



NSAI
Certification

**National Workshop Agreement
NWA 4:2009**

Wood fuel quality assurance – Guidelines for implementation



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Introduction¹

This document supports NWA 4:2009 which is the normative document. The reason for publishing guidelines is to set a uniform expectation of what the certification assessment will demand in response to the requirements in NWA 4:2009.

This document sets out minimum expectations. Organisations implementing NWA 4:2009 are encouraged to integrate it with other management systems which may also be a requirement of their customers or other stakeholders. Inevitably, this will mean that the requirements in NWA 4 for certain elements are insufficient and it will involve addressing additional requirements. The common management schemes are:

ISO 9001:2008: Quality Management
ISO 14001:2004: Environmental Management
OHSAS 18001:2007: Health and Safety Management

If the NWA is integrated with another management system, it may result mutual benefits and reduction in duplication.

A standard sets minimum requirements for conformity. Additional aspects may be added to the minimum requirements if the organisation wishes. Any assessment of NWA 4:2009 will target the specific requirements of NWA 4; additional aspects may or may not be audited as this will depend on the available time and the complexity of processes and systems.

1 Scope

The National Workshop Agreement (NWA) specifies quality assurance requirements for the following wood fuel types:

- firewood and logs;
- wood pellets and wood briquettes and
- wood chips.

The table in the NWA gives types of solid biofuels and is taken from I.S. TS 14588. This gives compatibility with other classifications used in Europe and might be useful when marketing the wood fuel. It will also provide compatibility if the organisation wished to upgrade its certification to the relevant EuroNorm (EN)

4 Requirements

4.1 Policy

A policy is a document providing a commitment by management to key aspects of wood fuel supply. The policy should be written in a way which suits the organisation and may contain commitments in addition to the list in the NWA (e.g. commitments to environmental protection, health and safety or other standards to which the organisation subscribes)

The policy need not be bullet-point and need not have the NWA requirements in the order presented in NWA 4. The policy should be written in a way that facilitates communication (e.g. not unnecessarily wordy, a balance between mission and practicality).

The aim of the policy is to provide a framework for the quality assurance scheme and is normally available to the public and customers (website or posted at reception or in other forms)

The policy should be signed and dated.

The review of the policy would normally be part of the management review meeting.

¹ Chapter numbers correspond with those in NWA 4:2009.

4.2 Sourcing

Sourcing of wood fuel is important as inappropriate sourcing may result in long term damage to the environment and potential stakeholder dissatisfaction. The country of origin should be declared so that the customer can have confidence that there is management of the supply chain; it also guards against the use of wood fuel derived from anything other than clean by-product (e.g. such sources as sawdust from saw-mills).

The chain of custody is normally demonstrated by maintaining felling permits or similar records traceable to the wood product received. The felling permits also give evidence of country of origin. Other documents may be used as appropriate to the wood product used as an input. Traceability from end product (e.g. batch of pellets, bale of briquettes) is not required by the scheme.

No post consumer waste is allowed.

During the audit, the auditor may wish to match invoices to felling permits to ensure that all wood is accounted for². A simple filing system in date order will normally be sufficient to store the records generated.

4.3 Quality control

Quality control is the planned actions which result in the correct quality of wood fuel reaching the customer. It is normal to document the planned actions in a table, diagram or procedure which shows what is done, when and with what. Refer to figure 1 as an example.

4.3.1 General

The scope of the quality control system should cover, at least,

- Handling, storage and transportation requirements
- Operational measurements and critical parameters which will be checked
- Equipment used for measuring and calibration / maintenance
- Management review of actions taken and planned
- Record keeping requirements

4.3.2 Sampling and testing of product

Sampling has to be representative of the fuel. Annex A gives guidance on appropriate methods of sampling. Sampling should aim to be consistent and representative. Taking samples from fuels which are not representative should be avoided (i.e. take sample from the point of discharge to a truck rather than a stockpile which would then be sieved to remove dust and small particles).

In house testing may be quite simple (e.g. moisture content using an oven and scales) but it is important that testing is done consistently with equipment which is capable of measuring accurately. Methods such as visual inspection or grabbing a sample in ones hands may not be satisfactory if the parameter being measured is scientific. Test methods that conform to published standards should be used in preference to any other methods (refer to the EN standards referenced in the NWA).

Measuring equipment should be capable of measuring a minimum unit which is 25% of the accuracy required (e.g. if the accuracy required is +/- 0.1 g, the balance should be able to measure in units of 0.025 g or less). Measuring equipment should be maintained in good condition in line with the manufacturer's recommendations and, as a minimum, calibrated using traceable standards. External calibration intervals may be extended based on history but this will depend on the environment in which the instrument is kept, the precision of the

² This does not require traceability to end product. It will be sufficient to match sources, which may be mixed, to production input.

instrument, the quality of the instrument, the amount it is used and whether there are checks internally to minimise unexpected deviation or drift.

