-(-)-1,2,4-Butanetriol	1 mg/mL	Pyridine	BF-D-6584-05-IS	5 mL
Tricaprin	8 mg/mL	Pyridine	BF-D-6584-06	5 mL
MSTFA	5 mL	Neat	BF-D-6584-07N	5 mL
<b>SET of 7 above compounds</b>			<b>BF-D-6584-SET</b>	<b>7 units</b>
<b>Mix of above compounds, on right (MSTFA separate)</b>				
Biofuel 20	0.5 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	BF-FU-030-D	2 mL
Biofuel 20	20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	BF-FU-030-D-40X	2 mL
Biofuel 100 Consumer grade	0.5 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	BF-FU-029-D	2 mL
Biofuel 100 Consumer grade	20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	BF-FU-029-40X	2 mL
Biofuel 100	0.5 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	BF-FU-032-D	2 mL
Biofuel 100	20 mg/mL	CH <sub>2</sub> Cl <sub>2</sub>	BF-FU-032-D-40X	2 mL

### ASTM D6584 Mixture

BF-D-6584-MIX	1 mL
<i>At stated conc. in Pyridine</i>	
Glycerol	0.5 mg/mL
Monoolein	5 mg/mL
1,3-Diolein	5 mg/mL
Trioctadecenoil (Olein)	5 mg/mL
(S)-(-)-1,2,4-Butanetriol	1 mg/mL
Tricaprin	8 mg/mL

Note: MSTFA (BF-D-6584-07N) can be ordered separately.

### EN 14103 Fatty Acid Methyl Esters (FAMES)

The methyl esters in the mixture are those derived from typical glycerides present in biomass sources.

#### Soy & Corn

BF-SOY-ME	100 mg
16:0 Palmitate	6% Wt.
18:0 Stearate	3% Wt.
20:0 Arachidate	3% Wt.
18:1 Oleate	35% Wt.
18:2 Linoleate	50% Wt.
18:3 Linolenate	3% Wt.

#### Palm Kernel

BF-PALM-ME	100 mg
8:0 Caprylate	7% Wt.
10:0 Caprate	5% Wt.
12:0 Laurate	48% Wt.
14:0 Myristate	15% Wt.
16:0 Palmitate	7% Wt.
18:0 Stearate	3% Wt.
18:1 Oleate	12% Wt.
18:2 Linoleate	3% Wt.

#### Percent Methanol Calibration Standard Set (EN 14110)

BF-MEOH-SET	5 x 1 mL
BF-MEOH-1X (100 µg/g)	BF-MEOH-25X (2500 µg/g)
BF-MEOH-5X (500 µg/g)	BF-MEOH-50X (5000 µg/g)
BF-MEOH-10X (1000 µg/g)	
Methanol in Water	

#### Rapeseed Oil

BF-RAP-ME	100 mg
14:0 Myristate	1% Wt.
16:0 Palmitate	4% Wt.
18:0 Stearate	3% Wt.
20:0 Arachidate	3% Wt.
22:0 Behenate	3% Wt.
24:0 Lignocerate	3% Wt.
18:1 Oleate	60% Wt.
22:1 Erucate	5% Wt.
18:2 Linoleate	12% Wt.
18:3 Linolenate	5% Wt.
20:1 Eicosenoate	1% Wt.

#### Beef Tallow & Palm Oil

BF-BT-ME	100 mg
14:0 Myristate	2% Wt.
16:0 Palmitate	30% Wt.
16:1 Palmitoleate	3% Wt.
18:0 Stearate	3% Wt.
18:1 Oleate	41% Wt.
18:2 Linoleate	7% Wt.
18:3 Linolenate	3% Wt.

#### Technical Note

All products are refinery grade stock, unless specifically marked consumer grade.

#### Technical Note

Individual Mixes packaged under Nitrogen for stability.

### Fatty Acid Ethyl Esters (FAEEs)

#### Ethyl Esters in Soy & Corn

BF-SOY-EE	100 mg
16:0 Ethyl palmitate	6% Wt.
18:0 Ethyl stearate	3% Wt.
20:0 Ethyl arachidate	3% Wt.
18:1 Ethyl oleate	35% Wt.
18:2 Ethyl linoleate	50% Wt.
18:3 Ethyl linolenate	3% Wt.

#### Ethyl Esters in Palm Kernel Oil

BF-PALM-EE	100 mg
8:0 Ethyl caprylate	7% Wt.
10:0 Ethyl caprate	5% Wt.
12:0 Ethyl laurate	48% Wt.
14:0 Ethyl myristate	15% Wt.
16:0 Ethyl palmitate	7% Wt.
18:0 Ethyl stearate	3% Wt.
18:1 Ethyl oleate	12% Wt.
18:2 Ethyl linoleate	3% Wt.

Neats are 100 mg.  
Solutions are 1 mL of 10 mg/mL conc. in Hexane as a solvent.

