SolidStandards

Enhancing the implementation of quality and sustainability standards and certification schemes for solid biofuels (EIE/11/218)

D6.1i
National Industry Position Paper
Poland

Co-funded by the Intelligent Energy Europe Programme of the European Union

The SolidStandards project

The SolidStandards project addresses ongoing and recent developments related to solid biofuel quality and sustainability issues, in particular the development of related standards and certification systems. In the SolidStandards project, solid biofuel industry players will be informed and trained in the field of standards and certification and their feedback will be collected and provided to the related standardization committees and policy makers.

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About this document

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Foreword

CEN, the European Committee for Standardisation, represented in this consortium by NEN, is interested in gathering the opinions of industry representatives for the development of new standards, the revision of existing standards, and the representation of European interests within international standardisation (ISO) procedures. The SolidStandards project offers an excellent opportunity to collect a large number of viewpoints through direct contact with industry representatives. In addition, a broader, public approach has been applied to collect feedback from industry players other than those participating in trainings. Furthermore, experience gained through the project has been used to provide recommendations to CEN and the solid biofuel community how to cope with new developments on solid biofuel markets.

The findings of this task under WP 6 of the SolidStandards project will be summarised in a final European industry position paper on international standards for solid biofuels.

This report contains the feedback collection and analysis from Poland.

This national report includes the following:

1. Description of national biofuel markets based on **available data**
2. Description of standardisation activities
3. Description of certification activities
4. Overview of standardisation and certification needs
5. Results of discussion with national mirror committee
6. Summary of national industry needs

The objectives are:

- To explain the industry points of view to standardisation committees
- To initiate and support the development of additional standards (e.g. on biomass storage)
- To increase the practical applicability of standards under development
- To bring European industry viewpoints into on-going CEN and ISO standardisation processes
- To provide the necessary feedback on existing standards in order to facilitate their revision in the future

BAPE has discussed this national industry paper with representative of the national mirror committee (Technical Committee 144 on Coke and Other Solid Formed Fuels – which is a leading Polish Committee in terms of cooperation with CEN/TC 335) of the Polish Committee for Standardization (www.pkn.pl).
NEN will consolidate all national papers to one, overall European industry position paper about international standards for solid biofuels.
The final European industry position paper will be presented to CEN/TC 335 and/or ISO/TC 238 and distributed among the members of these technical committees.

1. Description of the national biofuels market of Poland

1.1. General description of the market

Market development

Renewable energy market in Poland was set up in 2005 as a result of accession to the European Union. Poland committed itself to have specific share of renewable energy in total amount of energy produced in the country (from 6% to 15% in 2020). It resulted in law obliging energy distributors to purchase at least 3,1% electricity deriving from renewables in 2005 up to 19% in 2020. The only possible way to increase the production of green energy, taking into account the structure of Polish power plants based on conventional energy sources, was utilisation of biomass in existing installations. In Poland co-firing of biomass with coal was (and still is) regarded as energy production from renewable sources. Until 2008 it was possible to use only wood biomass in co-firing process. However, in order to limit the use of wood biomass in co-firing process, it is obligatory since 2008 to co-fire biomass from agriculture and energy plantations at given levels – from 20% in 2008, 50% in 2012 up to 85 % from 2018.

The annual obligation to increase the share of renewable energy and significant investments in infrastructure necessary to fulfil this share by energy sector resulted in long-term agreements for the supply of biomass. Biomass producers and suppliers had to make investments aimed at meeting the growing demand for solid biomass.

Present situation

- As a result of the above-described conditions biomass production raised to approx. 27 Mt/year.
- Such production capacity was achieved mostly thanks to the efforts of medium, small and micro businesses investing their own funds, taking long-term bank loans and utilizing EU funds but also thanks to increased wood acquisition (removals) from State Forest National Forest Holding up to 37m^3.
- Investments in the Polish biomass market consumed over 700 million EUR.
- Polish enterprises supplying biomass to energy market employ about 20 000 people.
- Most of the biomass production facilities are located in less industrialized areas with above-average unemployment.
- About 10 Mt were used to generate electricity and 19 Mt for the heat production. The latter included waste from sawmills, fire wood, wood chips, wood residues from forests and straw and straw pellets and briquettes as well as 2 Mt imported non woody pellets and briquettes (from eastern neighbours) and palm kernel shells (Africa and Asia).