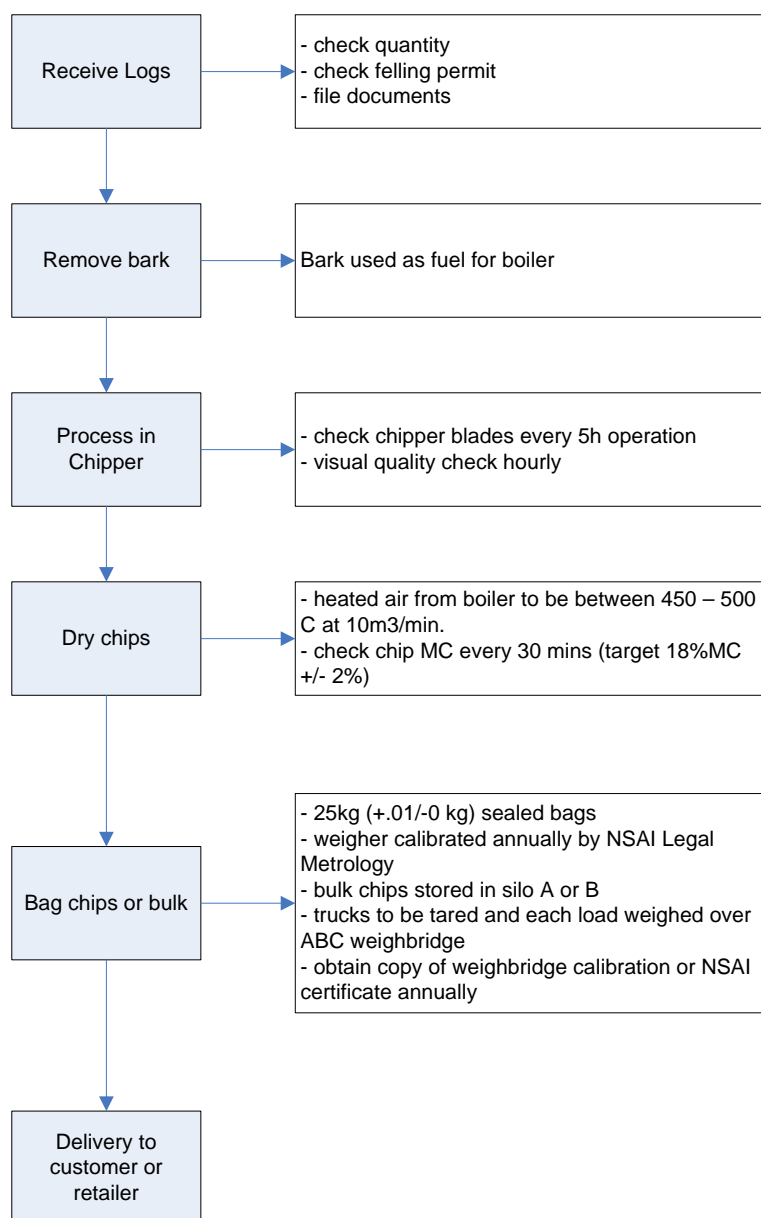


Figure 1: Example of a flow diagram showing quality controls

The test parameters should, as a minimum, be those given in the relevant annex of the NWA. Tests can be outsourced but this is the decision of the organisation based on convenience, cost, skills, facilities, the test required and other relevant parameters.

Records should be kept of:

- Calibration and maintenance activities
- Manufacturer's guidance on equipment use and maintenance
- Test results (dates, sample identification, results, equipment used)

4.3.3 Handling, storage and transportation

Handling, storage and transportation of wood fuel has to be controlled so that the minimum rework is required (rework could be the re-drying of fuel which got wet by accidental exposure, or re-grading if handling changed the characteristics).

As a minimum, the desired storage, handling and transportation conditions have to be specified. Equipment to be used in handling or treating the wood should be defined together with any routine maintenance requirements. It is normal to define this in a simple document so that consistency can be assured; this document can be as simple as the controls needed (e.g. storage in a dry shed with natural ventilation which excludes rain or condensation from reaching the wood fuel).

Inspections of wood fuel at various stages have to be made at pre-planned intervals (the frequency of inspection will depend on the risk of deterioration).

Inspections are to be recorded but this could be in a diary or notebook.

4.3.4 Management review

A review of the quality assurance provided should be undertaken at least annually. This will involve a look at all sources of feedback which includes, as a minimum:

- Trends in operational data (from production records);
- Trends in test data (from inspection records);
- Conformance with the requirements of this NWA (from reviewing the documented procedures);
- Nonconformances and corrective action (from inspection records and external audit results);
- Corrective action effectiveness (from checking that problems are solved);
- Customer complaints and feedback (from records of issues raised); and
- Proactive measures to make the operational and product data more consistent and the processes more robust (from reviewing opportunities for improvement – some of these may come from the external audit)

Records are required to show that the review was comprehensive (at least the mandatory topics) and to record any action recommended. It is good practice to use a standard form for this in order that no key issues are neglected. This is as valid for a one man business as the exercise should be treated as a moment of reflection and planning for the next year; writing plans on paper ensures that there is a structure of intent from which actions can be developed and sequenced. It is good practice to have a system to ensure that actions planned are reviewed from time to time to ensure timely completion; it is normal to have a sign-off and date upon completion.

