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Title: **Test report to order 11601577**
Test report: **No. 1016453007**

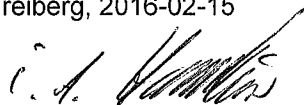
Project: **No. 1016453**
Title of project: **analysis of pellets DIN EN 14961-2**
Number of samples: **1 sample**
Sample type: **wood pellets**
Sampler: **unknown**
Receipt of samples: **04.02.2016**
Test period: **04.02.2016 - 15.02.2016**

The test results refer solely to the analysed test specimen. Unless the sampling was done by our laboratory or in our sub-order the responsibility for the correctness of the sampling is disclaimed. This test report is only valid with signature and may only be further published completely and unchanged. Extracts or changes require the authorisation of the EUROFINS UMWELT in each individual case.

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Accredited test laboratory according to DIN EN ISO/IEC 17025 notification under the DAkkS German Accreditation System for Testing. The accreditation shall apply for the tests listed in the certificate.

Freiberg, 2016-02-15



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Project: analysis of pellets DIN EN 14961-2

Analysis according to DIN EN ISO 17225-2 september 2014

Parameter	Unit	LOQ	limits			Sample designation	Olimp 6 mm
			class-A1	class-A2	class-B	Lab-ID#	116006705
						Method	

Quality characteristics

diameter, D	mm		D06 6±1 D08 8±1	D06 6±1 D08 8±1	D06 6±1 D08 8±1	DIN EN ISO 17829 (FR-JE02)	6,2
length, L	mm		3,15 ≤ L ≤ 40	3,15 ≤ L ≤ 40	3,15 ≤ L ≤ 40	DIN EN ISO 17829 (FR-JE02)	according
water content, M	% w/w ar	0,1	M10 ≤ 10	M10 ≤ 10	M10 ≤ 10	DIN EN ISO 18134-2 (FR-JE02)	6,6
ash content, A	% w/w db	0,1	A0.7 ≤ 0,7	A1.2 ≤ 1,2	A2.0 ≤ 2,0	DIN EN ISO 18122 (FR-JE02)	0,26
mechanical durability, DU	% w/w ar		DU97.5 ≥ 97,5	DU97.5 ≥ 97,5	DU96.5 ≥ 96,5	DIN EN ISO 17831-1 (FR-JE02)	99,1
fine portion, F (< 3,15 mm)	% w/w ar	0,1	F1.0 ≤ 1,0	F1.0 ≤ 1,0	F1.0 ≤ 1,0	DIN EN ISO 18846 (FR-JE02)	< 0,1
bulk density, BD	kg/m³ ar		BD 600 ≥ 600	BD 600 ≥ 600	BD 600 ≥ 600	DIN EN ISO 17828 (FR-JE02)	630
net calorific value, Q (H u,p)	MJ/kg ar	0,2	Q16.5 ≥ 16,5	Q16.5 ≥ 16,5	Q16.5 ≥ 16,5	DIN EN ISO 18125 (FR-JE02)	17,99
nitrogen total, N	% w/w db	0,05	N0.3 ≤ 0,3	N0.5 ≤ 0,5	N1.0 ≤ 1,0	DIN EN ISO 16948 (FR-JE02)	< 0,05
sulfur total, S	% w/w db	0,005	S0.04 ≤ 0,04	S0.05 ≤ 0,05	S0.05 ≤ 0,05	DIN EN ISO 16994 (FR-JE02)	< 0,005
chlorine total, Cl	% w/w db	0,005	Cl0.02 ≤ 0,02	Cl0.02 ≤ 0,02	Cl0.03 ≤ 0,03	DIN EN ISO 16994 (FR-JE02)	0,008

Determination of minor elements

arsenic, As	mg/kg db	0,8	≤ 1	≤ 1	≤ 1	DIN EN ISO 16968 (FR-JE02)	< 0,8
lead, Pb	mg/kg db	2	≤ 10	≤ 10	≤ 10	DIN EN ISO 16968 (FR-JE02)	< 2
cadmium, Cd	mg/kg db	0,2	≤ 0,5	≤ 0,5	≤ 0,5	DIN EN ISO 16968 (FR-JE02)	< 0,2
chromium total, Cr	mg/kg db	1	≤ 10	≤ 10	≤ 10	DIN EN ISO 16968 (FR-JE02)	< 1
copper, Cu	mg/kg db	1	≤ 10	≤ 10	≤ 10	DIN EN ISO 16968 (FR-JE02)	< 1
nickel, Ni	mg/kg db	1	≤ 10	≤ 10	≤ 10	DIN EN ISO 16968 (FR-JE02)	< 1
mercury, Hg	mg/kg db	0,05	≤ 0,1	≤ 0,1	≤ 0,1	DIN EN ISO 16968 (FR-JE02)	< 0,05
zinc, Zn	mg/kg db	1	≤ 100	≤ 100	≤ 100	DIN EN ISO 16968 (FR-JE02)	9

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Project: analysis of pellets DIN EN 14961-2

Analysis according to DIN EN ISO 17225-2 september 2014

Parameter	Unit	LOQ	limits			Sample designation	Olimp 6 mm
			class-A1	class-A2	class-B	Lab-ID#	116006705
						Method	

Ash melting behaviour (oxidizing atmosphere) on ash 550°C

shrinkage start temperature, SST	°C		should be given	should be given	should be given	DIN CEN/TS 15370-1 (FR-JE02)	690
deformation temperature, DT	°C		should be given	should be given	should be given	DIN CEN/TS 15370-1 (FR-JE02)	1470
hemisphere temperature, HT	°C		should be given	should be given	should be given	DIN CEN/TS 15370-1 (FR-JE02)	1480*
flow temperature, FT	°C		should be given	should be given	should be given	DIN CEN/TS 15370-1 (FR-JE02)	1490

Annotation:

additive: limits: ≤ 2 % w/w sort and amount must be specified

Information given by the customer: no information

maximum for bulk density is 750 kg/m³

length: up to 1 % of pellets can be longer than 40mm. Maximum length should be < 45mm.

Hu,p: net calorific value at constant pressure

ar: as received

db: dry basis

*: no definite hemisphere (hill-like form)

EUROFINS UMWELT is not liable for accuracy of the cited limits.

Explanations on Locations and Accreditations

The parameters identified by FR have been performed by the laboratory EUROFINS Umwelt Ost GmbH (Bobritzsch-Hilbersdorf).

The accreditation code JE02 identifies the parameters accredited according to DIN EN ISO/IEC 17025:2005 D-PL-14081-01-00.