The support system for green energy production in Poland was based on the introduction of tradable green certificates. Certificates are issued by the Polish Energy Regulatory Office to energy producers on the basis of documented production of renewable energy. Sale of these documents on dedicated stock exchange allowed to compensate for the increased (compared to conventional energy sources) costs of green energy production. At the beginning of 2013 the value of green certificates has dropped significantly due to oversupply of these certificates (caused by high electricity production based on co-firing exceeding required 10,4% by 3,3%). It resulted in significant reduction of biomass reception by energy producers and cancelling previously signed long-term agreements for biomass supply. Present situation on the market can be described as unstable and all market actors await for the new RES act that should introduce more certainty to the market.

Type of organization active on market	Estimate number of companies active on market	Comments
Solid biofuel producers	555	*40 wood pellets* *25 non-woody pellets* *40 wood briquettes* *280 non-woody briquettes* *170 wood chips*
Solid biofuel trader and/or logistics providers	240	*30 wholesalers* *110 small dealers* *100 supermarkets + petrol stations*
Solid biofuel users: small-medium sized (< 1 MW)	ca. 1 M	*1 million boilers, stoves and fireplaces ≤ 25 kW households* *700 boilers from 25 kW up to 200 kW* *300 boilers from 200 kW up to 1 MW*
Solid biofuel users: large scale (> 1 MW)	130	*100 heat plants from 1 MW up to 5 MW* *30 power plants (incl. 20 co-firing)*
Industrial association	2	*Polish Chamber of Biomass (Polska Izba Biomasy)* *Polish Biomass Association (Stowarzyszenie Polska biomasa)*
Combustion, gasification or fuel production equipment manufacturers	50	*4 – Polish pellet production machinery manufacturers* *10 – briquettes production equipment manufacturers* *6 – wood chips choppers manufacturers* *30 – boiler producers*
Certification, inspection or testing bodies	5	
Laboratory / Research organization	50	*ca. 45 laboratories*

Remark: It is possible that a company is active in more than one type of the industry segment

Data acquired from the Polish Main Statistics Office and estimation performed by BAPE.

1.2. General figures of the market

Solid biofuel production figures per type of biofuel **)	**Overall annual turnover x.1.000 EUR*)**	**Overall production volume 1.000 ton/year**
	2012	**2012**
Total	1 270 610	27000
Wood pellets	100 000	600
Wood briquettes	7 150	50
Wood chips	327 860	5 100
Firewood	536 300	13 250
Non-woody pellets	50 000	300
Straw and straw briquettes	17 150	200
Sawdust & bark	232 150	7 500
Energy production per type of producer	**Overall annual turnover x.1.000 EUR*)**	**Overall production volume TJ/year**
	2012	**2012**
Total	1 873 526	193 783
Small-medium sized (< 1 MW)	676 637	109 600
Large-scale (> 1 MW)	1 196 889	84 183

*) This data is based on data that was available during the SolidStandards project (2013).

Estimation made by BAPE based on data acquired from the Polish Main Statistical Office, Forest Administration and publication of the Poznań University of Life Sciences.

According to the National Action Plan for Energy from Renewable Sources (2010) in Poland there will be given support for the producers of energy from renewable sources and for the development of distributed energy sources. It is expected that co-firing of biomass with coal keeps being considered as a form of renewable energy until 2020 (with limitations in the use of forest biomass). It is also expected that electricity generated from wind and/or biomass is going to increase.

The Plan confirms national target of at least 15% share of RES in gross final energy consumption in 2020 including heat from RES at the level of 17.05%, electricity from RES – 19.13%, RES in transport – 10.14%. Taking into consideration recent EU policy in transportation sector Polish NAP should be revised regarding this matter.

