

BLUE ANGEL

The German Ecolabel



**Technically Dried
Wood Chips / Wood Pellets**

DE-UZ 153

Basic Award Criteria

Edition January 2011

Version 5

The Environmental Label is supported by the following four institutions:



The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety is the owner of the label. It regularly provides information on the decisions taken by the Environmental Label Jury.



The German Environmental Agency with its specialist department for "Ecodesign, Eco-Labeling and Environmentally friendly Procurement" acts as office of the Environmental Label Jury and develops the technical criteria of the Basic Criteria for Award of the Blue Angel.



The Environmental Label Jury is the independent, decision-making body for the Blue Angel and includes representatives from environmental and consumer associations, trade unions, industry, the trade, crafts, local authorities, academia, the media, churches, young people and the German federal states.



The RAL gGmbH is the awarding body for the Environmental Label. It organises the process for developing the relevant award criteria in independent expert hearings – which involve all relevant interest groups.

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This document is a translation of a German original. In case of dispute, the original document should be taken as authoritative.

1 Introduction

1.1 Preface

In cooperation with the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, the German Environmental Agency and considering the results of the expert hearings conducted by RAL gGmbH, the Environmental Label Jury has set up these Basic Criteria for the Award of the Environmental Label. RAL gGmbH has been tasked with awarding the Environmental Label.

Upon application to RAL gGmbH and on the basis of a Contract on the Use of the Environmental Label to be concluded with RAL gGmbH, the permission to use the Environmental Label may be granted to all products, provided that they comply with the requirements as specified hereinafter.

The product must comply with all the legal requirements in the country in which it is to be marketed. The applicant shall declare that the product meets this requirement.

1.2 Background

Wood as a fuel is principally used to replace fossil energy sources, such as coal, crude oil and natural gas. It does not only help preserve resources, it also greatly advances climate protection. Technically dried wood chips, wood pellets and wood briquettes which are the focus of these Basic Criteria additionally meet fundamental product quality requirements. A consistent high quality of fuels is essential to efficient use and lowest possible pollutant emissions, especially with respect to the use of small and medium-sized heating systems. The origin of the raw material and the manufacture play important roles in ensuring high product quality.

Technical drying significantly reduces the space consumption per useful heat. The raw materials may only come from certain types of untreated wood. Also, it must be guaranteed that the forest and plantation wood used is cultivated in a sustainable way. Key criteria of production are energy efficiency and lowest possible dust emissions during drying. Due to the high air change rate during drying the latter may altogether cause heavy dust loads in spite of lower exhaust air concentrations than during firing. The volume of data available regarding these emissions is still too small so that, currently, no limits can be set as criteria for award of the Blue Angel eco-label. Alternatively, applicants are requested to furnish information. The data thus collected will be used to further develop the Basic Criteria.

1.3 Objectives of the Blue Angel Eco-Label

Major goals of environmental protection are to reduce energy and resource consumption and avoid pollutant emissions. Pursuit of these goals will help protect the earth's climate, conserve resources and avoid the input of pollutants into the environment. Besides the Blue Angel eco-label is to signal the buyer of technically dried wood chips, wood pellets and wood briquettes that – compared with others - the eco-labelled product better meets the goals of consumer protection.

The Blue Angel eco-label may be awarded to wood fuels which guarantee high product quality and energy-efficient and low-emission combustion, especially in small and medium-sized heating systems, thereby supporting key objectives of environmental protection.

Therefore, following benefits for the environment and health are stated in the explanatory box:



2 Scope

These Basic Criteria apply to technically dried wood chips, wood pellets and wood briquettes from untreated biomass. Technical drying is a process where the pieces of wood are dried to a specified degree of dryness by a supply of thermal energy or dry warm air. Excluded from these Basic Criteria are wood chips, wood pellets and wood briquettes which have been pretreated in open air exclusively.

