



**viroque energy**  
Siempre a tu servicio

## Product specifications FAME (BIODIESEL) BLENDS BELOW 7% V/V

SPECIFICATIONS	UNITS	LÍMITS (1,2,3)	TEST METHODS (2)		
			EN 14214	STANDARDS UN E	STANDARDS ASTM
Ester content(4)	% m/m	min 96,5	EN 14103	UNE-EN 14103	
Density at 15 ° C (5)	kg/m³	860 a 900	EN ISO 3 675 EN ISO 1 2185	UNE-EN ISO 3675 UNE-EN ISO 12185	
Kinematic viscosity at 40 ° C	mm²/s	3,50 a 5,00	EN ISO 3 104	UNE-EN ISO 3104	
Flash Point (6)	°C	min 101	EN ISO 2 719 EN ISO 3 679	UNE-EN ISO 2719 UNE-EN ISO 3679	
Sulfur Content	mg/kg	max 10,0	EN ISO 2 0846 EN ISO 2 0884	UNE-EN ISO 20846 UNE-EN ISO 20884	
Cetane number		min 51,0	EN ISO 5 165	UNE-EN ISO 5165	
Sulfated ash content	% m/m	max 0,02	ISO 3987		
Water content	mg/kg	max 500	EN ISO 1 2937	UNE-EN ISO 12937	
Total contamination (solid particles)	mg/kg	max 24	EN 12662	UNE-EN 12662	
Copper corrosion (3 h at 50 ° C)	ASTM scale	max 1b	EN ISO 2 160	UNE-EN ISO 2160	
Oxidation Stability, 110 ° C	hours	min 8,0	EN 15751 EN 14112	UNE-EN 15751 UNE-EN 14112	
Acid value	mg KOH/g	max 0,50	EN 14104	UNE-EN 14104	
Iodine value	g I <sub>2</sub> /100 g	max 120	EN 14111	UNE-EN 14111	
Linolenic acid methyl ester	% m/m	max 12,0	EN 14103	UNE-EN 14103	
Methyl esters of fatty acids (≥ 4 double bonds)	% m/m	max 1	EN 15779	UNE-EN 15779	
Methanol content	% m/m	max 0,20	EN 14110	UNE-EN 14110	
Total monoglycerides content	% m/m	max 0,70	EN 14105	UNE-EN 14105	
Diglyceride content	% m/m	max 0,20	EN 14105	UNE-EN 14105	
Triglyceride content	% m/m	max 0,20	EN 14105	UNE-EN 14105	
Free glycerol	% m/m	max 0,02	EN 14105 EN 14106	UNE-EN 14105 UNE-EN 14106	
Total glycerol	% m/m	max 0,25	EN 14105	UNE-EN 14105	
Group I metals (sodium + potassium)	mg/kg	max 5,0	EN 14108 EN 14109 EN 14538	UNE-EN 14108 UNE-EN 14109 UNE-EN 14538	
Group II metals (calcium + magnesium)	mg/kg	max 50	EN 14538	UNE-EN 14538	
Phosphorus content	mg/kg	max 40	EN 14107	UNE-EN 14107	
Additives (8)					

EDITION: 4

DATE: 01/08/2015

SEE NOTES IN THE NEXT PAGE

### CLIMATE-RELATED REQUIREMENT (9) 9)

PROPERTY	ALLOWED COMBINATIONS				
	13	9	5	0	-3
Cloud Point, max (°C)	13	9	5	0	-3
CFPP max (°C)	10	5	0	-5	-10
Monoglyceride content max (% m/m) (7)					
"Summer"(from April 1 <sup>st</sup> to September 31 <sup>th</sup> ):	0,30	0,40	0,50	0,70	0,70
"Winter"(from October 1 <sup>st</sup> to March 31 <sup>th</sup> ):	(10)	0,30	0,40	0,60	0,70

NOTES:

- (1 ) All test methods referred include accuracy criteria. In case of dispute, and to solve it, procedures described in EN ISO 4259 must be followed, interpreting the results based on the accuracy of the corresponding test method.
- (2 ) Other technically equivalent test methods are permitted under approval of EXOLUM. In case of dispute the criteria regarding reference EN 14214 will be followed, as well as the criteria for results interpretation established in the mentioned method.
- (3 ) For standards established in EN 14214, methods specified in the second paragraph of this rule should be applied. For other test methods, those corresponding to the latest release should be applied.
- (4 ) It is not allowed the addition of any compounds other than FAME, except for performance improving additives. It is recommended the addition of adequate quantity of additive without negative effects
- (5 ) When using EN ISO 3675 method, density should be measured at room temperature (t) between 20 and 60°C. Correction to calculate at 15°C should be performed according to the algorithm in Annex C of EN 14214
$$d_{15} = d_t + 0.723 (t - 15)$$
- (6 ) If EN ISO 2719 method is used, follow procedure A, and only equipment provided with the appropriate detection system should be used (thermal or ionization detection). On the contrary, if EN ISO 3679 method is used, equipments with a thermal detection device should be used, by using 2 ml of sample. In case of dispute, reference method is the EN ISO 3679.
- (7 ) The dates shown are those established for diesel to be available in retail outlets with the quality of the new season. The advance that the product must enter the EXOLUM system to achieve that aim is defined in the service provision contract.
- (8 ) It is strongly recommended the addition during production and before storage to an additive to improve FAME's oxidative stability; the additive should bring an effect similar to 1000 mg/kg of BHT. Besides the aforementioned BHT, any of the listed "no-harm list of oxidation stabilizers for biodiesel" by AGQM can be used. To further information on other additives, see section 5.2 of EN 14214:2008.
- (9 ) Climate-related properties are not defined independently, different combinations are allowed.
- (10 ) On winter time, products with Cloud Point and CFPP corresponding to this class, are not allowed, regardless the monoglycerides content.

IN CASE OF CHANGES IN OFFICIAL SPECIFICATIONS IN SPAIN, THIS BOX WILL WE REVISED TO BE ADAPTED TO THE NEW SITUATION