The share of renewable energy production in Poland in 2012 was ca. 11.8%. The share of solid biomass in total renewable energy production in Poland has always been the highest (taking into consideration all kinds of RES) and equalled to over 90% in 2006 and approx. 85% in 2012.

Despite the sharp drop in prices of green certificates biomass consumption in 2012 amounted to about 29 Mt, equivalent to approx. 290 PJ (8%) of primary energy used in Poland in 2012. According to the Polish Energy Policy until 2030 and the National Action Plan for RES the share of biomass should systematically grow to reach 35 Mt in 2020.

Energy type	Unit	2006	2010	2015	2020
Electricity	PJ	6,7	12,5	21,1	37,3
	Mt	2,03	3,81	6,42	11,4
Heat	PJ	177,9	180,7	192,4	226,3
	Mt	18,9	19,1	20,4	24
Total	Mt	20,93	22,91	26,82	35,4
	Mm^3	27,6	30,9	35,6	46,1

Assumptions: η – efficiency, W_d – net calorific value, w – moisture content, $\eta_e = 0,35$, $W_d = 9,37$ GJ/t at w = 45% - for electricity, $\eta_c = 0,75$, $W_d = 12,58$ GJ/t at w = 30% - for heat, density ρ = 500 kg m.s./m^3

In 2011 7.2 Mt of biomass was utilized in the process of co-firing for electricity production and in 2012 the number raised to 8.5 Mt (incl. 2 Mt of imported biomass). Only 1.5 Mt was burnt in energy plants in biomass dedicated boilers.

The amount of biomass produced in Poland in 2011 equalled to approx. 25.7 Mt. The difference between 2011 and 2012 is a result of increased (ca. 1,3 Mt) wood chips production for co-firing.
Generally, Poland is characterized by upward trend of solid biofuels production by 5% per year on average.

2. Standardisation activities

2.1. National standardisation activities

Polish Committee for Standardization (PKN), which is a national unit dedicated to the problems of standardization in Poland, has not undertaken initiative or actions related to the preparation of own national standardization solutions regarding solid biofuels. In response to the activities of the European Committee for Standardization, in particular the Technical Committee CEN/TC 335, solid biofuels topics were assigned to Technical Committee 144 on Coke and Other Solid Formed Fuels.

TC 144 deals with issues concerning coke, semi-coke, formed fuels, briquettes, solid biofuels (biomass for energy purposes), solid recovered fuels. The scope of work includes standards for types of coke, formed fuels, semi-coke, solid biofuels and solid recovered fuels including requirements for these fuels as commercial products as well as terminology, methods of sampling and testing methods for mechanical, physical and chemical properties of these objects.
TC 144 works as well on coke and formed fuel storage, quality testing and requirements for fuels and barbecue lighter as commercial products.

Works of TC 144 mainly include fuel market for coke, cement, heating and electricity industry. Developed standardization documents are the basis for operation for independent laboratories and on-site laboratories as well as universities and research & development institutes.

The main objective of TC 144 is the development, evaluation and voting on standardization documents as well applying to assign a status of Polish Standards (PN) to international standards after their publication. Standards of particular importance for the coke, heat and electricity industry should be prepared in Polish language versions. However, due to limited

financial sources standards of series EN 14961 and EN 15234 have not been translated yet what creates significant obstacle for implementation of standards by Polish market actors.

The TC 144 consists of 22 persons but only 14 of them are currently actively involved in standardization works. 16 members represent scientific institutions - mainly research institutes (15) and universities (1), 4 persons are associated with business sector, 1 is a representative of an association of producers and 1 is delegated by the Polish Committee for Standardization.

By the end of 2013 Technical Committee 144 on Coke and Other Solid Formed Fuels is going to continue on standardization activities regarding standards ISO/DIS 17225:2012 Solid biofuels - Fuel specifications and classes - Parts 1 to 7.