3 Requirements

3.1 Origin of the Wood

3.1.1 General Requirements

Only freshly cut 'green' wood (except for stumps) and chemically untreated wood residues may be used as raw materials for the production of technically dried wood chips and wood pellets. The following wood classes according to DIN EN 14961-1 shall be permitted:

- 1.1.1 Whole trees without roots¹
- 1.1.3 Stemwood
- 1.1.4.3 Logging residues, dry, broadleaf
- 1.2.1 Chemically untreated wood residues

In order to, above all, compare origins of wood involving long-distance transportation and their impact on the environment with regional origins of wood the transportation expenses for the supply of wood raw materials need to be recorded.

- With respect to freshly cut green wood the average transportation expenses (distances and means of transportation) shall be determined from where the wood was harvested to the production facility (drying or pelleting plant),
- With respect to chemically untreated wood residues the transportation expenses shall be determined from the place of generation (e.g. saw mill) to the production facility.

If the applicant sells technically dried wood chips and wood pellets in a country other than the country of production the transportation expenses from the production facility to the distribution site shall be determined in addition to the above-mentioned transportation

¹ Except for Class 1.1.1.3 Short rotation coppice if there is reason to believe that the soil has been contaminated, the cultivated area has been used for storing chemicals or if the woody biomass has been treated using sewage sludge as a fertilizer.

expenses. If distribution sites are located in several countries said calculations shall be made separately for each country.

Climate-changing emissions resulting from the transports shall be calculated using the method specified in Appendix A and indicated in the product documentation as CO₂ emission value. The product information shall also include the production site.

Compliance Verification

The applicant shall declare that the wood used is classified into the above-mentioned classes of wood according to DIN EN 14961-1.

Also, the applicant shall determine the transportation-related CO₂ emissions in accordance with Appendix A and include the CO₂ emission value and production site in the product information.

Also, the applicant shall upon filing of the application as well as every two years submit to RAL gGmbH an operating report confirming compliance with the requirements mentioned above which includes a tabular summary of the records regarding the origins of wood as well as the calculated CO₂ emission values (see Appendix B). The operating report shall be reviewed and countersigned by an independent expert body (see Annex 3).

3.1.2 Chemically untreated wood residues without area reference

Chemically untreated wood residues are industrial wood residues from sawmills generated during the processing of stemwood (sawdust, wood shavings). The manufacturer of technically dried wood chips and wood pellets shall, as a minimum requirement, record the origin of the chemically untreated wood residues.

Compliance Verification

With respect to wood raw materials according to para. 3.1.2 the operating report for the wood class "chemically untreated wood residues" required under para. 3.1.1 shall include a confirmation that the wood belongs to the specified wood class. The tabular summary of the records - also mentioned in para. 3.1.1 - must additionally include company data of wood suppliers (see Appendix B).

3.1.3 Wood from areas where tree species are planted with the aim of early harvesting with felling cycles of less than 20 years (short-rotation plantations)

With respect to wood from short-rotation forestry it is to be made sure that the cultivation areas concerned meet the area-related requirements set forth in Directive 2009/28/EC (Article 17 (3), (4) and (5))². Within the meaning of Directive 2009/28/EC the area-related requirements shall be considered met if it can be shown that at the time of obtaining the raw material the cultivation areas concerned had the same status as in January 2008.

² Directive 2009/28/EC of the European Parliament and of the Council on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC of 23 April 2009

Compliance Verification

With respect to wood raw materials according to para. 3.1.3 the applicant shall provide information on the geographic origin of the wood used (cultivation area) and submit certificates/verifications establishing compliance with the area-related requirements of Directive 2009/28/EC. Compliance may be verified by means of a certification system acknowledged under said Directive (e.g. International Sustainability and Carbon Certification (ISCC) or Gesellschaft zur Zertifizierung nachhaltig erzeugter Biomasse mbH (REDcert)) or by means of a certificate issued by an accredited environmental verifier³. The applicant shall confirm compliance with the requirement in the operating report required under para. 3.1.1 and enter the relevant data into the tabular summary (see Appendix B).

3.1.4 Wood from continuously forested areas

Wood originating from continuously forested areas must comply with the requirements of the Forest Stewardship Council (FSC), Naturland criteria⁴ or the criteria of the Programme for the Endorsement of Forest Certification Schemes (PEFC) for sustainable forest management and the chain of custody (CoC).

