Irish Standard
I.S. EN 14961-4:2011

Solid biofuels - Fuel specifications and classes - Part 4: Wood chips for non-industrial use

I.S. EN 14961-4:2011

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Solid biofuels - Fuel specifications and classes - Part 4: Wood chips for non-industrial use

Biocombustibles solides - Classes et spécifications des combustibles - Partie 4: Plaquettes de bois à usage non industriel

Feste Biobrennstoffe - Brennstoffspezifikationen und -klassen - Teil 4: Holzhackschnitzel für nichtindustrielle Verwendung

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 14961-4:2011) has been prepared by Technical Committee CEN/TC 335 “Solid biofuels”, the secretariat of which is held by SIS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2011, and conflicting national standards shall be withdrawn at the latest by December 2011.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

The European standard series EN 14961 *Solid biofuels — Fuel specifications and classes* are provided as general requirements and additional product standards. Additional product standards may extend this series over time.

EN 14961 consists of the following parts, under the title *Solid biofuels — Fuel specifications and classes*:

— *Part 1: General requirements*;

— *Part 2: Wood pellets for non-industrial use*;

— *Part 3: Wood briquettes for non-industrial use*;

— *Part 4: Wood chips for non-industrial use*;

— *Part 5: Firewood for non-industrial use*;

— *Part 6: Non woody pellets for non-industrial use (under development)*.

Although these product standards may be obtained separately, they require a general understanding of the standards based on and supporting EN 14961-1. It is recommended to obtain and use EN 14961-1 in conjunction with these standards.

NOTE In these product standards, non-industrial use means fuel intended to be used in smaller appliances, such as in households and small commercial and public sector buildings.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

This European Standard for "Fuel Specifications and Classes — Part 4: Wood chips for non-industrial use" has been produced by CEN/TC 335 Solid Biofuels Working group "Fuel Specifications, Classes and Quality Assurance".

The objective of this European Standard is to provide unambiguous and clear classification principles for solid biofuels, to serve as a tool to enable efficient trading of biofuels and to enable good understanding between seller and buyer as well as a tool for communication with equipment manufacturers. It will also facilitate authority permission procedures and reporting.

This European Standard is made to support the use of wood chips in non-industrial situations and specifically for the domestic/householder markets and smaller commercial boiler situations, where sensitivity to the fuel quality can cause major issues. These consumers need special consideration for the following reasons:

- small-scale equipment does not usually have advanced controls and flue gas cleaning;
- it is not generally managed by professional heating engineers;
- they are often located in living and populated districts.

NOTE Wood chips produced according to this European Standard can be used in boilers tested according to EN 303-5 ($\leq$ 500 kW_{th}).

1 Scope

This European Standard determines the fuel quality classes and specifications for non-industrial wood chips. This European Standard covers only wood chip produced from the following raw materials (see EN 14961-1:2010, Table 1):

- 1.1 Forest, plantation and other virgin wood;
- 1.2 By-products and residues from wood processing industry;
- 1.3 Used wood.

NOTE For the avoidance of doubt, demolition wood is not included in the scope of this European Standard. Demolition wood is “used wood arising from demolition of buildings or civil engineering installations” (EN 14588:2010, 4.52).

2 Normative references

The following referenced documents are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 14588:2010, *Solid biofuels — Terminology, definitions and descriptions*

EN 14774-1, *Solid biofuels — Determination of moisture content — Oven dry method — Part 1: Total moisture — Reference method*

EN 14774-2, *Solid biofuels — Determination of moisture content — Oven dry method — Part 2: Total moisture — Simplified method*

EN 14775, *Solid biofuels — Determination of ash content*

EN 14918, *Solid biofuels — Determination of calorific value*

EN 14961-1:2010, *Solid biofuels — Fuel specifications and classes — Part 1: General requirements*

EN 15103, *Solid biofuels — Determination of bulk density*

EN 15104, *Solid biofuels — Determination of total content of carbon, hydrogen and nitrogen — Instrumental methods*

EN 15149-1, *Solid biofuels — Determination of particle size distribution — Part 1: Oscillating screen method using sieve apertures of 1 mm and above*

prEN 15234-4, *Solid biofuels — Fuel quality assurance — Part 4. Wood chips for non-industrial use*

EN 15289, *Solid biofuels — Determination of total content of sulphur and chlorine*

EN 15297, *Solid biofuels — Solid biofuels - Determination of minor elements - As, Cd, Co, Cr, Cu, Hg, Mn, Mo, Ni, Pb, Sb, V and Zn*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 14588:2010 and the following apply.