2.2. National standards

Before the European standards were developed there had been no national standards on fuels from solid biomass in Poland. The existing gap in the system - due to the urgent need - was filled with the help of standards on fossil fuels (coal) adapted to biomass fuels. Adaptation activities were undertaken by the group of companies involved in energy production (mainly large power plants). One of the research institutions validated existing analytical procedures regarding coal and their usage in case of solid biomass fuels. The result of these works was implementation into laboratory practice 14 analytical procedures relating to the properties of biomass fuels.

Given the overwhelming interest of power plants a Nationwide Network of Supervised Laboratories (LABIOMEN) using developed analytical procedures was created. LABIOMEN network is supervised by the Institute for Chemical Processing of Coal (IChPW) in Poland. The network currently comprises of ca. 40 laboratories. Until the introduction of the European standards for solid biofuels LABIOMEN used only analytical procedures developed by IChPW. Since 2010 laboratories are in a process of transition to methods set in the European standards. It is estimated that about 20 LABIOMEN laboratories still apply existing old procedures.

In other Polish laboratories until 2010 both own analytical procedures (developed on the basis of standards on coal) and procedures based on the requirements of international standards were applied. In particular, one of the most common standards in Poland was DIN 51731 characterizing properties of wood briquettes and pellets. The requirements of this standard, in the absence of other solutions at that time, were used also with regard to non-woody solid biofuels.

Currently in Poland laboratories are in transition process between old methods and the ones set in the European standards. One of the leading institutions in this field is the Solid Biofuels Research Laboratory of the Institute of Wood Technology, where 24 European standards are used to assess the properties of solid biofuels. There is also a slow but growing interest in these standards expressed by solid biofuels producers.

Currently, 35 European Standards relating to solid biofuels have the status of Polish Standards (PN-EN).

2.3. Uptake of European standards

In view of sometimes imprecise provisions set in Polish law regarding the use of biomass fuels for energy production in combustion processes, legible and clear records of EN 14961-1 specifying sources of biomass (wood biomass in particular) are a very useful tool for the proper classification of waste biomass intended for combustion. This situation is of particular importance in relation to the waste from chemically processed wood materials. The provisions of EN 14961-1 allowed to classify a significant group of residues (mainly residues from wood materials) as biomass accordingly defined by the Polish law. With expertise carried out based on the requirements of EN 14961-1 entrepreneurs gained satisfying solutions accepted by the governmental and self-governmental institutions.

It seems appropriate to extend the list of waste/residues types (given in the standard EN 14961-1) from which solid biofuels can be obtained as well as the list of waste/residues which definitely cannot be used to receive solid biofuels (e.g. wood waste containing creosote).

Currently, there is no significant interest in implementing quality assurance systems by companies engaged in solid biofuels production and trade. Ensuring fuel quality should be particularly important to small boiler manufacturers as the quality of solid biofuels significantly influences durability of their products. If e.g. guarantees on boilers depended on the quality of the fuel used, solid biofuel producers would implement adequate standards. Therefore, raising awareness on quality assurance system is an important issue, not only to biofuels users but at all stages of the supply chain.

Results of surveys carried out during training events under the SolidStandards project confirm these conclusions.

Based on feedback collected during the trainings it can be seen that the interest in implementing solid biofuel standards is relatively low. Out of 57 persons that gave their feedback filling in the questionnaire only 11 (ca. 20%) expressed their will to apply EN 14961-1 and EN 15234 in the future. The numbers regarding other parts of these standards were lower. Furthermore, even less participants (2-9) confirmed future implementation of standards concerning terminology, sampling, physical and chemical properties.

Some producers selling their products for co-firing are not willing to implement standards as the quality of their products may be relatively low. Moreover, certification is voluntary and the market is still characterised with low awareness. Some of the participants underlined that the standards should be available free to every market actor and implementation of these standards should be supported by a national institution.

