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## Solid recovered fuels — Vocabulary

*Combustibles solides de récupération — Vocabulaire*

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 300, *Solid recovered fuels*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 343, *Solid Recovered Fuels*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

The terminology, definitions and descriptions included in this document are those needed to understand the scope of ISO/TC 300, *Solid recovered fuels*, and those that appear in two or more standards of ISO/TC 300.

Where a term is used in only one standard, the term will be defined in the individual standard.

Due to the development cycle of other standards of ISO/TC 300, *Solid recovered fuels*, there may be instances of the terms not following the above rule. Where possible, this document tries to follow the rules stated, however, users should check terms and the understanding of terms in other standards as well.

Following the ISO rules, this document does not include common and generic terms.

[Annex A](#) provides a list of terms grouped by sub-sections to enable the user to find terms more quickly.

Where there are several synonyms that can be used, the preferred one is written first.

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# Solid recovered fuels — Vocabulary

## 1 Scope

This document defines terms for solid recovered fuels to enable the user to understand the scope of the work of ISO/TC 300. Where a term and definition are required in a single standard, the term and definition will be referenced in that standard.

Vocabulary boundaries are described in [Figure 1](#).

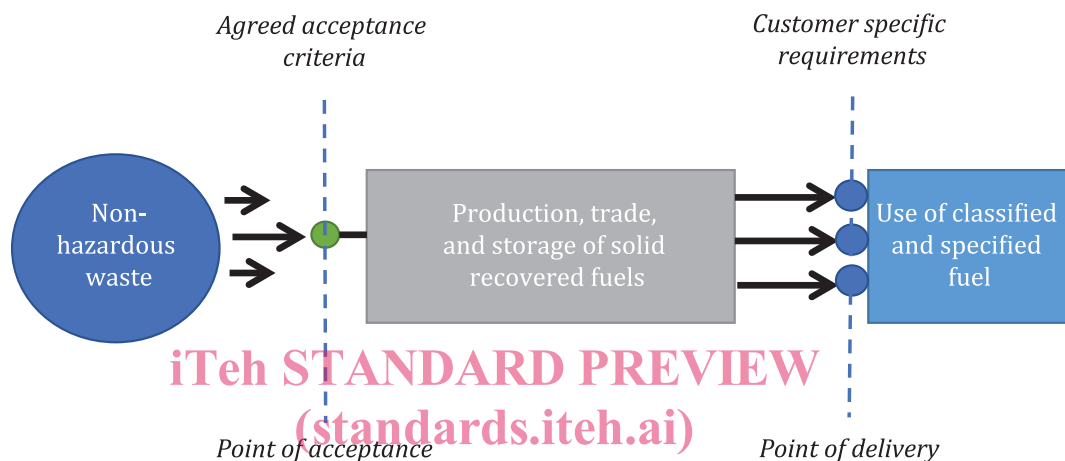


Figure 1 — Vocabulary boundaries for solid recovered fuels

NOTE Solid biofuels are covered by the scope of ISO/TC 238.

## 2 Normative references

There are no normative references in this document.

## 3 Terms and definitions

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

### 3.1

#### analysis sample

sample (3.63) taken specifically for the purpose of determining specified parameters

### 3.2

#### as received

#### ar

calculation basis for material at delivery to the end user

### 3.3

#### ash

#### ash content on dry basis

#### total ash

A

mass of inorganic residue remaining after ignition of a fuel under specified conditions, also includes *removed ash contributors* (3.62)

Note 1 to entry: This is expressed as mass fraction in per cent of the *dry matter* (3.22) in the fuel.

Note 2 to entry: Depending on the combustion efficiency, the ash may contain combustibles.

Note 3 to entry: If a complete combustion is realized, ash contains only inorganic, non-combustible components.

[SOURCE: ISO 16559:2014, 4.13, modified — “ignition” has replaced “combustion”, details of the unit have been moved to a new Note 1 to entry, “also includes removed ash contributors” has been added, and the old Note 1 to entry has been removed.]

