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ANALYTICAL REPORT

Analytical Report Number : AR-21-EM-013449-01 Version of : 14/10/2021

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Batch N° : 21Q006360

Reception Date : 01/10/2021

Batch Reference :

Order Reference : PO 1596078 _ Procedure n° 3355048

Sample Matrix	Sample reference	Observations
001 Biofuel, solid	3355048/1 et 2	Client

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Référence : 3355048/1 et 2

Sampling date :

Start of analysis : 04/10/2021

Preparations - Interpretations

	Result	Unit	Limit
FH0E8 : Preparation solid biofuel for analysis Test done on Saverne COFRAC TESTING scope 1-6313 <i>Preparation - NF EN ISO 14780</i>	fait		
FH0E3 : Humidity of a sample for solid biofuel Test done on Saverne COFRAC TESTING scope 1-6313 <i>Gravimetry - NF EN ISO 18134-3</i>	5.6	%	
FH0E6 : Total humidity Test done on Saverne COFRAC TESTING scope 1-6313 <i>Gravimetry - NF EN ISO 18134-2</i>	7.0	% rw	<= 10

Thermogravimetric analysis

	Result	Unit	Limit
FH0DC : Ash at 550 ° C Test done on Saverne COFRAC TESTING scope 1-6313 <i>Gravimetry - NF EN ISO 18122</i>			
Ash at 550 °C _ Dry basis	0.39	% DM	x <= 0.7
Ash at 550 °C _ As received	0.36	% rw	

Elementar analysis

	Result	Unit	Limit
FHAE3 : Nitrogen (N) Test done on Saverne COFRAC TESTING scope 1-6313 <i>Combustion - NF EN ISO 16948</i>			
Nitrogen (N) dry basis	<0.07	% DM	<= 0.3
Nitrogen (N) as received	<0.07	% rw	
FHAB4 : Chlorine (Cl) content Test done on Saverne COFRAC TESTING scope 1-6313 <i>Combustion - NF EN ISO 16994 (method A)</i>			
chlorine as received	<0.01	% rw	
Chlorine dry basis	<0.01	% DM	<= 0.02
Chlorine dry basis	<100	mg/kg dry matter	
FHAB2 : Sulphur content in solid biofuel Test done on Saverne COFRAC TESTING scope 1-6313 <i>Combustion - NF EN ISO 16994 (method A)</i>			
Sulphur (S) as received	<0.01	% rw	
Sulphur (S) dry basis	<0.01	% DM	<= 0.04
FHAE2 : Hydrogen (H) Test done on Saverne COFRAC TESTING scope 1-6313 <i>Combustion - NF EN ISO 16948</i>			
Hydrogen (H) dry basis	6.16	% DM	
Hydrogen (H) as received	5.73	% rw	

Calorific value

	Result	Unit	Limit
FHAE4 : Gross calorific value Test done on Saverne COFRAC TESTING scope 1-6313 <i>Combustion - NF EN ISO 18125</i>			
Gross calorific value dry basis	19838	kJ/kg dry matter	
Gross calorific value as received	18448	kJ/kg Raw Product	

 FHAE5 : **Net calorific value** Test done on Saverne COFRAC TESTING scope 1-6313

EUROFINS ANALYSES DES MATERIAUX ET COMBUSTIBLES France SAS

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Calorific value

		Result	Unit	Limit
FHAE5 : Net calorific value Test done on Saverne COFRAC TESTING scope 1-6313 <i>Calculation - NF EN ISO 18125</i>				
Net calorific value dry basis	*	18570	kJ/kg dry matter	
Net calorific value as received	*	17107	kJ/kg Raw Product	16500<= x <= 30000

Physical properties

		Result	Unit	Limit
FHAE6 : Level of fines Test done on Saverne COFRAC TESTING scope 1-6313 <i>Mechanical - NF EN ISO 18846</i>				
Level of fines	*	0.20	%	<= 0.5
Mass	*	14952.4	g	
FH0KK : Bulk density for samples ≤ 12mm Test done on Saverne COFRAC TESTING scope 1-6313 <i>Volumetry - NF EN ISO 17828</i>				
Generic Parameter	*	4.9	l	
volume of the container	*	660	kg/m³	600<= x <= 750
FD00P : Dimensions pellets solid biofuels Test done on Saverne COFRAC TESTING scope 1-6313 <i>Mechanical - NF EN ISO 17829</i>				
Length	*	17	mm	3.15<= x <=40
Diameter	*	6.1	mm	5<= x <=7
Lower length at 3,15 mm	*	0.0	%	
Length between 3.15 to 40 mm	*	100	%	99<= x <=1000
Length between 40 to 45 mm	*	0.0	%	
Length > 45 mm	*	0.0	%	
Comment	*	D06		
Difference	*	3.9	mm	
Difference 2	*	0.1	mm	

