

SGS Institut Fresenius GmbH Goerzallee 305A D-14167 Berlin GERMANY

DIN CERTCO
Gesellschaft für Konformitätsbewertung
Alboinstraße 56
12103 Berlin

Test report 3480531

Order no. 4248703
Client no. 10028880



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Environmental Services

SGS Institut Fresenius GmbH
Goerzallee 305A
14167 Berlin

Berlin, 15.08.2017

Your project: DINplus test
Your order no.: 3220335
Date of order: 20.07.2017

Testing period from 31.07.2017 until 15.08.2017
First sample no. 170834255
Sample entry 31.07.2017

SGS Institut Fresenius

i.V. Thomas Smyk
Customer Service

Maria Georgileas
Customer Service

i.V. Naser Riazati
Customer Service

Oliver Sommer
Customer Service

Sample matrix: Wood pellets
 Sample delivery: Sample sent on behalf of the client
 Sample entry: 31.07.2017
 Testing period: 31.07.2017 until 15.08.2017

Sample no.: 170834255
 Sample name: Sample 1, Wood pellets 6 mm, Production 2017-07

Parameter	Unit	LOQ	Method	Result	Limit DIN plus ¹	Lab ⁵
Fines	w-% ar	0,1	DIN EN 15149-1 ⁴	0,2	≤ 0,5 (1,0) ²	B1

Sample no.: 170834256
 Sample name: Sample 2, Wood pellets 6 mm, Production 2017-07

Parameter	Unit	LOQ	Method	Result	Limit DIN plus ¹	Lab ⁵
Average diameter	Millimeter		DIN EN ISO 17829	6,1	6 or 8 ± 1	B1
Average length	Millimeter		DIN EN ISO 17829	15,7	3,15 to 40	B1
Pellets < 10 mm	w-% ar		DIN EN ISO 17829	6,74	informational	B1
Overlengths > 40 and ≤ 45 mm	w-% ar		DIN EN ISO 17829	0,2	≤ 1	B1
Overlengths > 45 mm	w-% ar		DIN EN ISO 17829	0,1	not allowed	B1
Moisture	w-% ar	0,1	DIN EN ISO 18134-2	7,2	≤ 10	B1
Ash (550°C)	w-% d	0,1	DIN EN ISO 18122	0,39	≤ 0,7	B1
Mechanical Durability	w-% ar	0,1	DIN EN ISO 17831-1	99,2	≥ 97,5	B1
Net CV, const. p	MJ/kg ar	0,5	DIN EN 14918 ⁴	17,71	≥ 16,5 to ≤ 19	B1
Bulk density	kg/m ³ ar	1	DIN EN ISO 17828	652	≥ 600 to ≤ 750	B1
Nitrogen	w-% d	0,1	DIN EN ISO 16948	0,14	≤ 0,3	B1
Sulphur total	w-% d	0,01	DIN EN ISO 16994	< 0,01	≤ 0,04	B1
Chlorine total	w-% d	0,01	DIN EN ISO 16994	< 0,01	≤ 0,02	B1
Arsenic	mg/kg d	1	DIN EN ISO 16968	< 1	≤ 1	B1
Cadmium	mg/kg d	0,3	DIN EN ISO 16968	< 0,3	≤ 0,5	B1
Chromium	mg/kg d	1	DIN EN ISO 16968	< 1	≤ 10	B1
Copper	mg/kg d	2	DIN EN ISO 16968	3	≤ 10	B1
Lead	mg/kg d	3	DIN EN ISO 16968	< 3	≤ 10	B1
Mercury	mg/kg d	0,05	DIN EN ISO 16968	< 0,05	≤ 0,1	B1
Nickel	mg/kg d	1	DIN EN ISO 16968	< 1	≤ 10	B1
Zinc	mg/kg d	1	DIN EN ISO 16968	9	≤ 100	B1
Shrinkage starting temperature SST	°C		DIN CEN/TS 15370-1 ³	1230	-	B1
Deformation temperature DT	°C		DIN CEN/TS 15370-1 ³	1460	≥ 1200	B1
Hemisphere temperature HT	°C		DIN CEN/TS 15370-1 ³	1470	-	B1
Flow temperature FT	°C		DIN CEN/TS 15370-1 ³	1480	-	B1

ar - result calc. to 'as received' state

d - result calc. to 'bone dry' state

LOQ - Limit of quantitation

1) Issue 06/2015

2) Value is valid for packing units up to 20kg; Value in parenthesis is valid for bigger packing units and bulk ware

3) Determination was performed under oxidizing conditions. Pre ashing temperature was 815°C.

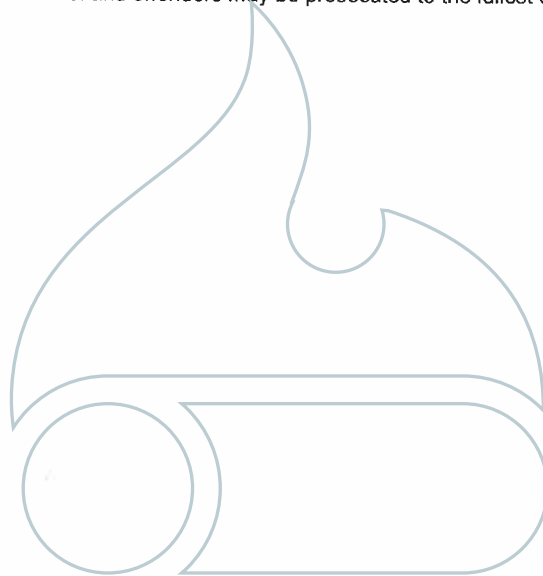
4) Deviant to the requirements of DINplus, regarding applicable standards according to DIN EN ISO 17225-2 the respective ones according to DIN EN 14961-2 were applied instead, approved by DIN CERTCO.

