The first international
certification for wood chips.

# GoodChips® Standard

## *Requirements for GoodChips® certified entities*

GOODCHIPS® ST 1001:2018

**Name of the Document:** Requirements for GoodChips® certified entities

**Title of the Document:** GoodChips® ST 1001:2018

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# Foreword

Bioenergy Europe is the voice of European bioenergy. It aims to develop a sustainable bioenergy market based on fair business conditions. Founded in 1990, Bioenergy Europe is a non-profit, Brussels-based international organisation bringing together more than 40 associations and 90 companies, as well as academia and research institutes from across Europe.

Bioenergy Europe is the governing body of the GoodChips® scheme and owner of the GoodChips® trademark. Bioenergy Europe develops requirements of the GoodChips® certification scheme and through the GoodChips® International Management it lists Certification and Testing bodies that are allowed to provide the GoodChips® certification, and licenses certified companies to use the GoodChips® logo.

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# Introduction

The GoodChips® quality certification scheme provides harmonisation of wood chips and hog fuel production and trade. It is a third-party certification, where an impartial Certification Body ensures that the certified wood chips and hog fuel meet the GoodChips® quality requirements.

This document specifies requirements for companies producing, processing and trading wood chips and hog fuel and that in general are performing activities that might affect the quality of the final product. Observance of these requirements is intended to grant companies the right to use the GoodChips® logo.

The conformity of companies with the requirements of this document is assessed and confirmed by Certification Bodies, listed by GoodChips® International Management.

The term "shall" is used throughout this document to indicate mandatory requirements. The term "should" is used to indicate guidance/recommendation that, although not mandatory, is provided as a recognised mean of meeting the requirements. The term "may" is used to indicate permission.

# 1. Scope

1.1. This document provides requirements for companies certified under the GoodChips® scheme or that apply to get the GoodChips® certification.

1.2. Compliance with the requirements of this document is subject to a third-party conformity assessment according to GoodChips ST 1002 Requirements for bodies providing GoodChips® certification.

# 2. Normative references

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

- EN 15234-1, Solid biofuels. Fuel quality assurance. General requirements;
- EN 15234-4, Solid biofuels. Fuel quality assurance. Wood chips for non-industrial use;
- GoodChips® ST 1002, Requirements for bodies providing GoodChips® certification;
- GoodChips® ST 1003, Requirements for the use of the GoodChips® logo and name;
- ISO 14780, Solid biofuels -- Sample preparation;
- ISO 16559, Solid biofuels -- Terminology, definitions, and descriptions;
- ISO 16948, Solid biofuels -- Determination of total content of carbon, hydrogen and nitrogen;
- ISO 16968, Solid biofuels -- Determination of minor elements;
- ISO 16994, Solid biofuels -- Determination of total content of sulfur and chlorine;
- ISO 17225-1, Solid biofuels -- Fuel specifications and classes -- Part 1: General requirements;
- ISO 17827-1, Solid biofuels -- Determination of particle size distribution for uncompressed fuels -- Part 1: Oscillating screen method using sieves with apertures of 3,15 mm and above;
- ISO 18122, Solid biofuels -- Determination of ash content;
- ISO 18125, Solid biofuels -- Determination of calorific value;
- ISO 18134-1, Solid biofuels -- Determination of moisture content -- Oven dry method -- Part 1: Total moisture -- Reference method;
- ISO 18134-2, Solid biofuels -- Determination of moisture content -- Oven dry method -- Part 2: Total moisture -- Simplified method;
- ISO 9001, Quality management systems – Requirements.

2.2. All the GoodChips® documentation is available at https://goodchips.eu/resources/technical-documentation.html.

# 3. Definitions

3.1. For the purposes of this document, the terms and definitions given in ISO 16559 and in ISO 17225-1 apply.

3.2. The following definitions apply as well:

3.2.1. Certification Body
Third-party body assessing the conformity of companies with the GoodChips® requirements.

3.2.2. Certification period
Period corresponding to the duration of the GoodChips® certificate (i.e. three years).

3.2.3. Company
GoodChips® certified company or company applying to be certified.

3.2.4. Final product
Wood chips or hog fuel sold according to the quality class and particle size declared by the company.

3.2.5. GoodChips® International Management
Executive Body of the GoodChips® scheme. It is the sole GoodChips® licensor, and the only body entitled to grant companies the right to use the GoodChips® logo and name on behalf of Bioenergy Europe.