Subcontracting | Eurofins Umwelt Ost GmbH

		Result	Unit	Limit
FR0DY : Mechanical durability in pellets [solid biofuels] % Test subcontracted to Eurofins Umwelt Ost GmbH (Freiberg) DIN EN ISO/IEC 17025:2018 DAkkS D-PL-14081-01-00 <i>Mechanical - DIN EN ISO 17831-1: 2016-05</i>	*	99.2	% (w/w)	97.5<= x <=100
FR135 : water content [solid biofuels] % Test subcontracted to Eurofins Umwelt Ost GmbH (Freiberg) DIN EN ISO/IEC 17025:2018 DAkkS D-PL-14081-01-00 <i>Gravimetry - DIN EN ISO 18134-2: 2017-05</i>	*	5.7	% (w/w)	
FR03D : Arsenic [solid biofuels] mg/kg ds Test subcontracted to Eurofins Umwelt Ost GmbH (Freiberg) DIN EN ISO/IEC 17025:2018 DAkkS D-PL-14081-01-00 <i>ICP-MS - DIN EN ISO 17294-2 (E29): 2017-01</i>	*	< 0.8	mg/kg	x <= 1
FR03F : Lead [solid biofuels] mg/kg ds Test subcontracted to Eurofins Umwelt Ost GmbH (Freiberg) DIN EN ISO/IEC 17025:2018 DAkkS D-PL-14081-01-00 <i>ICP-MS - DIN EN ISO 17294-2 (E29): 2017-01</i>	*	< 2	mg/kg	x <= 10
FR03G : Cadmium [solid biofuels] mg/kg ds Test subcontracted to Eurofins Umwelt Ost GmbH (Freiberg) DIN EN ISO/IEC 17025:2018 DAkkS D-PL-14081-01-00 <i>ICP-MS - DIN EN ISO 17294-2 (E29): 2017-01</i>	*	< 0.2	mg/kg	x <= 0.5
FR03M : Copper [solid biofuels] mg/kg ds Test subcontracted to Eurofins Umwelt Ost GmbH (Freiberg) DIN EN ISO/IEC 17025:2018 DAkkS D-PL-14081-01-00 <i>ICP-MS - DIN EN ISO 17294-2 (E29): 2017-01</i>	*	< 1	mg/kg	x <= 10

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	Result	Unit	Limit
FR03I : Chromium [solid biofuels] mg/kg ds Test subcontracted to Eurofins Umwelt Ost GmbH <small>(Freiberg) DIN EN ISO/IEC 17025:2018 DAkkS D-PL-14081-01-00 JCP-MS - DIN EN ISO 17294-2 (E29): 2017-01</small>	< 1	mg/kg	x <= 10
FR03S : Nickel [solid biofuels] mg/kg ds Test subcontracted to Eurofins Umwelt Ost GmbH (Freiberg) <small>DIN EN ISO/IEC 17025:2018 DAkkS D-PL-14081-01-00 JCP-MS - DIN EN ISO 17294-2 (E29): 2017-01</small>	< 1	mg/kg	x <= 10
FR03Y : Zinc [solid biofuels] mg/kg ds Test subcontracted to Eurofins Umwelt Ost GmbH (Freiberg) <small>DIN EN ISO/IEC 17025:2018 DAkkS D-PL-14081-01-00 JCP-MS - DIN EN ISO 17294-2 (E29): 2017-01</small>	8	mg/kg	x <= 100
FR04A : Mercury [solid biofuels] [AAS] mg/kg ds Test subcontracted to Eurofins Umwelt Ost GmbH <small>(Freiberg) DIN EN ISO/IEC 17025:2018 DAkkS D-PL-14081-01-00 CV-AAS - DIN EN ISO 12846 (E12): 2012-08</small>	< 0.05	mg/kg	x <= 0.1
FROME : Ash melting behaviour 815°C (oxidizing) [solid biofuels] Test subcontracted to Eurofins Umwelt Ost GmbH (Freiberg) <small>DIN EN ISO/IEC 17025:2018 DAkkS D-PL-14081-01-00 Thermomicroscopy - DIN EN ISO 21404: 2020-06</small>			
Shrinkage start temp SST	1040	°C	
Deformation temp DT	1390	°C	1200<= x <=2000
Hemisphere temp HT	1470	°C	
Flow temp FT	1480	°C	

Criterias from : DIN+ 2020-01 _ Norme 17225-2

L'échantillon analysé est satisfaisant pour les critères étudiés. Pour déclarer, ou non, la conformité à la spécification, il n'a pas été tenu explicitement compte de l'incertitude associée au résultat.

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Accreditation in accordance with the recognised international standard ISO/IEC 17025 : 2005 demonstrates technical competence for a defined scope for parameters identified by * .

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Accredited laboratory for carrying out sampling and testing land and / or conducting analyzes of water's sanitary control parameters - detailed scope of accreditation available on request.

 Laboratory fulfils the Ministry of Environnement 's requirements defined by decree in the Official Journal published on the 11th March 2010; Scope of the agreement provided on request or on the web : www.eurofins.fr


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