The Polish solid biofuels market is relatively young, struggling with many problems, mainly economic. The implementation of a quality assurance system may be associated with yet another requirement that small companies will not be able to meet (also due to “bureaucracy” connected with introduction of quality standards). However, taking into account quality assurance systems are little known in Poland and few producers implement them, it is necessary to continue promoting measures for consistent improvement as in the near future it may occur that it is the quality that will be a crucial element for the survival of the company on the market.

It was not possible to obtain information on the application in laboratories’ procedures regarding the principles of sampling and sample preparation (as indicated in EN 14778 and EN 14780). Every institution in Poland assessing solid biofuels properties declared that biofuels samples for laboratory tests are prepared in a way that ensures their representativeness.

Analytical procedures set in the standards (EN) for the assessment of physical, mechanical and chemical properties are systematically implemented into laboratory practice by institutions assessing and classifying solid biofuels. Procedures defined in EN 14961 series as normative were implemented in the first place. The procedures meant as optional are the least applied ones (e.g. EN 15148, EN 15105, EN 15210-2, EN 15290, EN 16126).

3. Certification activities

Acquiring certificates confirming compliance of the solid biofuels quality with the requirements of relevant standards is not a common practice in Poland. In December 2012, only three Polish producers of wood pellets had DINplus certificates issued by DINCertco GmbH. There is no confirmation of any Polish company certified with ENplus. Currently, two domestic solid biofuel producers hold certificates issued by the Institute of Wood Technology. The Institute is accredited to carry out certification activities of products (including solid biofuels).

The main obstacles to widespread use of certification schemes for biomass fuels in Poland are:

- economic barrier - relatively high costs associated with obtaining and maintaining certificates of compliance with standards what disqualifies mainly smaller solid biofuel producers;
- legal barrier - lack of appropriate quality requirements included in relevant legislation concerning solid biofuels used in Poland what discourages implementation of costly certification schemes.

On the other hand, imprecise provisions of Polish law relating to the combustion of biomass fuels (in particular chemically treated wood waste) caused many entrepreneurs to assess and classify their wood waste based on the requirements of EN 14961-1. Several companies have undertaken actions to obtain certificates of conformity of solid biofuels with the requirements of standards in order to acknowledge that despite the content of synthetic chemicals their materials can be acknowledged as solid biofuels and they fulfil required quality parameters. The intention of these producers is to prove that their products bear the characteristics of by-products and their combustion is safe to the environment. This aspect of certification seems to be quite important in Polish conditions.

International companies engaged in attestation and standardization activities try to meet expectations of their customers. However, taking into consideration the number of certificates issued for Polish companies lead to the conclusion that proposed rates for such services are not yet acceptable for an average producer.

The most common sustainability certification scheme in Poland is Forest Stewardship Council (FSC) forest management certification. Currently the scheme is at the stage of addressing pre-approval conditions by the Standards Development Group. Currently there are 19 certified forest areas and 933 CoC certificates issued.

PEFC (The Pan European Forest Certification Council) is the second certification scheme used in Poland. Almost 100 Forest and CoC certificates have been issued.

4. Standardisation and certification needs

4.1. Feedback collection about standards for transport/storage

Applying standardized solutions for transport and storage of biomass and solid biofuels (in particular fire protection) could contribute to increased use of biomass as fuel in public buildings. Currently, their use raises a number of concerns regarding safety issues (e.g. at schools).

The feedback gathered on the basis of questionnaire shows that most of the responders are not aware of standards or certification systems on transport and storage of biofuels. This includes 40 persons (over 90%) not aware of ÖNORM M 7136 on pellet transport and storage, 25 persons (over 54%) not aware of certification systems (offered by German DINCERTCO or EN plus) for pellet logistics and transport companies, 35 persons (76%) not aware of ÖNORM M 7137 on pellet storage silos and storage rooms for small end-users and 33 persons (71%) not aware of certification systems (offered by German DINCERTCO) for pellet storage rooms and silos for small end-users.

However, majority of responders think that these kinds of certification would be helpful in Poland or at the EU level. Most of the responders (43) also think that there should be standards on health and security aspects for pellet storage at the end-users and they also indicated that similar initiatives are needed mostly for wood briquettes (30 responders – 77%), wood chips (20 responders – 51%) and non-woody fuels (19 responders – 49%).