5) The laboratory locations of the SGS Group Germany and Switzerland according to the above abbreviations are listed at <http://www.institut-fresenius.de/filestore/89/laborstandortkuerzelsgs2.pdf>

Sample matrix: Wood pellets
Sample delivery: Sample sent on behalf of the client
Sample entry: 31.07.2017
Testing period: 31.07.2017 until 15.08.2017

*** End of test report ***

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Test report 3478452

Order no. 4248703
Client no. 10028880



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Environmental Services

SGS Institut Fresenius GmbH
Goerzallee 305A
14167 Berlin

Berlin, 15.08.2017

Your project: ENplus
Your order no.: 3220335
Date of order: 20.07.2017

Testing period from 31.07.2017 until 15.08.2017
First sample no. 170170834255
Sample entry 31.07.2017

SGS Institut Fresenius

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Sample matrix: Wood pellets
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Sample entry: 31.07.2017
Testing period: 31.07.2017 until 15.08.2017

Sample no.: 170834255
Sample name: Sample 1, Wood pellets 6 mm, Production 2017-07

Parameter	Unit	LOQ	Method	Result	Limit ENplus ¹			Lab ⁵
					A1	A2	B	
Fines	w-% ar	0,1	DIN EN 15149-1 ⁴	0,2	≤ 1 (≤ 0,5) ²			B1

Sample no.: 170834256
Sample name: Sample 2, Wood pellets 6 mm, Production 2017-07

Parameter	Unit	LOQ	Method	Result	Limit ENplus ¹			Lab ⁵
					A1	A2	B	
Average diameter	Millimeter		DIN EN ISO 17829	6,1	6 or 8 ± 1			B1
Average length	Millimeter		DIN EN ISO 17829	15,7	3,15 to 40			B1
Overlengths > 40 and ≤ 45 mm	w-% ar		DIN EN ISO 17829	0,2	≤ 1			B1
Overlengths > 45 mm	w-% ar		DIN EN ISO 17829	0,1	not allowed			B1
Moisture	w-% ar	0,1	DIN EN ISO 18134-2	7,2	≤ 10			B1
Ash (550°C)	w-% d	0,1	DIN EN ISO 18122	0,39	≤ 0,7	≤ 1,2	≤ 2,0	B1
Mechanical Durability	w-% ar	0,1	DIN EN ISO 17831-1	99,2	≥ 98,0	≥ 97,5		B1
Net CV, const. p	MJ/kg ar	0,5	DIN EN 14918 ⁴	17,71	≥ 16,5			B1
Net CV, const. p	kWh/kg ar	0,14	DIN EN 14918 ⁴	4,919	≥ 4,6			B1
Bulk density	kg/m ³ ar	1	DIN EN ISO 17828	652	≥ 600 to ≤ 750			B1
Nitrogen	w-% d	0,1	DIN EN ISO 16948	0,14	≤ 0,3	≤ 0,5	≤ 1,0	B1
Sulphur total	w-% d	0,01	DIN EN ISO 16994	< 0,01	≤ 0,04	≤ 0,05		B1
Chlorine total	w-% d	0,01	DIN EN ISO 16994	< 0,01	≤ 0,02		≤ 0,03	B1
Shrinkage starting temperature SST	°C		DIN CEN/TS 15370-1 ³	1230	-			B1
Deformation temperature DT	°C		DIN CEN/TS 15370-1 ³	1460	≥ 1200	≥ 1100		B1
Hemisphere temperature HT	°C		DIN CEN/TS 15370-1 ³	1470	-			B1
Flow temperature FT	°C		DIN CEN/TS 15370-1 ³	1430	-			B1
Arsenic	mg/kg d	1	DIN EN ISO 16968	< 1	≤ 1			B1
Cadmium	mg/kg d	0,3	DIN EN ISO 16968	< 0,3	≤ 0,5			B1
Chromium	mg/kg d	1	DIN EN ISO 16968	< 1	≤ 10			B1
Copper	mg/kg d	2	DIN EN ISO 16968	3	≤ 10			B1
Lead	mg/kg d	3	DIN EN ISO 16968	< 3	≤ 10			B1
Mercury	mg/kg d	0,05	DIN EN ISO 16968	< 0,05	≤ 0,1			B1
Nickel	mg/kg d	1	DIN EN ISO 16968	< 1	≤ 10			B1
Zinc	mg/kg d	1	DIN EN ISO 16968	9	≤ 100			B1

ar - result calc. to 'as received' state

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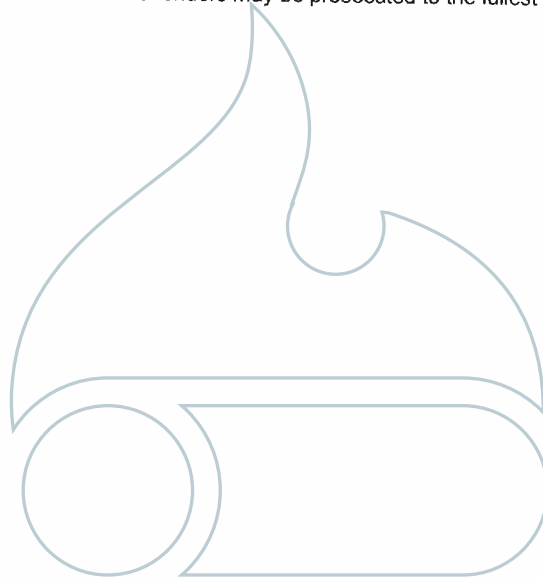
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