3.2.6. Hog fuel
Wood that has pieces of varying size and shape, produced by crushing with blunt tools such as rollers, hammers, or flails.

3.2.7. Non-conforming product
Product deviating from the requirements of this Standard.

3.2.8. Quality Management System
Management system to direct and control an organisation with regard to quality.

3.2.9. Quality Manager
Person in charge of supervising the activities related to the final product and its related activities and ultimately responsible for the final product.

3.2.10. 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.

## 4. Wood chips quality requirements

4.1. The final product shall meet the technical specifications of the corresponding quality class defined in table I.

4.2. The final product shall meet one of the main fraction classes (P classes) and the fine fraction classes (F classes) showed in table II.

4.3. Compliance of the final product with the requirements of this Standard shall be verified through analyses carried out on a sample taken by the inspector during the on-site inspection[1].

[1] The schedule of inspections is included in Annex D of GoodChips® ST 1002.

## *Table I*
## *Wood chips technical specifications related to the quality classes covered by the scope of GoodChips® certification*

| | Property class<br>Analysis method (last version) | Unit | A | | | | B | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 extra-dry | 1 | 2 | 3 | 1 | 2 | 3 | 4 |
| Normative | **Origin and source** [a] | | **Virgin wood** [b]<br>• Without stumps, roots and bark [c]<br>• Without segregated wood from gardens, parks, roadside maintenance, vineyards, fruit orchards and driftwood from freshwater<br>**Chemically untreated wood residues and by-products from wood processing industry**<br>• Without bark | | | | **Virgin wood** [d]<br>• without bark<br>**Chemically untreated wood residues an by-products from wood processing industry**<br>• without bark | **Virgin wood**<br>**Chemically untreated wood residues an by-products from wood processing industry**<br>**Segregated wood from gardens, parks, roadside maintenance, vineyards, fruit orchards and driftwood from freshwater** | **Chemically untreated wood residues an by-products from wood processing industry**<br>**Chemically untreated used wood** [e] | **Chemically treated uncontaminated wood residues, by-products, fibres and wood constituents from wood processing industry** [f] |
| | **Particle size, P**<br>ISO 17827-1 | mm | P31S or P45S (Table II) | | from P31S to P63 | | To be selected from Table II | | | |
| | **Fine fraction, F**<br>ISO 17827-1 | (<3,15 mm w-%) | F05 or F10 (Table II) | | from F05 to F20 (Table II) | | To be selected from Table II | | | |
| | **Moisture, M**<br>ISO 18134-1, ISO 18134-2 | w-% | M10 ≤ 10 | M25 ≤ 25 | M35 ≤ 35 | M50 ≤ 50 | M60 ≤ 60<br>M30 ≤ 30 | | | |
| | **Ash, A**<br>ISO 18122 | w-% dry | A1.0 ≤ 1.0 | A1.0 ≤ 1.0 | A1.5 ≤ 1.5 | A1.5 ≤ 1.5 | A3.0 ≤ 3.0 | A7.0 ≤ 7.0 | A4.0 ≤ 4.0 | A5.0 ≤ 5.0 |
| | **Nitrogen, N**<br>ISO 16948 | w-% dry | Not to be specified [g]<br>(Typical values are given in Annex B of ISO 17225-1, tables B.1 and B.3) | | | | N1.0 ≤ 1.0 | N1.0 ≤ 1.0 | N1.5 ≤ 1.5 | N1.0 ≤ 1.0 |
| | **Sulfur, S**<br>ISO 16994 | w-% dry | | | | | S0.1 ≤ 0.1 | S0.1 ≤ 0.1 | S0.1 ≤ 0.1 | S0.1 ≤ 0.1 |
| | **Chlorine, Cl**<br>ISO 16994 | w-% dry | | | | | Cl0.05 ≤ 0.05 | Cl0.05 ≤ 0.05 | Cl0.1 ≤ 0.1 | Cl0.1 ≤ 0.1 |
| | **Arsenic, As**<br>ISO 16968 | mg/kg | | | | | ≤ 1 | ≤ 1 | ≤ 4 | ≤ 4 |
| | **Cadmium, Cd**<br>ISO 16968 | mg/kg dry | | | | | ≤ 2.0 | ≤ 2.0 | ≤ 2.0 | ≤ 2.0 |
| | **Chromium, Cr**<br>ISO 16968 | mg/kg dry | | | | | ≤ 20 | ≤ 20 | ≤ 30 | ≤ 20 |