Based on the consultation with the representatives of the national mirror committee it seems that currently there is no need for standardized solutions for transport and storage of biomass (solid biofuels) observed.

Following issues could become subjects to standardization processes:

- principles for storage of biomass and solid biofuels particularly exposed to weather conditions,
- safety of staff handling biomass and solid biofuels at large storage facilities as well as dealing with transport:
  - to prevent health hazards to workers deriving from bio-organisms (mainly fungi and decay),
  - to prevent self-ignition and fire (wood biomass storages in particular),
  - to prevent dust explosions.

4.2. Feedback collection per type of biomass

Part 4 of the questionnaire included questions on different types of solid biofuels. An overview of the questions and corresponding answers from training participants in Poland are included in Annex to this paper.

4.3. Feedback collection about quality certification

Since the introduction of EN standards on quality certification systems relatively short time has passed, therefore the national mirror committee does not have critical comments in this regard. After implementation of quality assurance systems and quality certification at several solid biofuels' producers, hopefully in the near future, it will be possible to gain experiences allowing to put any relevant suggestions in this regard.

There were no suggestions regarding for new subjects for quality certification schemes in the questionnaires received.

4.4. Other standardisation and certification needs

Other issues that could become subjects to standardization include:

- Quick measurement methods of moisture content - important in large power plants
- Quick measurement methods of solid biofuels properties applicable at industrial conditions
- Eligibility criteria for chemically treated/contaminated biomass for solid biofuels production (containing certain chemical substances - creosote and other)
  - the boundary between solid biofuel and recycled solid biofuel with prevailing share of biomass
  - acceptable level of contamination
  - methods for determination of the content of particular contamination types
- Methods for determination of contaminants disqualifying biomass for production of solid biofuels
  - e.g. solids content – plastic, metal elements
- Methods for determining biodegradability of biomass – an aspect included in legislation, required by authorities in Poland

There were no suggestions for new subjects for other standardisation or certification issues in the questionnaires.

5. Results of discussion of feedback collection with national mirror committee

The National Industry Position Paper was elaborated in strong cooperation with a member of TC 144 on Coke and Other Solid Formed Fuels operating within the Polish Committee for Standardization – Doctor Eng. Wojciech Cichy. Mr. Cichy is in charge of a team evaluating

solid biofuels in the Accredited Laboratory functioning within the Institute of Wood Technology (ITD). He is also a solid biofuels consultant at the ITD's unit certifying products/articles.

In the course of the SolidStandards project Technical Committee 144 has not been convened. The TC 144 members communicate (consultations, voting) exclusively by electronic means through IT platform. For the purpose of the SolidStandards project Mr. Cichy consulted the paper also with Certification Centre of Wood Industry Products and Institute for Chemical Processing of Coal. The results of the discussion are included in this paper.

6. Summary of national industry needs

1. It seems appropriate to extend the list of waste/residues types (given in the standard EN 14961-1) from which solid biofuels can be obtained as well as the list of waste/residues which definitely cannot be used to receive solid biofuels (e.g. wood waste containing creosote).

2. Currently, there is no significant interest in implementing quality assurance systems by companies engaged in solid biofuels production and trade. Ensuring fuel quality should be particularly important to small boiler manufacturers as the quality of solid biofuels significantly influences durability of their products. Raising awareness on quality assurance system is an important issue, not only to biofuels users but at all stages of the supply chain.

3. Following issues could become subjects to standardization processes:

- principles for storage of biomass and solid biofuels
- safety of staff handling biomass and solid biofuels at large storage facilities
- quick measurement methods of moisture content and other properties applicable at industrial conditions
- eligibility criteria for chemically treated/contaminated biomass for solid biofuels production
- methods for determination of contaminants disqualifying biomass for production of solid biofuels
- methods for determining biodegradability of biomass

Annex 1

Feedback results on specific solid biofuel questions.