It shall be verified in particular that:

- all non-merchantable wood (diameter <7 cm) is left on the site; no whole-tree utilization,
- no pesticides are used (except for pest control by official order),
- no fertilizers are used to increase yields and
- the area-related sustainability requirements according to 2009/28/EC are met.

A certificate from FSC, Naturland or PEFC shall be submitted as verification. In addition, it shall be demonstrated that the standards of the certifying bodies include, above all, the above-mentioned criteria. As an alternative to the presentation of a certificate and the demonstration of compliance with the four above-mentioned criteria compliance with the FSC, Naturland or PEFC requirements or the four above-mentioned criteria can also be established by a certificate issued by an environmental verifier.

Compliance Verification

With respect the wood raw materials according to para. 3.1.4 the applicant shall provide information on the geographic origin (area) of the wood used and submit a certificate meeting the FSC, Naturland or PEFC criteria. In addition, the applicant shall demonstrate that, above all, the above-mentioned criteria are met either by showing that the criteria of the standards used consider these issues in their entirety (indication of the relevant excerpt in the catalogue

³ Persons or organisations allowed to work as environmental verifier or environmental verification body in the field of agriculture and forestry according to the Umweltauditgesetz (Eco-Audit Act) of 4 September 2002 (Federal Law Gazette I page 3490), last amended on March 17, 2008 (Federal Law Gazette I page 399) or other environmental verifiers and environmental verification bodies from other member states of the European Union or another signatory to the agreement on the European Economic Area according to Section 18, Umweltauditgesetz (Eco-Audit Act).

⁴ http://www.naturland.de/wald_und_holz.html

of criteria) or by certification by an accredited environmental verifier⁵. As an alternative to the presentation of a certificate compliance with the requirements according to FSC, Naturland or PEFC as well as with the four above-mentioned criteria can also be established by a certificate issued by an accredited environmental verifier. The applicant shall confirm compliance with the requirement in the operating report required under para. 3.1.1 and enter the relevant data into the tabular summary (see Appendix B).

3.2 Manufacture

The manufacture of technically dried wood chips, wood pellets and wood briquettes includes the provision of raw material (extraction of wood from the forest), chipping of wood chips or cutting of pellets as well as drying. Only the production of pellets then possibly requires further controlled crushing, and, in any case, however, the actual pelleting. The energy required for the manufacture is primarily determined by the drying energy. Particulate matter emissions may be another relevant factor during drying.

3.2.1 Drying

The heat required to dry wood fuels must be supplied from renewable energy sources, such as solid biomass, waste heat from combined heat and power plants using biogas, sewage or landfill gas or solar heat or industrial waste.

In addition, evidence of efficient use of the drying energy shall be presented. The heat required for evaporating the water contained in the wood shall not exceed factor 2.5 of the physical heat requirement⁶. For this purpose, the applicant shall record the amount of heat used and the amount of water evaporated and give the average temperature of the drying air. The amount of evaporated water may be determined either by weighing the wood before and after drying (batch experiment) or by determining the water content (moisture) of input and output material. The water content is to be determined in accordance with DIN EN 14774-1, 14774-2.

Due to the high air flow during drying high loads may altogether occur in spite of a relatively low particulate matter concentration in the exhaust air. There are currently only few measurement data regarding this problem. In order to be able to better assess the relevance of particulate matter emissions in the future applicants must have corresponding measurements performed at their plants twice a year by a testing laboratory or qualified expert accredited for such emission measurements. For an improved relevance assessment pelleting plants must have these measurements performed on the other parts of the plant too (crushing, pressing). Indication of the resulting data shall differentiate between drying and the other parts of the plant.

Compliance Verification

The applicant shall declare that the heat used for drying comes from renewable energy sources, such as solid biomass, waste heat from combined heat and power plants using biogas, sewage or landfill gas or solar heat. Compliance with the requirement to use the above-mentioned renewable energies shall be established by submission of supply or purchase agreements with the heat-generating company (indicating the agreed supply quantities) or by

⁵ Information on the environmental verifiers accredited or licensed in Germany may be obtained from the DAU GmbH at : <http://www.dau-bonn-gmbh.de/dauList.htm?cid=203>

⁶ Evaporation heat of water at 25°C = 2.441 MJ/kg of water

operational documents (permit indicating the capacity) if the corresponding heat energy is generated by the company itself.