[a] Blends of different classes of origin and source inside each quality class are allowed

[b] Excluding Short rotation coppice, if reason to suspect contamination of land or if planting has been used for the sequestration of chemicals or growing trees have been fertilized by sewage sludge (issued from waste water treatment or chemical process)

[c] To be considered as bark obtained from debarking operations;

[d] Excluding Segregated wood from gardens, parks, roadside maintenance, vineyards, fruit orchards and driftwood from freshwater

[e] Post-consumer/post-society wood; natural or merely mechanically processed wood, contaminated only to an insignificant extent during use by substances that are not normally found in wood in its natural state (for example pallets, transport cases, boxes, wood packages, cable reels, construction wood)

[f] Chemically treated wood by-products and residues from wood processing industry is allowed in B4 as long as it does not contain heavy metals or halogenated organic compounds as a result of treatment with wood preservatives or coating

[g] The threshold values (N, S, Cl and minor elements) for A classes are not required as these classes of fuels are chemically untreated wood residues or from virgin material, which has been grown in uncontaminated land and therefore the likelihood of contamination is very low

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Copper, Cu** ISO 16968 | mg/kg | Not to be specified [g] (Typical values are given in Annex B of ISO 17225-1, tables B.1 and B.3) | ≤ 30 | ≤ 30 | ≤ 50 | ≤ 30 |
| | **Lead, Pb** ISO 16968 | mg/kg | | ≤ 20 | ≤ 20 | ≤ 30 | ≤ 20 |
| | **Mercury, Hg** ISO 16968 | mg/kg | | ≤ 0.1 | ≤ 0.1 | ≤ 0.1 | ≤ 0.1 |
| | **Nickel, Ni** ISO 16968 | mg/kg | | ≤ 10 | ≤ 10 | ≤ 10 | ≤ 10 |
| | **Zinc, Zn** ISO 16968 | mg/kg | | ≤ 100 | ≤ 100 | ≤ 100 | ≤ 100 |
| | **Net Calorific Value, Q** ISO 18125 | MJ/kg or kWh/kg as received | Minimum value to be stated | Minimum value to be stated | | | |

## *Table II*
## *Wood chips particle size classes covered by the scope of GoodChips® certification*

| **Dimensions** (mm) | | | | |
|---|---|---|---|---|
| | **Main fraction** [a] (minimum 60 w-%), mm | **Coarse fraction** w-% (length of particle) | **Max. length of particles** [b] | **Max. cross sectional area of the coarse fraction** [c] |
| **P31S** | 3.15 mm < *P* ≤ 31.5 mm | ≤ 6 % > 45 mm | ≤ 150 mm | ≤ 4 cm² |
| **P31** | 3.15 mm < *P* ≤ 31.5 mm | ≤ 6 % > 45 mm | ≤ 200 mm | |
| **P45S** | 315 mm < *P* ≤ 45 mm | ≤ 10 % > 63 mm | ≤ 200 mm | ≤ 6 cm² |
| **P45** | 3.15 mm < *P* ≤ 45 mm | ≤ 10 % > 63 mm | ≤ 350 mm | |
| **P63** | 3.15 mm < *P* ≤ 63 mm | ≤ 10 % > 100 mm | ≤ 350 mm | |
| **P100** | 3.15 mm < *P* ≤ 100 mm | ≤ 10 % > 150 mm | ≤ 350 mm | |
| **Fine fraction, F** (<3,15 mm w-%) | | | | |
| **F05** | ≤ 5 % | | | |
| **F10** | ≤ 10 % | | | |
| **F15** | ≤ 15 % | | | |
| **F20** | ≤ 20 % | | | |
| **F25** | ≤ 25 % | | | |
| **F30** | ≤ 30 % | | | |
| **F30+** | > 30 (maximum value to be stated) | | | |

[a] The numerical values (P-class) for dimension refer to the particle sizes (at least 60 w-%) passing through the mentioned round hole sieve size (ISO 17827-1). Use S classes for wood chips and hog fuel for residential and small-scale commercial applications.