3.1
wood chips
chipped *woody biomass* in the form of pieces with a defined *particle size* produced by mechanical treatment with sharp tools such as knives

NOTE Wood chips have a subrectangular shape with a typical length of 5 mm to 50 mm and a low thickness compared to other dimensions.

3.2
chemical treatment
any treatment with chemicals other than air, water or heat

NOTE Examples of chemical treatment are listed in informative Annex C of EN 14961-1:2010.

3.3
contamination
make impure by exposure to or addition of a poisonous or polluting substance to a fuel

4 Symbols and abbreviations

The symbols and abbreviations used in this European Standard comply with the SI system of units as far as possible.

d dry (dry basis)

ar as received

w-% weight-percentage

A designation for ash content A_d [w-%, dry basis] 1)

BD designation for bulk density as received [kg/m^3] 1)

P designation for particle size distribution 1)

M designation for moisture content as received on wet basis, M_{ar} [w-%] 1)

Q designation for net calorific value as received, $q_{p,net,ar}$ [MJ/kg or kWh/kg or MWh/t] at constant pressure 1)

NOTE 1 MJ/kg equals 0,277 8 kWh/kg (1 kWh/kg equals 1 MWh/t and 1 MWh/t is 3,6 MJ/kg). 1 g/cm^3 equals 1 kg/dm^3.

5 Specification of wood chips for non-industrial use

Specification of the wood chips is stated in accordance with Table 1 and Table 2. The sampling and analysis of the properties shall be carried out in accordance with the methods mentioned in the normative references.

Property classes A1 and A2 represent virgin woods and chemically untreated wood residues. A1 represents fuels with lower ash content indicating no or little bark, and lower moisture content, while class A2 has slightly higher ash content and/or moisture content. B1 extended the origin and source of class A to include other material, such as, short rotation coppice, wood from gardens and plantation, etc. and chemically untreated

1) Designation symbols are used in combination with a number to specify property levels in Table1. For designation of chemical properties chemical symbols like S (sulphur), Cl (chlorine), N (nitrogen) are used and the value is added at the end of the symbol.

industrial by-products and residues. Property class B2 also includes chemically treated industrial by-products and residues and used wood.

Chemically treated wood residues, fibres and wood constituents from wood processing (1.2.2) and used wood (1.3) are included in property class B2 as long as they do not contain heavy metals or halogenated organic compounds as a result of treatment with wood preservatives or coating. In case of raw materials belonging to 1.2.2 and 1.3.2 (chemically treated wood in EN 14961-1:2010, Table 1) the actual origin of the raw material shall be closer described, e.g. 1.2.2, Residues from laminated wood production.

Chemical treatment before harvesting of biomass does not need to be stated. Where any operator in the fuel supply chain has reason to suspect serious contamination of land (e.g. coal slag heaps) or if planting has been used specifically for the sequestration of chemicals or woody biomass, is fertilized by sewage sludge (issued from waste water treatment or chemical process), fuel analysis should be carried out to identify chemical impurities such as halogenated organic compounds or heavy metals.

If the properties being specified are sufficiently known through information about the origin and handling (or preparation method combined with experience) then physical/chemical analysis may not be needed.

To ensure resources are used appropriately and the declaration is accurate, use the most appropriate measure below:

a) Using typical values, e.g. laid down in Annex B on EN 14961-1:2010, or obtained by experience;

b) Calculation of properties, e.g. by using typical values and considering documented specific values;

c) Carrying out of analysis:

    1) With simplified methods if available,

    2) With reference methods.

The responsibility of the producer or supplier to provide correct and accurate information is exactly the same whether laboratory analysis is performed or not. Typical values do not release the producer or supplier from providing accurate and reliable information.

The threshold values (N, S, Cl and minor elements) for grade A1 and A2 are not required as these classes of fuel are chemically untreated wood residues or from virgin material, which has been grown on uncontaminated land and therefore the likelihood of contamination is very low.

In Table 1 particle size classes are shown and in the informative Annex A bulk densities for different moisture content ranges are given.

The quality shall be given in the product declaration (prEN 15234-4).