*Also, the applicant shall declare that the drying efficiency requirement is met. The efficiency criterion is considered met if the quotient of the amount of heat used divided by the amount of evaporated water is $\leq 2.5 * 2.441$ MJ/kg. The applicant shall confirm compliance with the requirement in the operating report required under para. 3.1.1 and submit a tabular summary of the records regarding the amount of heat used (heat meter), the amount of evaporated water and the average temperature of the drying air (see Appendix B). If the amount of evaporated water is determined by weighing the input and output material these data have to be recorded as well. If the amount of evaporated water is determined by determining the water content (moisture) before and after drying these data will have to be recorded.*

To establish compliance with the required measurement of particulate emissions the applicant shall submit the corresponding test reports prepared by the accredited testing laboratory and/or qualified expert together with the operating report required under para. 3.1.1.

3.3 Product Quality

A nearly constant product quality is very important for use in small and medium-sized heating systems to achieve a low-emission and efficient combustion. Certain parameters need to be met in addition to the compliance with requirements regarding the origin of wood.

3.3.1 Technically dried wood chips

The particle size shall be specified in accordance with E DIN EN 14961-4:2010-07, Table 1. The water content of technically dried wood chips must be $\leq 15\%$ (corresponds to a maximum moisture of 18%). For this purpose, the water content shall be either representatively determined in accordance with EN 14774-1, 14774-2 or it shall be verified by means of a manufacturer's certificate that this water content will be definitely achieved by continuous and uniform drying of the material. In any case, the calorific value of the wood chips on receipt shall be at least 4 kWh/kg. Moreover, the requirements of E DIN EN 14961-4:2010-07, Table 2, must be met for the property classes A1 or A2, except for the ash content which may be up to 2.5 percent.

Compliance Verification

The applicant shall at least once per month perform the measurements required for verification of compliance with the product quality requirements by way of internal monitoring and record the results. External monitoring shall be done once a year by an accredited testing laboratory and/or qualified expert. The expert reports shall be submitted together with the operating report required under para. 3.1.1. The applicant shall use the operating report to confirm compliance with the product quality requirements and submit a tabular summary of the records regarding the parameters water content, calorific value, ash content, bulk density and particle size (see Appendix B).

3.3.2 Wood Pellets

As regards wood pellets, all requirements of E DIN EN 14961-2:2010-07, Table 1 shall be met with respect to the A1 property class.

Compliance Verification

For verification of compliance with the product quality requirements the applicant shall at least once a month perform the required measurements by way of internal monitoring and record the results. External monitoring shall be done once a year by an accredited testing laboratory and/or a qualified expert. The expert report shall be submitted together with the operating report required under para. 3.1.1. The applicant shall use the operating report to confirm compliance with the product quality requirements and submit a tabular summary of the records regarding the parameters required according to Table 1 with respect to the A1 property class of E DIN EN 14961-2:2010-07 (see Appendix B).

Alternatively, compliance can be verified by submission of a corresponding certificate according to ENplus or DINplus. If compliance is verified according to ENplus the certificate must be issued for the ENplus A1 product quality.

3.3.3 Wood Briquettes

Wood briquettes shall meet all quality requirements of the certification programme DIN Plus according to DIN EN ISO 17225-3.

Compliance Verification

For verification of compliance with the product quality requirements the applicant shall at least once a month perform the required measurements by way of internal monitoring and record the results. External monitoring shall be done once a year by an accredited testing laboratory and/or a qualified expert. The expert report shall be submitted together with the operating report required under para. 3.1.1. The applicant shall use the operating report to confirm compliance with the product quality requirements and submit a tabular summary of the records regarding the parameters required according to Table 1 with respect to the A1 property class of E DIN EN 14961-2:2010-07 (see Appendix B).