[b] Length and cross-sectional area only have to be determined for those particles, which are to be found in the coarse fraction. Maximum 2 pieces of about 10 l sample may exceed the maximum length, if the cross-sectional area is < 0,5 cm².

[c] For measuring the cross-sectional area, it is recommended to use a transparent set square, place the particle orthogonally behind the set square and estimate the maximum cross-sectional area of this particle with the help of the cm² pattern.

## 5. Hog fuel quality requirements

5.1. The final product shall meet the technical specifications of the corresponding quality class defined in table III.

5.2. The final product shall meet one of the main fraction classes (P classes) and the fine fraction classes (F classes) showed in table IV.

5.3. Compliance of the final product with the requirements of this Standard shall be verified through analyses carried out on a sample taken by the inspector during the on-site inspection[2].

### *Table III*
### *Hog fuel technical specifications related to the quality classes covered by the scope of GoodChips® certification*

| | **Property class** Analysis method (last version) | Unit | **B** | | | |
|---|---|---|---|---|---|---|
| | | | **1** | **2** | **3** | **4** |
| Normative | **Origin and source** [a] | | **Virgin wood** [b]<br>• without bark<br>**Chemically untreated wood residues an by-products from wood processing industry**<br>• without bark | **Virgin wood**<br>**Chemically untreated wood residues an by-products from wood processing industry**<br>**Segregated wood from gardens, parks, roadside maintenance, vineyards, fruit orchards and driftwood from freshwater** | **Chemically untreated wood residues an by-products from wood processing industry**<br>**Chemically untreated used wood** [c] | **Chemically treated uncontaminated wood residues, by-products, fibres and wood constituents from wood processing industry** [d] |
| | **Particle size, P** ISO 17827-1 | mm | To be selected from Table IV | | | |
| | **Fine fraction, F** ISO 17827-1 | (<3,15 mm w-%) | To be selected from Table IV | | | |
| | **Moisture, M** ISO 18134-1, ISO 18134-2 | w-% | M60 ≤ 60<br>M30 ≤ 30 | | | |
| | **Ash, A** ISO 18122 | w-% dry | A3.0 ≤ 3.0 | A7.0 ≤ 7.0 | A4.0 ≤ 4.0 | A5.0 ≤ 5.0 |
| | **Nitrogen, N** ISO 16948 | w-% dry | N1.0 ≤ 1.0 | N1.0 ≤ 1.0 | N1.5 ≤ 1.5 | N1.0 ≤ 1.0 |
| | **Sulfur, S** ISO 16994 | w-% dry | S0.1 ≤ 0.1 | S0.1 ≤ 0.1 | S0.1 ≤ 0.1 | S0.1 ≤ 0.1 |
| | **Chlorine, Cl** ISO 16994 | w-% dry | Cl0.05 ≤ 0.05 | Cl0.05 ≤ 0.05 | Cl0.1 ≤ 0.1 | Cl0.1 ≤ 0.1 |
| | **Arsenic, As** ISO 16968 | mg/kg | ≤ 1 | ≤ 1 | ≤ 4 | ≤ 4 |
| | **Cadmium, Cd** ISO 16968 | mg/kg dry | ≤ 2.0 | ≤ 2.0 | ≤ 2.0 | ≤ 2.0 |

[2] The schedule of inspections is included in Annex D of GoodChips® ST 1002.

[a] Blends of different classes of origin and source inside each quality class are allowed

[b] Excluding Segregated wood from gardens, parks, roadside maintenance, vineyards, fruit orchards and driftwood from freshwater

[c] Post-consumer/post-society wood; natural or merely mechanically processed wood, contaminated only to an insignificant extent during use by substances that are not normally found in wood in its natural state (for example pallets, transport cases, boxes, wood packages, cable reels, construction wood)

[d] Chemically treated wood by-products and residues from wood processing industry is allowed in B4 as long as it does not contain heavy metals or halogenated organic compounds as a result of treatment with wood preservatives or coating

| | | | | | | |
|---|---|---|---|---|---|---|
| | **Chromium, Cr** ISO 16968 | mg/kg dry | ≤ 20 | ≤ 20 | ≤ 30 | ≤ 20 |
| | **Copper, Cu** ISO 16968 | mg/kg | ≤ 30 | ≤ 30 | ≤ 50 | ≤ 30 |
| | **Lead, Pb** ISO 16968 | mg/kg | ≤ 20 | ≤ 20 | ≤ 30 | ≤ 20 |
| | **Mercury, Hg** ISO 16968 | mg/kg | ≤ 0.1 | ≤ 0.1 | ≤ 0.1 | ≤ 0.1 |
| | **Nickel, Ni** ISO 16968 | mg/kg | ≤ 10 | ≤ 10 | ≤ 10 | ≤ 10 |
| | **Zinc, Zn** ISO 16968 | mg/kg | ≤ 100 | ≤ 100 | ≤ 100 | ≤ 100 |
| | **Net Calorific Value, Q** ISO 18125 | MJ/kg or kWh/kg as received | Minimum value to be stated | | | |