Wood pellets

4A.1 In case your company produces industrial pellets: do you think that the classification system in EN 14961-1 is useful for the description of the quality of the pellets?	22	
Yes	17	77,3 %
No	5	22,7 %
4A.2 Do you think that fuel specifications according to EN 14961-2 match the needs of the market?	29	
Yes	28	96,6 %
No	1	3,4 %
4A.3 Do you agree with the requirements (threshold values) defined in EN 14961-2?	28	
Yes	27	96,4 %
No	1	3,6 %
4A.4 Do you think that three quality classes for wood pellets are enough, too many or too few?	28	
Enough	27	96,4 %
Too many	0	0,0 %
Too few	1	3,6 %
4A.5 Have you already been producing pellets according to a quality standard or a quality certification scheme?	7	
EN 14961-2	3	42,9 %
ÖNorm M 7135	0	0,0 %
DIN plus	6	85,7 %
EN plus	0	0,0 %
Other scheme/set of requirements	1	14,3 %
4A.6 Could you indicate the importance of the quality standard or a quality certification scheme, by giving a rating between 1 (not important) and 5 (very important)?		
1	0	0,0 %
2	0	0,0 %

3	1	4,5 %
4	4	18,2 %
5	17	77,3 %
4A.6 Could you indicate the importance of the quality standard or a quality certification scheme, by giving a rating between 1 (not important) and 5 (very important)? - EN 14961-2	22	
1	0	0,0 %
2	0	0,0 %
3	1	4,5 %
4	4	18,2 %
5	17	77,3 %
4A.6 Could you indicate the importance of the quality standard or a quality certification scheme, by giving a rating between 1 (not important) and 5 (very important)? - ÖNorm M 7135	11	
1	1	9,1 %
2	1	9,1 %
3	7	63,6 %
4	2	18,2 %
5	0	0,0 %
4A.6 Could you indicate the importance of the quality standard or a quality certification scheme, by giving a rating between 1 (not important) and 5 (very important)? - DIN plus	15	
1	0	0,0 %
2	0	0,0 %
3	4	26,7 %
4	3	20,0 %
5	8	53,3 %
4A.6 Could you indicate the importance of the quality standard or a quality certification scheme, by giving a rating between 1 (not important) and 5 (very important)? - EN plus	14	
1	0	0,0 %
2	0	0,0 %
3	3	21,4 %

4	3	21,4 %
5	8	57,1 %
4A.8 Do you think that an integrated quality assurance system for production, trade and delivery of pellets (as defined in EN 15234-2) is necessary and useful?	22	
Yes	20	90,9 %
No	2	9,1 %
4A.9 Do you think that fuel quality assurance according to EN 15234-2 is realizable?	22	
Yes	19	86,4 %
No	3	13,6 %

Wood briquettes

4B.1 Should there be separate requirements in EN 14961-3, enabling the classification of bark briquettes (ash content > 3 % necessary)?	5	
Yes	2	40,0 %
No	3	60,0 %
4B.2 Should there be no threshold values for heavy metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn), if chemically untreated material is used (classes A1 and A2 of EN 14961-3)?	4	
Yes	2	50,0 %
No	2	50,0 %
4B.3 Is the N-content of Class B with 1% (EN 14961-3) too high?	3	
No, the content is fine	3	100,0 %
Yes	0	0,0 %

Wood chips

4C.1 The future ISO 17225-1 includes only one property table for wood chips and hog fuel. Do you agree with the proposed combination in one table, with stating only the traded form separately: wood chips (produced with sharp tools) or hog fuel (crushed by blunt tools)?	4	
Yes	3	75,0 %
No	1	25,0 %
4C.2 The future ISO 17225-1 includes only one particle size table for wood chips for industrial use (acc. to EN 14961-1) and wood chips for non-industrial use (acc. to EN 14961-4). Do you agree with the proposed combination in one table (see table on top)?	3	