Alternatively, compliance can be verified by submission of a corresponding certificate according to ENplus or DINplus. If compliance is verified according to ENplus the certificate must be issued for the ENplus A1 product quality.

3.4 Product Information

A series of information on the product and its manufacture are of interest to the consumer or may serve as an ecological criterion for consumers in their purchasing decision. That is why the delivery notes or the packaging of products sold in packages through building supply stores shall provide the following information:

- Information on the minimum calorific value met (in kWh/kg) and the minimum bulk density (kg/m³) to allow the consumer to determine the energy density and hence calculate the amount of wood pellets required.

- Information on the transportation expenses for the supply of the wood used and – if sold abroad – the transportation expenses for product shipment given as CO₂ emission value determined as specified in para. 3.1.1. In addition, the production site shall be indicated.
- For wood pellets: indication that the product falls within the A1 property class according to DIN EN 14961-2:2010-07.
- Information on the proper storage of the fuels and on the heating systems approved and suited for the fuels. For wood chips in particular: note stating that they are suited for use in plants of medium capacity (e.g. apartment buildings, municipal facilities of about 300 kWth or more).
- Each shipment shall be assigned an identification number and the delivery note shall include the manufacturer's data and, if different, also the relevant supplier's data (company name, driver, license plate number). The latter shall not be applicable to packaged goods.

Compliance Verification

The applicant shall declare compliance with the requirement and submit the product information. The applicant shall make sure that this information reaches the consumer through the his/her distributor.

3.5 Special requirements to be met by dealers applying for the Blue Angel eco-label

3.5.1 Application for the Blue Angel eco-label for a product composed of one or more eco-labelled products

Products that have already been awarded an eco-label may be marketed by a dealer under a new trade name with an eco-label of its own. It shall be admissible to mix different products (base products) of different manufacturers.

The dealer shall be subject to a simplified verification procedure.

In addition, the applicant shall adapt the product information pursuant to para. 3.4 to the new product.

Compliance Verification

The following documents shall be submitted in lieu of the compliance verifications set forth in paras. 3.1 to 3.4:

- *Indication of manufacturer and the base products of the new product applying for a new eco-label.*
- *Submission of copies of a valid license agreement for the Blue Angel eco-label between RAL gGmbH and the respective manufacturers. The maximum period of use of the applied-for eco-label shall be the period covered by all license agreements submitted.*
- *Submission of the respective current operating reports of the respective manufacturers according to para. 3.1 reviewed by an independent qualified body upon filing of the application as well as every two years during the term of contract.*
- *Indication of the quantitative composition of the product applying for the eco-label upon filing of the application by indicating the expected delivery quantities of the base products. The quantitative composition shall be balanced over the term of the contract and reported to RAL gGmbH every two years by submission of the relevant operating reports. Apart*

from the quantitative composition the balancing shall show that the quantities of Blue Angel products sold does not exceed the quantities purchased.

- *Adaptation of the product information to the newly mixed product by the quantitative weighting of the product values of the base products and recalculation of the mixed product values. In addition to the transportation expenses included in the manufacturer's CO₂ emission value the dealer shall determine the transportation expenses analogous to para. 3.1.1 which result from the transports from the manufacturers' facilities to the dealer's warehouse and add them to the values. The calculation of the new values specified in the product information shall be documented in a comprehensible manner and reviewed and countersigned by an independent and qualified body. If the dealer purchases Blue Angel eco-labelled products from different production sites he/she shall indicate these production sites with the quantitative weighting in the product information (e.g. site A (60%), site B (30%), site C (10%)), - where there is only one site the dealer shall indicate this single production site.*

3.5.2 Application for the Blue Angel eco-label for a product composed of one or more NON-eco-labelled products

A dealer shall be permitted to market a product under a proprietary trade name the base products of which do not carry an eco-label of their own. It shall be admissible to mix different base products of different manufacturers.

The dealer shall ensure that the manufacturers of the products purchased and mixed by the dealer meet all requirements of paras. 3.1 to 3.4. For this purpose, the dealer shall obtain all compliance verifications from the manufacturers required under these paragraphs and submit them with the application.