### 3.4

#### ash fusibility

#### ash melting behaviour

characteristic physical state of the ash obtained by heating under specific conditions

Note 1 to entry: Ash fusibility is determined under either oxidizing or reducing conditions.

Note 2 to entry: See also *ash sphere temperature* (3.5).

[SOURCE: ISO 16559:2014, 4.16, modified — In Note 2 to entry, “ash shrinkage temperature” has been changed to “ash sphere temperature”.] (standards.iteh.ai)

### 3.5

#### ash sphere temperature

temperature where the height of a pyramidal and truncated-cone ash test piece is equal to the width of the base, or the edges of cubical or cylindrical ash test pieces are completely round with the height remaining unchanged

Note 1 to entry: Adapted from ISO 540:2008, 3.2.

### 3.6

#### bale

material which has been compressed and bound to keep its shape and density

### 3.7

#### biomass

material of biological origin excluding material embedded in geological formations and/or fossilized

[SOURCE: ISO 16559:2014, 4.32, modified — Notes 1 and 2 to entry have been removed.]

### 3.8

#### bridging

#### arching

tendency of particles to form a stable bridge across an opening and which restricts flow

### 3.9

#### bulk density

$\rho$

mass of a portion (i.e. a large quantity of particulate material) of a solid fuel divided by the volume of the container which is filled by that portion under specific conditions

[SOURCE: ISO 16559:2014, 4.40]



### 3.10 calorific value heating value

quantity of heat produced by the complete combustion, at a constant pressure equal to 1 013,25 mbar, of a unit volume or mass of gas, the constituents of the combustible mixture being taken at reference conditions and the products of combustion being brought back to the same conditions

[SOURCE: EN 437:2018, modified — The second paragraph and list have been removed.]

### 3.11 chips

chipped material with a typical length 5 mm to 50 mm commonly in the form of pieces with a defined particle size produced by mechanical treatment with sharp tools such as knives

### 3.12 classification of solid recovered fuels

categorizing of *solid recovered fuels* (3.75) into classes focusing on the key properties (net calorific value, chlorine and mercury) that are defined by boundary values

### 3.13 component

part or element of a larger whole of a *solid recovered fuel* (3.75) or a general material

### 3.14 composition

break down of *solid recovered fuels* (3.75) by types of *components* (3.13)

Note 1 to entry: This is typically expressed as a percentage of the mass fraction component in the fuel on an *as received* (3.2) basis (% in mass ar).

Note 2 to entry: Examples of components: wood, paper, board, textiles, plastics, rubber.

### 3.15 crushing

mechanical reduction of particle size by exerting mainly blunt deforming forces to a material

### 3.16 densified solid recovered fuel

*solid recovered fuel* (3.75) made by mechanically compressing loose material to mould it into a specific size and shape

Note 1 to entry: Examples are pellets and briquettes.

Note 2 to entry: The process can be aided by adding heat or binders.

### 3.17 distribution factor

correction factor for the *particle size distribution* (3.53) of the material to be sampled

### 3.18 drop flow

material flow falling over an overflow point or a drop point in a transport system

### 3.19 drying

process of removing water from a material

Note 1 to entry: For the purpose of test sample preparation, it may be useful to remove just the amount of water that could interfere with other processes involved (e.g. during *crushing* (3.15) or *milling* (3.42)). In order to minimise the alteration of the solid fuel during test portion preparation, removing the total amount of water present is not necessarily needed.

**3.20**  
**dry**  
**dry basis**

*d*

calculation basis in which the material is considered free from *moisture* (3.46)

[SOURCE: ISO 16559:2014, 4.72, modified — “Solid biofuel” has been replaced with “material” and the notes to entry have been removed.]

**3.21**  
**dry ash free**  
**dry ash free basis**  
**daf**

calculation basis in which the material is considered free from *moisture* (3.46) and *ash* (3.3)

Note 1 to entry: The abbreviation of dry ash free is daf.

[SOURCE: ISO 16559:2014, 4.71, modified — “Solid biofuel” has been replaced by “material” and “inorganic matter” by “ash”.]