## *Table IV*
## *Hog fuel particle size classes covered by the scope of GoodChips® certification*

| **Dimensions** (mm) | | | |
|---|---|---|---|
| | **Main fraction** [a] (minimum 60 w-%) | **Coarse fraction** w-% (length of particle) | **Max. length of particles** [b] |
| **P31** | 3.15 mm < *P* ≤ 31.5 mm | ≤ 6 % > 45 mm | ≤ 200 mm |
| **P45** | 3.15 mm < *P* ≤ 45 mm | ≤ 10 % > 63 mm | ≤ 350 mm |
| **P63** | 3.15 mm < *P* ≤ 63 mm | ≤ 10 % > 100 mm | ≤ 350 mm |
| **P100** | 3.15 mm < *P* ≤ 100 mm | ≤ 10 % > 150 mm | ≤ 350 mm |
| **P200** | 3.15 mm < *P* ≤ 200 mm | ≤ 10 % > 250 mm | ≤ 400 mm |
| **P300** | 3.15 mm < *P* ≤ 300 mm | To be specified | To be specified |
| **F05** | ≤ 5 % | | |
| **F10** | ≤ 10 % | | |
| **F15** | ≤ 15 % | | |
| **F20** | ≤ 20 % | | |
| **F25** | ≤ 25 % | | |
| **F30** | ≤ 30 % | | |
| **F30+** | > 30 (maximum value to be stated) | | |

[a] The numerical values (P-class) for dimension refer to the particle sizes (at least 60 w-%) passing through the mentioned round hole sieve size (ISO 17827-1). Use S classes for wood chips and hog fuel for residential and small-scale commercial applications.

[b] Length and cross-sectional area only have to be determined for those particles, which are to be found in the coarse fraction. Maximum 2 pieces of about 10 l sample may exceed the maximum length, if the cross-sectional area is < 0,5 $cm^2$.

## 6. Process requirements

6.1. The company shall:

6.1.1. Have separate identifiable areas for different raw materials eligible for each quality class, if storing the raw materials;

6.1.2. Have separate identifiable areas for final products of each quality class, if storing the final products;

6.1.3. Have separate identifiable areas for non-conforming final products;

6.1.4. Have a dryer installed if producing classes A1 extra-dry and/or A1;

6.1.5. Have a covered storage if producing classes from A1 extra-dry to A2.

6.2. Compliance of the process requirements with this Standard shall be verified during the on-site inspection[3].

## 7. Management System requirements

7.1. General requirements

7.1.1. The company shall establish, document, implement and maintain a quality management system that is capable of supporting and demonstrating the consistent compliance of its products with this Standard[4].

7.1.2. The top management shall be responsible of the compliance with this Standard.

7.2. Compliance of the process requirements with this Standard shall be verified during the on-site inspection[5].

7.3. Support

7.3.1. People

7.3.1.1. The company shall define responsibilities of personnel related to the fulfilment of this Standard.

7.3.1.2. The company shall appoint a Quality Manager who, irrespective of other responsibilities, shall have responsibility and authority that include:

a) ensuring that processes and procedures required by this Standard are established, implemented, and maintained;

b) reporting to top management on the performance of the company relating to the fulfilment of this Standard and any need for improvement.

7.3.1.3. Within the first year of certification, the Quality Manager shall participate in the GoodChips® training recognised by GoodChips® International Management[6].

[3] The schedule of inspections is shown in Annex D of GoodChips® ST 1002.

[4] The company's quality management system established based on ISO 9001, EN 15234-1, EN 15234-4 or other recognised Quality Management Systems might be used to meet the management system requirements of this Standard.

[5] The schedule of inspections is shown in Annex D of GoodChips® ST 1002.