Yes	3	100,0 %
No	0	0,0 %
4C.3 Do you agree with the following proposed particle sizes for inclusion in the future ISO 17225-1 standard on fuel specifications of wood chips: P16, P31, P45, P63, P100 and P300 (see table on top)?	3	
Yes	3	100,0 %
No, I would prefer the following sizes	0	0,0 %
4C.4 Should there be separate particle size requirements for forest chips (needles, increased amount of fines), stem wood or industrial wood residues and used wood?	4	
No	3	75,0 %
Yes	1	25,0 %
4C.5 Do you think a specific maximum length of particles can be produced and guaranteed with the raw material “forest residues” and “whole trees”?	3	
No	3	100,0 %
Yes	0	0,0 %
4C.6 Do we need the property class for fines like F25+, ≥ 25 % fines (< 3,15 mm), to be able to classify e.g., forest residues?	2	
Yes	0	0,0 %
No	2	100,0 %
4C.8 Do we need a maximum cross sectional area in EN 14961-1?	3	
Yes	0	0,0 %
No	3	100,0 %
4C.9 Do we need a maximum cross sectional area in EN 14961-4?	4	
Yes	2	50,0 %
No	2	50,0 %
4C.10 Do we need to have net calorific value as received as a normative property?	3	
Yes	2	66,7 %
No	1	33,3 %

Firewood

4D.1 Can you specify your product according to EN 14961-1 or EN 14961-5?	2	
Yes, according to standard EN 14961-1	0	0,0 %

Yes, according to standard EN 14961-5	0	0,0 %
No	2	100,0 %
4D.2 Do we need a special table for firewood in EN 14961-1 or is the product standard for oven-ready firewood EN 14961-5 enough?	1	
No, the product standard EN 14961-5 for oven ready firewood is enough	1	100,0 %
Yes, we need an extra table in EN 14961-1	0	0,0 %
4D.3 Are the entire normative (mandatory) or informative (voluntary) properties important in EN 14961-1, or are some properties missing?	1	
All the properties are important	1	100,0 %
We should add/delete the following properties	0	0,0 %
4D.4 .1 Should some normative properties be changed in voluntary properties in EN 14961-5?	0	
It is all right the way it is	0	0,0 %
The following normative properties should be changed in voluntary properties	0	0,0 %
4D.4.2 Should some voluntary properties be changed in normative properties in EN 14961-5?	0	
It is all right the way it is	0	0,0 %
The following voluntary properties should be changed in normative properties:	0	0,0 %
4D.5 Do we need to specify the moisture content on both wet basis (M) and dry basis (U)?	2	
Yes, we need both specifications	1	50,0 %
No, we only need the specification on wet basis (M)	1	50,0 %
No, we only need the specification on dry basis (U)	0	0,0 %

Non-woody pellets

4E.1 Do you think that three raw material type classes (cereal straw pellets, miscanthus pellets, reed canary grass pellets) for non-woody pellets are enough?	11	
Yes	4	36,4 %
No, because (e.g., there should be specified properties for other raw material types)	7	63,6 %
4E.2 Do you think that two quality classes for non-woody pellets are enough or too few?	9	
Enough	9	100,0 %
Too few	0	0,0 %

4E.3 Do you think that EN 14961-1 or EN 14961-6 should state the maximum amount of additives in case the raw material for pellet is blend?	12	
Yes	8	66,7 %
No	3	25,0 %
4E.4 Do you think that EN 14961-1 or EN 14961-6 should state what kind of additives are not allowed?	12	
Yes	9	75,0 %
No	2	16,7 %
4E.5 Do you think that EN 14961-1 or EN 14961-6 should include parameters regarding impurities assessment (e.g., soil)?	12	
Yes	10	83,3 %
No	1	8,3 %
4E.6 Do you intend to implement EN 14961-6 and 15234-6?	10	
Yes	5	50,0 %
No	5	50,0 %
4E.7 Do you think that fuel quality assurance according to EN 15234-6 is feasible?	7	
Yes	5	71,4 %
No	2	28,6 %