

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

DIN CERTCO
Gesellschaft für Konformitätsbewertung
Alboinstraße 56
12103 Berlin

Test report 3713540

Order no. 4445701

Client no. 10028880



Mr. Thomas Smyk
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Environment, Health and Safety

SGS Institut Fresenius GmbH
Goerzallee 305A
14167 Berlin

Berlin, 19.02.2018

Your project: ENplus® test Pechora Energo Res.

Your order no.: 3240594

Date of order: 30.01.2018

Testing period from 01.02.2018 until 19.02.2018

First sample no. 180112348

Sample entry 23.01.2018

SGS Institut Fresenius

i.V. Thomas Smyk
Customer Service

i.V. Oliver Sommer
Customer Service

Sample matrix: Wood pellets
 Sample delivery: Sample sent on behalf of the client
 Sample entry: 23.01.2018
 Testing period: 01.02.2018 until 19.02.2018

SGS IF sample no:

180112348

Sample description:

Wood pellets, 6 mm, from storage, 09.11.2017

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	18,5	3,15 to 40			B1
Overlengths > 40 and ≤ 45 mm	w-% ar		DIN EN ISO 17829	not found	≤ 1			B1
Overlengths > 45 mm	w-% ar		DIN EN ISO 17829	not found	not allowed			B1
Moisture	w-% ar	0,1	DIN EN ISO 18134-2	6,3	≤ 10			B1
Ash (550°C)	w-% d	0,1	DIN EN ISO 18122	0,5	≤ 0,7	≤ 1,2	≤ 2,0	B1
Mechanical Durability	w-% ar	0,1	DIN EN ISO 17831-1	99,1	≥ 98,0	≥ 97,5		B1
Net CV, const. p	MJ/kg ar	0,5	DIN EN 14918 ⁴	17,77	≥ 16,5			B1
Net CV, const. p	kWh/kg ar	0,14	DIN EN 14918 ⁴	4,936	≥ 4,6			B1
Bulk density	kg/m ³ ar	1	DIN EN ISO 17828	628	≥ 600 to ≤ 750			B1
Nitrogen	w-% d	0,1	DIN EN ISO 16948	0,11	≤ 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	0,017	≤ 0,02		≤ 0,03	B1
Shrinkage starting temperature SST	°C		DIN CEN/TS 15370-1 ³	1160	-			.. ⁶
Deformation temperature DT	°C		DIN CEN/TS 15370-1 ³	1230	≥ 1200	≥ 1100		.. ⁶
Hemisphere temperature HT	°C		DIN CEN/TS 15370-1 ³	1260	-			.. ⁶
Flow temperature FT	°C		DIN CEN/TS 15370-1 ³	1270	-			.. ⁶
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	2	≤ 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	10	≤ 100			B1

ar - result calc. to 'as received' state

d - result calc. to 'bone dry' state

LOQ - Limit of quantitation

1) Issue 3.0, August 2015

2) Limit is set for bulk pellets at factory gate or when loading trucks for deliveries to end-users; limit in parenthesis is set for sealed bags or sealed big bags

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

4) Since ISO standards are not completely published, the respective CEN standards were applied in accordance with ENplus® handbook 3.0.

 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>

6) Analysis was performed by an accredited cooperation partner

Sample matrix: Wood pellets
Sample delivery: Sample sent on behalf of the client
Sample entry: 23.01.2018
Testing period: 01.02.2018 until 19.02.2018

*** End of test report ***

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12103 Berlin

Test report 3714188

Order no. 4445701
Client no. 10028880



Deutsche
Akkreditierungsstelle
D-PL-14115-02-00
D-PL-14115-03-00
D-PL-14115-06-00
D-PL-14115-07-00
D-PL-14115-08-00
D-PL-14115-10-00
D-PL-14115-13-00
D-PL-14115-14-00

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Berlin, 19.02.2018

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First sample no. 180112348
Sample entry 23.01.2018

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Sample delivery: Sample sent on behalf of the client
Sample entry: 23.01.2018
Testing period: 01.02.2018 until 19.02.2018

Sample no.: 180112348

Sample name: Wood pellets, 6 mm, from storage, 09.11.2017

Parameter	Unit	LOQ	Method ⁴	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	18,5	3,15 to 40	B1
Pellets < 10 mm	w-% ar		DIN EN ISO 17829	0,44	informational	B1
Overlengths > 40 and ≤ 45 mm	w-% ar		DIN EN ISO 17829	not found	≤ 1	B1
Overlengths > 45 mm	w-% ar		DIN EN ISO 17829	not found	not allowed	B1
Moisture	w-% ar	0,1	DIN EN ISO 18134-2	6,3	≤ 10	B1
Ash (550°C)	w-% d	0,1	DIN EN ISO 18122	0,5	≤ 0,7	B1
Mechanical Durability	w-% ar	0,1	DIN EN ISO 17831-1	99,1	≥ 97,5	B1
Net CV, const. p	MJ/kg ar	0,5	DIN EN 14918 ⁴	17,77	≥ 16,5 to ≤ 19	B1
Bulk density	kg/m ³ ar	1	DIN EN ISO 17828	628	≥ 600 to ≤ 750	B1
Nitrogen	w-% d	0,1	DIN EN ISO 16948	0,11	≤ 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	0,017	≤ 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	2	≤ 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	10	≤ 100	B1
Shrinkage starting temperature SST	°C		DIN CEN/TS 15370-1 ³	1160	-	-- ⁶
Deformation temperature DT	°C		DIN CEN/TS 15370-1 ³	1230	≥ 1200	-- ⁶
Hemisphere temperature HT	°C		DIN CEN/TS 15370-1 ³	1260	-	-- ⁶
Flow temperature FT	°C		DIN CEN/TS 15370-1 ³	1270	-	-- ⁶

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>

6) Analysis was performed by an accredited cooperation partner

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