[6] This requirement is applicable from the moment the training is made available and notified by GoodChips® International Management.

7.3.1.4. The company shall ensure that personnel performing activities relating to this Standard have sufficient knowledge and competences and shall provide them with training by the Quality Manager or by another qualified resource. The scope of the training shall cover at least requirements of this Standard, referenced ISO standards, and company's own procedures.

7.3.2. Documented procedures

7.3.2.1. The company shall maintain documented information that address all applicable requirements of this Standard, including:

a) processes relating to production, processing and distribution of the final product influencing their quality;

b) identification and removal of foreign bodies in the batches of final products;

c) sampling and testing methods of the moisture content and particle size distribution;

d) identification and control of non-conforming products and relating causes, and implementation of appropriate actions;

e) complaints management;

f) procedures relating to outsourcing of services/external provision of products;

g) other requirements of this Standard.

7.3.2.2. The company shall ensure that the documented procedures that relate to the fulfilment of this Standard are internally formally approved, reviewed, and updated, suitably identifiable and accessible to all relevant personnel.

7.3.3. Control of Records

7.3.3.1. The company shall retain documented information demonstrating evidence on fulfilment of this Standard for the duration of the certification period, including:

a) records relating to the origin of procured material (e.g. harvesting licenses for virgin wood/invoices/contracts of any raw material being purchased/obtained from other companies for the production of the final product);

b) records relating to the procurement of final product;

c) training of the Quality Manager and other personnel performing activities relating to this Standard;

d) results of the regular measurements of the final product moisture content following every vehicle loading; calibration of measurement tools and equipment; control of non-conforming products and relating corrective actions;

e) results of the regular measurements of the particle size distribution; calibration of measurement tools and equipment; control of non-conforming products and relating corrective actions;

f) a sample of final product for each vehicle leaving the facility, to be retained for a month;

g) results of the regular visual inspection following every vehicle loading;

h) internal audits and management review;

i) complaint management.

7.3.3.2. The company shall establish procedures to define the controls needed for the identification, storage, protection, retrieval, retention time and disposition of its records related to the fulfilment of this Standard.

7.4. Performance monitoring

7.4.1. Measurement and testing of products

7.4.1.1. The company shall measure moisture content of the final product following every vehicle loading.

7.4.1.2. The company shall measure particle size distribution of the final product. The frequency of the measurement shall be defined by the company and approved by the Certification Body.

7.4.1.3. The company shall define the sampling and testing methods[7] for the measurement of the moisture content and particle size distribution that shall be approved by the Certification Body.

7.4.1.4. The company shall perform a visual inspection following every vehicle loading.

7.4.1.5. The company shall calibrate tools and equipment used for the measurement of the moisture content and particle size distribution in regular intervals. The frequency of the calibration shall be defined by the company and reviewed by the Certification Body. Whenever recommended differently by the manufacturer of the tool/equipment, a document attesting the recommended frequency shall be shown to the inspector during the inspection.

## 7.5. Non-conforming products[8]

7.5.1. The company shall ensure that final products that do not conform to the requirements of this Standard, including causes of the non-conformity, are identified. The company shall take appropriate actions based on the nature of the non-conformity and its effect on the conformity of products.

## 7.6. Internal audit

7.6.1. The company shall conduct internal audits at planned intervals that are no longer than one year to provide information on whether its processes and the quality management system are:

a) conform to the requirements of this Standard and the company's own procedures;

b) effectively implemented and maintained.

7.6.2. The top management shall acknowledge the results and corrective actions of the internal audit.

7.6.3. The company shall take appropriate corrective actions relating to the results of the internal audits.

## 7.7. Complaints

7.7.1. The company shall establish procedures for dealing with complaints from suppliers, customers and other parties relating to the fulfilment of this Standard.

7.7.2. Upon receipt of the complaint the company shall:

a) Record the complaint;

b) Acknowledge the complaint to the complainant;

c) Gather and verify all necessary information to evaluate and make decision on the complaint;

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[7] ISO 17827-1 is the relevant ISO standard for testing of the particle size distribution. ISO 18134-1 and ISO 18134-2 are the relevant ISO standards for testing of the moisture content. ISO 14780 and ISO 18135 are the relevant ISO standards for sampling.