Also, the applicant shall adapt the product information according to para. 3.4 to the new product.

Compliance Verification

- *Indication of manufacturers and the base products of the new product applying for an eco-label.*
- *Submission of all compliance verifications according to paras. 3.1 to 3.4 for each base product.*
- *Indication of the quantitative composition of the product applying for the eco-label upon filing of the application by indicating the expected delivery quantities of the base products. The quantitative composition shall be balanced over the term of the contract and reported to RAL gGmbH every two years by submission of the relevant operating reports.*
- *Adaptation of the product information to the newly mixed product by the quantitative weighting of the product values of the base products and recalculation of the mixed product values. In addition to the transportation expenses included in the manufacturer's CO₂ emission value the dealer shall determine the transportation expenses analogous to para. 3.1.1 which result from the transports from the manufacturers' facilities to the dealer's warehouse and add them to the values. The calculation of the values set forth in the product information shall be documented in a comprehensible manner and reviewed and countersigned by an independent and qualified body. If the dealer purchases base*

products from different production sites he/she shall indicate these production sites with the quantitative weighting in the product information (e.g. site A (60%), site B (30%), site C (10%)), - where there is only one site the dealer shall name this single production site.

4 Applicants and Parties Involved

Manufacturers or distributors of final products according to Paragraph 2 shall be eligible for application.

Parties involved in the award process are:

- RAL gGmbH to award the Blue Angel Environmental Label,
- the federal state being home to the applicant's production site,
- Umweltbundesamt (German Environmental Agency) which after the signing of the contract receives all data and documents submitted in applications for the Blue Angel in order to be able to further develop the Basic Award Criteria.

5 Use of the Environmental Label

The use of the Environmental Label by the applicant is governed by a contract on the use of the Environmental Label concluded with RAL gGmbH.

Within the scope of such contract, the applicant undertakes to comply with the requirements under Paragraph 3 while using the Environmental Label.

Contracts on the Use of the Environmental Label are concluded to fix the terms for the certification of products under Paragraph 2. Such contracts shall run until December 31, 2022. They shall be extended by periods of one year each, unless terminated in writing by March 31, 2022 or March 31 of the respective year of extension.

After the expiry of the contract, the Environmental Label may neither be used for labelling nor for advertising purposes. This regulation shall not affect products being still in the market.

The applicant (manufacturer) shall be entitled to apply to RAL gGmbH for an extension of the right to use the ecolabel on the product entitled to the label if it is to be marketed under another brand/trade name and/or other marketing organisations.

The Contract on the Use of the Environmental Label shall specify:

- Applicant (manufacturer/distributor)
- Brand/trade name, product description
- Distributor (label user), i.e. the above-mentioned marketing organisations.

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Appendix A Calculation method for determining a CO₂ emission value for transportation over long distances from wood origins and for sale abroad according to 3.1.1

CO₂ (kg CO₂e/t of cargo) =
 (EF CO₂ truck * km + EF CO₂ railway * km + EF CO₂ oceangoing vessel or barge * km)/1000
 (EF = emission factor according to the table below)

		Unit	Relation	Emission Factor ⁷
1	EF CO ₂ Truck	g CO ₂ e/tkm	EU-27	61
		g CO ₂ e/tkm	Africa	64
		g CO ₂ e/tkm	North America	89
		g CO ₂ e/tkm	Russia	62
2	EF CO ₂ Railway	g CO ₂ e/tkm	EU-27	16
		g CO ₂ e/tkm	Africa	23
		g CO ₂ e/tkm	North America	18
		g CO ₂ e/tkm	Russia	10
3	EF CO ₂ Seagoing Vessel -Bulk Cargo	g CO ₂ e/tkm	Africa -> Europe	7
		g CO ₂ e/tkm	North America -> Europe	7
		g CO ₂ e/tkm	Russia -> Europe	10
4	EF CO ₂ Seagoing Vessel - Container	g CO ₂ e/tkm	Africa -> Europe	15
		g CO ₂ e/tkm	North America -> Europe	13
		g CO ₂ e/tkm	Russia -> Europe	18
5	EF CO ₂ Barge - Bulk Cargo	g CO ₂ e/tkm	EU-27	48

