Natural Resources Canada | Ressources naturelles Canada

Solid Biofuels Bulletin No. 3

CAN/CSA-ISO SOLID BIOFUELS STANDARDS

This is the third in a series of bulletins, introducing the CAN/CSA-ISO series of standards on solid biofuels and summarizes details related to fuel classifications, specifications and test methods.

CAN/CSA-ISO Solid Biofuels Standards at a Glance

The CAN/CSA-ISO Solid Biofuels Standards are voluntary standards developed for residential, commercial and industrial energy applications. Intended stakeholders include:

- Solid biomass fuel producers
- End users and consumers
- Equipment manufacturers
- Testing laboratories
- Regulators.

There are numerous benefits to adhering to these standards. Market adoption of the standards will:

- Facilitate domestic and international trade
- Enhance uptake of new technologies
- Promote public safety and contribute to a more sustainable industry
- Minimize emissions of pollutants
- Facilitate quality assessment of solid biomass resources.

The series of CAN/CSA-ISO Solid Biofuels Standards published in 2015 were developed to standardize the following: terminology; specifications and classes; and test methods for raw and processed biofuel materials originating from forestry, arboriculture, agriculture, horticulture and aquaculture.

Natural Resources Canada's Solid Biofuels Bulletins uses the term "biomass fuels" interchangeably with "biofuels". The CAN/CSA-ISO Standards use the term "biofuels" which is retained in these bulletins when referencing specific standards' titles.

Development of Solid Biofuels Standards

The International Organisation for Standardization (ISO) established a Technical Committee[2] (TC238) responsible for developing solid biofuels standards at the international level.

- ISO/TC238 is comprised of 24 voting countries and 14 observing countries. Canada is a voting member.
- ISO/TC238 plans to publish 55-60 standards on solid biofuels.

- Canadian Standard Association (CSA) Group has been accredited by the Standards Council of Canada to manage a harmonized Standards Mirror Committee (SMC) on ISO/TC238 standards. This is to respond to market needs outlined by users (predominantly the biomass fuel industry and government agencies).
- The SMC is a balanced committee, comprised of different stakeholders from four main categories: producers, users, regulatory authorities, and general interest.
- CSA Group has adopted several ISO Solid Biofuels Standards (see Table 1) and is in the process of adopting more ISO/TC238 standards in the Canadian context.

CSA Group

Where to get Solid Biofuels Standards?

Purchase CAN/CSA-ISO Solid Biofuels Standards at: shop.csa.ca

Table 1. CSA Group has adopted and published Standards as the first series of solid biofuels standards, under the general title of Solid biofuels — Fuel specifications and classes

Standard No.	Standard Title	Scope of the Standard
CSA-ISO 16559	Terminology, definitions and descriptions	This Standard outlines the terminology and definitions for solid biomass fuels.
CSA-ISO 17225-1	Part 1: General requirements	The fuel quality classes and specifications for solid biomass fuels.
CSA-ISO 17225-2	Part 2: Graded wood pellets	The fuel quality classes and specifications of graded wood pellets for non-industrial and industrial use.
CSA-ISO 17225-3	Part 3: Graded wood briquettes	The fuel quality classes and specifications of graded wood briquettes.
CSA-ISO 17225-4	Part 4: Graded wood chips	The fuel quality classes and specifications of graded wood chips.
CSA-ISO 17225-5	Part 5: Graded firewood	The fuel quality classes and specifications of graded firewood.
CSA-ISO 17225-6	Part 6: Graded non-woody pellets	The fuel quality classes and specifications of graded non-woody pellets.
CSA-ISO 17225-7	Part 7: Graded non-woody briquettes	The fuel quality classes and specifications of graded non-woody briquettes.
CSA-ISO 18134-1	Determination of moisture content – Oven dry method – Part 1: Total moisture – Reference method	This document describes the method of determining the total moisture content of a test sample of solid biomass fuels by drying in an oven, and should be used when high precision of the determination of moisture content is necessary. The method described in this document is applicable to all solid biomass fuels.
CSA-ISO 18134-2	Determination of moisture content – Oven dry method – Part 2: Total moisture – Simplified method	This document describes the method of determining the total moisture content of a test sample of solid biomass fuels by drying in an oven and may be used when the highest precision is not needed such as for routine production control on site. The method described in this document is applicable to all solid biomass fuels.
CSA-ISO18134-3	Determination of moisture content – Oven dry method – Part 3: Moisture in general analysis sample	This part of ISO 18134 describes the method of determining the moisture in the analysis test sample by drying in an oven. It is intended to be used for general analysis samples in accordance with EN 14780. The method described in this part of ISO 18134 is applicable to all solid biofuels. The moisture content of solid biofuels (as received) is always reported based on the total mass of the test sample (wet basis).
CSA-ISO 16948	Determination of total content of carbon, hydrogen and nitrogen	This Standard describes a method for the determination of total carbon, hydrogen and nitrogen contents in solid biomass fuels.

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Standard No.	Standard Title	Scope of the Standard
CSA-ISO 16994	Determination of total content of sulfur and chlorine	This Standard describes methods for the determination of the total sulfur and total chlorine content in solid biomass fuels.
CSA-ISO 16968	Determination of minor elements	This Standard describes methods for the determination of the content of minor elements arsenic, cadmium, cobalt, chromium, copper, mercury, manganese, molybdenum, nickel, lead, antimony, vanadium, and zinc in all solid biomass fuels. Further, it describes methods for sample decomposition and suggests suitable instrumental methods for the determination of the elements of interest in the digests. The determination of other elements such as selenium, tin, and thallium is also possible with the methods described in this Standard.
CSA-ISO 16993	Conversion of analytical results from one basis to another	This Standard provides formulae which allow analytical data relating to solid biomass fuels to be expressed on the different bases in common use.
CSA-ISO 16995	Determination of the water soluble chloride, sodium and potassium content	This Standard describes a method for the determination of the water soluble chloride, sodium and potassium content in solid biomass fuels by extraction with water in a closed container, and their subsequent quantification by different analytical techniques.
CSA-ISO 16967	Solid biofuels—Determination of major elements—Al, Ca, Fe, Mg, P, K, Si, Na and Ti	This International Standard describes methods for the determination of major elements of solid biofuels respectively of their ashes, which are Al, Ca, Fe, Mg, P, K, Si, Na, Ti. The determination of other elements such as barium (Ba) and manganese (Mn) is also possible with the methods described in this International Standard. This International Standard includes two parts: Part A describes the direct determination on the fuel (this method is also applicable for sulfur and minor elements) Part B provides a method of determination on a prepared 550 °C ash.

The complete list of standards under the direct responsibility of ISO/TC238:

For the published standards visit:
www.iso.org/iso/home/store/catalogue_tc/catalogue_tc_browse.htm?commid=554401&published=on

For the standards 'under development' visit:
www.iso.org/iso/home/store/catalogue_tc/catalogue_tc_browse.htm?commid=554401&development=on

References & Links

1. Natural Resources Canada – www.nrcan.gc.ca for the Solid Biofuels Bulletins Series.
2. ISO Technical Committee 238 Solid Biofuels www.iso.org/iso/iso_technical_committee%3Fcommid%3D554401

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