[8] Classification of non-conformities and related corrective actions required by the Certification Body are described in GoodChips® ST 1002.

d) Formally communicate the decision on the complaint to the complainant;

e) Implement appropriate corrective and preventive measures resolving the causes of the complaint.

## 8. Reporting requirements[9]

8.1. The company shall report to GoodChips® International management:

a) The amount of tonnes[10] of final products estimated to be sold in the current calendar year[11];

b) The amount of tonnes[10] of final products actually sold in the previous calendar year[12];

8.2. The company shall report substantial changes to the Certification Body and GoodChips® International Management no later than a month after the change, including:

a) Appointment of a new Quality Manager;

b) Changes of the ownership or the legal status of the company;

c) Changes in the number and/or the location of the facility, chipping/crushing sites, and storage;

d) Changes in nature and/or origin of raw materials;

e) Changes in production/processing processes;

f) Changes in quality class and/or particle size class produced.

8.3. The company shall provide additional information required by GoodChips® International Management in case of:

b) Publications about the scheme;

c) Collection of data for statistical purposes;

d) Quality problems affecting either the certified company or other parts of the wood chip/hog fuel sector;

e) Complaints.

## 9. Use of the GoodChips® logo and name

9.1. Any company in the supply chain[13] associating themselves with GoodChips® certification or using the GoodChips® logo and name shall comply with the requirements of GoodChips® ST 1003.

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[9] GoodChips® International Management shall not disclose to any third-party information which it has received from the company, unless prior express written consent for the disclosure is granted by the company from whom the information was received. GoodChips® International Management may disclose information which it has received from the company if the disclosure contains no reference, either explicit or implied, to any company. GoodChips® International Management may share information with certification bodies, should both parties need a cross check.

[10] To be intended as metric tonnes of final product sold independently of the moisture content.

[11] The invoice for the first year of certification is based on the figures of wood chips and/or hog fuel estimated to be sold for the rest of the year.

[12] The invoices for the following years shall be based on the figures of final product estimated to be sold in the current year, plus an adjustment (that could be a positive or a negative value) made of the difference between the estimated figures and the actual amount of final product sold in the previous year.

[13] End-users are considered as entities outside the supply chain

# Annex A

## Suggested best practices

*Informative*

Suggested best practices in table V should be implemented to meet the requirements stated in this Standard.

### *Table V.*
### *Suggested best practices*

| Activity | Suggested best practices |
|---|---|
| **Harvesting** | ■ Remove snow and ice from tree stems before chipping/crushing<br>■ Make sure the lowest possible amount of soil is collected along with the feedstock<br>■ Ensure that harvesting equipment are properly and regularly maintained |
| **Chipping** | ■ Ensure that bolts are tightened on all machineries so that no metallic parts come lose and contaminate the final product<br>■ Ensure that processing equipment are properly and regularly maintained to make sure that the final product produced is consistent with the quality class stated<br>■ Keep knives sharpened, check regularly chipper settings and ensure proper screen sizing<br>■ Feed the chipper/crusher with uniform diameter wood chunks<br>■ When possible blow the final product directly into the truck and avoid using a front-loader<br>■ Ensure that no foreign bodies (e.g. sand, ice, earth, plastic, stones, metals) get mixed with the final product |
| **Processing** | ■ Install a forced drying system to lower the moisture content to 25% or less<br>■ Install a magnet to remove possible metals introduced while chipping<br>■ Install a sieving system with different mesh sizes to screen the chips<br>■ Ensure that no foreign bodies (e.g. sand, ice, earth, plastic, stones, metals) get mixed with the final product |
| **Transport & delivery** | ■ Ensure all residues from a previous delivery are cleaned-up from the truck, especially if the next planned load is of another quality class<br>■ Sell per tonne and provide information on the moisture content to the costumer<br>■ Take a sample at the end-user facility and ask the end-user to do the same |
| **Storage** | ■ Avoid silos or use them only for low moisture content final product<br>■ If using silos, make sure they are well ventilated<br>■ Limit the storage time if storing chips with M>25%<br>■ Apply first-in, first-out principle (FIFO)<br>■ Prefer concrete surface<br>■ Ensure adequate ventilation in order to avoid fermentation processes<br>■ Make sure there are no water infiltrations from the top and the bottom of the storage facility |

Bibliography

■ ISO 17225-4, Solid biofuels -- Fuel specifications and classes -- Part 4: Graded wood chips;


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