Compound	Neats	Solutions
Ethyl palmitate (16:0)	FAEE-006N	FAEE-006S
Ethyl stearate (18:0)	FAEE-007N	FAEE-007S
Ethyl arachidate (20:0)	FAEE-008N	FAEE-008S
Ethyl oleate (18:1)	FAEE-014N	FAEE-014S
Ethyl linoleate (18:2)	FAEE-012N	FAEE-012S
Ethyl linolenate (18:3)	FAEE-016N	FAEE-016S
Ethyl myristate (14:0)	FAEE-005N	FAEE-005S
Ethyl behenate (22:0)	FAEE-009N	FAEE-009S
Ethyl lignocerate (24:0)	FAEE-010N	FAEE-010S
Ethyl erucate (22:1)	FAEE-011N	FAEE-011S
Ethyl caprylate (8:0)	FAEE-002N	FAEE-002S
Ethyl caprate (10:0)	FAEE-003N	FAEE-003S
Ethyl laurate (12:0)	FAEE-004N	FAEE-004S
Ethyl palmitoleate (16:1)	FAEE-001N	FAEE-001S
Ethyl nervonate (24:1)	FAEE-013N	FAEE-013S
Ethyl heptadecanoate (17:0)	FAEE-015N	FAEE-015S
Ethyl linolenate (gamma) (18:3)	FAEE-020N	FAEE-020S

#### Ethyl Esters in Rapeseed Oil

BF-RAP-EE	100 mg
14:0 Ethyl myristate	1% Wt.
16:0 Ethyl palmitate	4% Wt.
18:0 Ethyl stearate	3% Wt.
20:0 Ethyl arachidate	3% Wt.
22:0 Ethyl behenate	3% Wt.
24:0 Ethyl lignocerate	3% Wt.
18:1 Ethyl oleate	60% Wt.
22:1 Ethyl erucate	5% Wt.
18:2 Ethyl linoleate	12% Wt.
18:3 Ethyl linolenate	5% Wt.
20:1 Ethyl eicosenoate	1% Wt.

#### Ethyl Esters in Beef Tallow

BF-BT-EE	100 mg
14:0 Ethyl myristate	2% Wt.
16:0 Ethyl palmitate	30% Wt.
16:1 Ethyl palmitoleate	3% Wt.
18:0 Ethyl stearate	14% Wt.
18:1 Ethyl oleate	41% Wt.
18:2 Ethyl linoleate	7% Wt.
18:3 Ethyl linolenate	3% Wt.

**ASTM D6751 & ASTM D5453 Sulfur as Di-n-butyl sulfide in Biodiesel**

**Sulfur in Biodiesel 5%**

ppm (µg/g)	% Wt.	Cat. No.	Unit
0	0	BF-5453-B5-BL	100 mL
5	0.0005	BF-5453-B5-5X-SET	2 x 100 mL
10	0.001	BF-5453-B5-10X-SET	2 x 100 mL
15	0.0015	BF-5453-B5-15X-SET	2 x 100 mL
30	0.003	BF-5453-B5-30X	100 mL
50	0.005	BF-5453-B5-50X	100 mL
75	0.0075	BF-5453-B5-75X	100 mL
100	0.01	BF-5453-B5-100X	100 mL
200	0.02	BF-5453-B5-200X	100 mL
500	0.05	BF-5453-B5-500X	100 mL

**Sulfur in Biodiesel 20%**

ppm (µg/g)	% Wt.	Cat. No.	Unit
0	0	BF-5453-B20-BL	100 mL
5	0.0005	BF-5453-B20-5X-SET	2 x 100 mL
10	0.001	BF-5453-B20-10X-SET	2 x 100 mL
15	0.0015	BF-5453-B20-15X-SET	2 x 100 mL
30	0.003	BF-5453-B20-30X	100 mL
50	0.005	BF-5453-B20-50X	100 mL
75	0.0075	BF-5453-B20-75X	100 mL
100	0.01	BF-5453-B20-100X	100 mL
200	0.02	BF-5453-B20-200X	100 mL
500	0.05	BF-5453-B20-500X	100 mL

Note: 10,000 ppm = 1% Wt.

**Sulfur in Biodiesel 100%**

ppm (µg/g)	% Wt.	Cat. No.	Unit
0	0	BF-5453-B100-BL	100 mL
5	0.0005	BF-5453-B100-5X-SET	2 x 100 mL
10	0.001	BF-5453-B100-10X-SET	2 x 100 mL
15	0.0015	BF-5453-B100-15X-SET	2 x 100 mL
30	0.003	BF-5453-B100-30X	100 mL
50	0.005	BF-5453-B100-50X	100 mL
75	0.0075	BF-5453-B100-75X	100 mL
100	0.01	BF-5453-B100-100X	100 mL
200	0.02	BF-5453-B100-200X	100 mL
500	0.05	BF-5453-B100-500X	100 mL

**Biofuel Blank**

**B100**

BF-WM-B100-BL-1	100 g
BF-WM-B100-BL-5	500 g

**Technical Note**

The 5, 10 and 15 ppm sulfurs are supplied as a set including a blank. We suggest using the blank for analysis to compensate for matrix interferences, such as low levels of native sulfur.