**3.22**  
**dry matter**

material remaining after removal of *moisture* (3.46) under specific conditions

[SOURCE: ISO 16559:2014, 4.73]

**3.23**  
**duplicate sample**

two *samples* (3.63) taken under comparable conditions

Note 1 to entry: This selection may be accomplished by taking units adjacent in time or space.

**3.24**  
**effective increment size**

*minimum sample size* (3.44) divided by the number of *increments* (3.39)

**3.25**  
**effective sample size**

*effective increment size* (3.24) multiplied by the number of *increments* (3.39)

**3.26**  
**electromagnetic separation of non-ferrous metals**

separation of non-ferrous metals by inducing temporary magnetic forces

Note 1 to entry: This term is also known as eddy current separation.

**3.27**  
**energy conversion**

use of the *calorific value* (3.10) of the *solid recovered fuel* (3.75) for *energy purposes* (3.29), alone or with other fuels

Note 1 to entry: Solid recovered fuels may be an intermediary energy carrier and used directly or indirectly for the energy conversion such as in multi-stage production and use of synthetic gas. Examples of energy conversion processes are incineration, co-incineration, combustion, co-combustion, gasification and pyrolysis, in which energy is used for supplying heat, cooling and/or electric power.

**3.28**  
**energy density**

*E*

ratio of net energy content and bulk volume

Note 1 to entry: The energy density is calculated by dividing the net calorific value by the *bulk density* (3.9).

[SOURCE: ISO 16559:2014, 4.79, modified — Note 1 to entry has been changed.]

### 3.29

#### energy purposes

use of the *calorific value* (3.10) within industrial processes or for the supply of heat and electrical power

Note 1 to entry: For industrial processes, the use of solid recovered fuel may contribute to the energy source within the process of producing specific materials, such as cement clinker, bricks and lime.

### 3.30

#### finer

small sized particles in fuel below a certain pre-defined size, as agreed by the *parties* (3.54)

Note 1 to entry: Typically, finer are measured through sieving. Small sized particles are typically <10 mm, however, the upper size of the finer may be smaller or larger.

### 3.31

#### fluff

loose material of low bulk density

Note 1 to entry: Usually in the range of a few centimetres.

### 3.32

#### fraction separation

process of dividing *components* (3.13), particles or layers if homogenisation of the *sample* (3.63) is practically not applicable and/or the analysis of different fractions or phases are appropriate

### 3.33

#### fundamental error

only error that remains when the sampling operation is “perfect”, i.e. when all parts of the *sample* (3.63) are obtained in a probabilistic manner and each part is independent

Note 1 to entry: The fundamental error results when discrete units of the material to be sampled have different compositions with respect to the property of interest.

### 3.34

#### gross calorific value

#### GCV

calorific value where the water produced by combustion is assumed to be condensed

### 3.35

#### hazardous waste

*waste* (3.89), which has properties that may be harmful to human health or the environment

EXAMPLE Hazardous materials are in themselves or have characteristics, which are deemed to be hazardous. Discarded batteries can be considered solid hazardous waste due to the explosive nature of the products; matches, activated carbon and alkali metals are hazardous due to their flammable characteristics; washing powder is a poisonous solid if ingested enough to cause acute poisoning. Handling or treatment of a waste that is not hazardous waste but where the handling or treatment may cause danger or lead to danger, does not make the waste hazardous waste.

Note 1 to entry: These wastes are categorized by waste streams and hazardous characteristics. The hazardous characteristics relevant to solid wastes are: explosives substances; flammable solids; wastes liable to spontaneous combustion; wastes which, in contact with water emit flammable gases; wastes which oxidize; organic peroxides; toxic and infectious substances.

Note 2 to entry: Further identification of the waste’s status can be determined using the Annex I and Annex III tables of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal.

Note 3 to entry: Additional categories of hazardous waste to those in the Basel Convention Annex I and Annex III may be established by stakeholders to the agreement or at a national level.