Explanation:

g CO₂e = grams of carbon-dioxide-equivalents: emissions based on the global warming potential of CO₂

tkm = ton kilometre: kilometres driven per ton of freight

⁷ Data source: EcoTransIT-World (www.ecotransit.org; method report)

Form for documenting the CO₂ emission value for transportation over long distances from wood origins and for sale abroad according to para. 3.1.1:

From (Site/Place)	To (Site/Place)	Distance (km) ①	Means of transportation	EF (g CO ₂ e/tkm) ②	CO₂ Emissions (g CO ₂ e/t) = ① x ②
				Total:	

Appendix B Contents of the Operating Report to be submitted upon filing of the application as well as every two years

Re 3.1.1 „General Requirements“

Declaration that only the specified wood classes have been used. Tabular summary for the period under review indicating the following details:

- Quantities of wood supplied (in t)
- Suppliers
- Wood class
- Geographic origin
- Resulting transportation distances or expenses, respectively
- CO₂ emission values calculated therefrom

Please use the form in Appendix A to document the data required for determining the CO₂ emission value. The corresponding delivery notes as well as copies of the product information indicating the calculated CO₂ emission value are to be made available upon request.

Re 3.1.2 „Requirements for chemically untreated wood residues“

Declaration that only the specified wood class has been used.

The tabular summary required under para. 3.1.1. shall be supplemented by the following information on the origin: address of the woodworking companies that supplied the wood residues.

The relevant invoices/delivery notes indicating the wood class shall be made available upon request.

Re 3.1.3 „Requirements for wood from short-rotation plantations“

Declaration that the area-related requirements have been met.

The tabular summary required under para. 3.1.1. shall be supplemented by information on the plantation area and indication of the relevant certificate and/or certification by an accredited environmental verifier. The certificates and/or certifications shall be enclosed with the operating report.

Re 3.1.4 „Requirements for wood from continuously forested areas“

Declaration that the requirements have been met.

The tabular summary required under para. 3.1.1. shall be supplemented by information on the geographic origin (area) and indication of the relevant certificate including the decisive excerpt from the catalogue of criteria of the certifying institutions showing that especially the four criteria under para. 3.1.4 are met. The certificates and/or the alternative compliance verification by certification by an environmental verifier shall be enclosed with the operating report.

Re 3.2.1 „Drying of wood fuels“

Declaration that the heat used for drying comes from specified renewable energy sources. If the occasion arises: renewed submission of the supply/purchase agreements or operation documents if the renewable energies used have changed since the time of application.

Declaration that the drying efficiency requirements have been met.

Tabular summary for the period under review providing the following details:

- Type of renewable energy
- Amount of heat energy used (in kWh)
- Amount of evaporated water (in kg)
- Either weight of input and output material or
- water content (moisture) of input and output material

The amounts of heat used shall be compared in the tabular summary with the amounts of heat pursuant to the supply or purchase agreements or the operation documents on self-generated heat.

Re 3.3.1 „Product quality of technically dried wood chips“

Declaration that the product quality requirements have been met and submission of an external expert report.

Tabular summary for the period under review regarding the monthly measurements of:

- Water content ($\leq 15\%$) or moisture ($\leq 18\%$)
- Calorific value (≥ 4 kWh/kg)
- Ash content ($\leq 2.5\%$)
- Bulk density (coniferous wood < 150 kg/m³; broadleaf wood < 200 kg/m³)
- Particle size according to Table 1 E DIN EN 14961-4:2010-07

Re 3.3.2 „Product quality of wood pellets“

Declaration that the product quality requirements have been met and

a) either submission of a certificate according to ENplus for the ENplus A1 product quality or according to DINplus

or

b) submission of an external expert report and

tabular summary for the period under review regarding the monthly measurements of the parameters listed in Table 1 for the A1 property class according to E DIN EN 14961-2:2010-07 (diameter, water content, ash content, mechanical strength, fines, additives, calorific value, bulk density, nitrogen, sulphur, chlorine, arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc; informative: indication of the ash melting behaviour).