**Technical Note**

Formulations for EN 12916, other methods and custom formulations are available.

**Physical Standards**

Compound	Conc.	Matrix	Cat. No.	Unit
<b>ASTM D2500</b>				
Cloud Point	-16 °C *	B5	BF-D-2500-B5	200 mL
	-14 °C *	B20	BF-D-2500-B20	200 mL
	-1 °C *	B100	BF-D-2500-B100	200 mL
<b>ASTM D93 / EN-ISO 3679</b>				
Flash Point	60 °C *		BF-D-93-60C	200 mL
	65 °C *		BF-D-93-65C	200 mL
	140 °C *		BF-D-93-140C	200 mL
<b>ASTM D4951 / EN 14107</b>				
Phosphorus Content	0.001 % Wt.	B100	BF-D-4951-B100	100 g
<b>ASTM D6304 / EN ISO 12937</b>				
(KF) Water Content	60 µg/g		BF-KF-0.6X-5ML-VAP	10 x 5 mL
	100 µg/g		BF-KF-1X-5ML-VAP	10 x 5 mL
	1000 µg/g		BF-KF-10X-5ML-VAP	10 x 5 mL
	5000 µg/g		BF-KF-50X-5ML-VAP	10 x 5 mL
<b>ASTM D6751 / UOP 391 / EN 14108 / EN 14109</b>				
Sodium / Potassium	100 ppm	B100	BF-UOP-391-B100	100 g
<b>EN 14538</b>				
Calcium / Magnesium	100 ppm	B100	BF-14538-B100	100 g

\* These are nominal values and the actual value will be recorded on the certificate.



**EN 14214 Wear Metals**

Each is 100 grams at 500 µg/g concentration.

Compound	Matrix	Cat. No.	100 grams
Aluminum	B100	BF-WM-B100-01-0.5X	
Calcium	B100	BF-WM-B100-09-0.5X	
Chromium	B100	BF-WM-B100-13-0.5X	
Copper	B100	BF-WM-B100-15-0.5X	
Iron	B100	BF-WM-B100-27-0.5X	
Lead	B100	BF-WM-B100-29-0.5X	
Magnesium	B100	BF-WM-B100-32-0.5X	
Phosphorus	B100	BF-WM-B100-41-0.5X	
Potassium	B100	BF-WM-B100-43-0.5X	
Sodium	B100	BF-WM-B100-54-0.5X	
Zinc	B100	BF-WM-B100-70-0.5X	

**Biofuel Metals Mix**

**Multi-Element Biofuel Standard**

<b>BF-WM-B100-MIX1</b>	100 g
200 µg/g each in B100	5 comps.
Ca (Calcium)	Na (Sodium)
K (Potassium)	P (Phosphorus)
Mg (Magnesium)	

**Technical Note**

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**EN 15721 Ethanol Impurities** 

**Ethanol Impurities  
Solution A**

**EN-15721-A** 1 mL  
1% w/w each in Ethanol 10 comps.

Methanol 2-Butanoll  
Acetaldehyde 1-Butanoll  
3-Methyl-1-butanol 1-Propanol  
2-Methyl-1-butanol Ethyl acetate  
2-Methyl-1-propanol Acetal

**Internal Standard  
Solution A**

**EN-15721-A-IS** 1 mL  
1 % w/w in Ethanol

3-Propanol

**EN 15721 Solution A Set**  
EN-15721-A-SET 2 x 1 mL  
EN-15721-A and EN-15721-A-IS

**EN 14105 BioFuel Glyceride Solutions** 

**Solution I**

**EN-14105-01** 1 mL  
At stated (µg/mL) conc. in Pyridine 6 comps.

(s)-(-)-1,2,4-Butanetriol 80  
Monoolein 250  
Diolein 50  
Triolein 50  
Glycerol 5  
Tricaprin 8

**Solution II**

**EN-14105-02** 1 mL  
At stated (µg/mL) conc. in Pyridine 6 comps.

(s)-(-)-1,2,4-Butanetriol 80  
Monoolein 600  
Diolein 200  
Triolein 150  
Glycerol 20  
Tricaprin 800

**Solution III**

**EN-14105-03** 1 mL  
At stated (µg/mL) conc. in Pyridine 6 comps.

(s)-(-)-1,2,4-Butanetriol 80  
Monoolein 950  
Diolein 350  
Triolein 300  
Glycerol 35  
Tricaprin 800

**Solution IV**

**EN-14105-04** 1 mL  
At stated (µg/mL) conc. in Pyridine 6 comps.

(s)-(-)-1,2,4-Butanetriol 80  
Monoolein 1250  
Diolein 500  
Triolein 400  
Glycerol 50  
Tricaprin 800



**AccuStandard®**

ISO Guide 34 ■ ISO/IEC 17025 ■ ISO 9001

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