Planned actions not taken in the previous year should be reviewed at the next management review. Circumstances may have changed and the reason why actions are postponed or cancelled should be recorded.

4.3.5 Record keeping

The records described in the NWA need to be kept so they can be used for managing the business (management review), to prove conformity with the wood fuel specification and to prove conformity with the NWA. The minimum retention period is 2 years but certain records may be required to be kept longer; it should be evident how long each type of record is to be retained.

Records may be on any media but all records need to be maintained so that they are available and legible when retrieved. Electronic copies will need to be backed up and kept secure. Back-ups can be of any type (tape, disc, DVD, flash memory etc.) provided it is sufficiently secure.

4.4 Customer interface

4.4.1 General

The aim of this section of the standard is to provide clear and correct information to the customer so that purchase can be based on a knowledge of the fuel quality.

4.4.2 Packaging

Information needs to be provided on delivery docket, datasheets or packaging (units under 25kg).

Packaging can be of any type but this should conform with storage parameters necessary to maintain the quality of fuel (Cl. 4.3.3). The packaging, if used, needs to state:

- The country of origin;
- Species or species group (where relevant);
- Moisture content;
- Physical characteristics;
- Weight or volume;
- Other data as specified in Annex A, B or C;
- Organisation's name and address; and, if appropriate,
- The logo of the scheme to which the organisation is a member³.

The information must be legible and of a size that can be read easily.

As well as preserving the wood fuel so that it reaches the end user with the expected characteristics, packaging is a very effective measure for ensuring that there is market differentiation and that the customer is aware of wood fuel which meets the requirements of this NWA. The size of the packaging will determine the amount of information that can be given and the NWA 4 requirement is a minimum. Packaging type and quantity should be selected in the best interests of the environment; larger producers may have to consider membership of REPAK or similar. Packaging which is post-consumer and which is of a similar quality to the fuel is recommended so that it can be recycled or reused. Packaging which is not biodegradable should be used with care. The packaging should contain symbols or information to promote re-use or recycling.

4.4.3 Delivery

Delivery is a very important interface. The customer should be confident that the fuel delivered is to the expected quality. The organisation should be aware of any issues which may impact on the quality of the fuel during the time before it is consumed. The organisation needs to protect itself from complaints about the fuel quality which stem from issues beyond the organisation's control.

In certain circumstances, sampling might be recommended from delivered fuel at the customer site (e.g. if it is suspected that transportation might have a negative impact on quality).

This means that there should be advice on wood fuel storage and boiler maintenance on the delivery docket or packaging.

4.4.4 Complaints and feedback

All complaints and feedback should be recorded and analysed to ensure that appropriate action is identified and that it is carried out. This could be recorded on a special form or dedicated notebook or in any other suitable form. It is normal that, for each complaint or feedback, the following be recorded:

- Date of receipt
- Nature of complaint or feedback
- Contact details of person making the complaint
- If negative, the reason for the problem, the action taken to remedy the reported issue and the action needed to be taken to stop recurrence.
- The dates when any action taken
- A check to ensure that the action was effective.

³ The logo must be used in accordance with the published requirements of the WFQA

ANNEX A

How to use these tables.

The laboratory sample required is the amount which has to be delivered to the laboratory. No smaller amounts can be accepted.

The minimum increment is the amount taken at any point (e.g. by bucket, scoop, shovel etc.). A number of increments taken in places to represent the entire stockpile or delivery makes up the laboratory sample.

If the wood fuel is sampled packaged, stationary or moving, the appropriate table should be used.

Example 1: Stockpile of Wood Chip: 45 Tonnes

Laboratory sample size needs to be at least 80 Litres (table A).

At least 11 increments are required (table D). The actual amount is calculated as $45/0.04 + 10 = 11.125$. This is always rounded up so 12 samples should be taken from representative parts of the stockpile (ignoring the bottom 300mm and avoiding any areas which may be unrepresentative). If 12 samples are required these could be 6.67 litres each (80/12) but must be over 2 litres each increment (table B).

Example 2: Bags of wood pellet. Each bag contains 15kg. The pallet contains 80 bags.

The laboratory needs 40 litres as a minimum sample size (table A)

The minimum amount to be sampled is 6 bags (table C). The calculation gives the minimum for this lot as $5 + ((80 \times 15)/1000)/0.025 = 5.03$ which rounded up gives the minimum of 6.

A check is then made to see if 6 bags of 15kg is in excess of 40 litres (using nominal density 650kg / m³). $((6 \times 15)/650) \times 1000 = 138.5$ litres. The 6 bags will be satisfactory for the laboratory sample

A: Lab Sample Size Required:

Firewood	100 pieces
Briquettes	30 pieces
Wood chip	80 litres
Wood pellets	40 litres

B: Minimum Increment Size:

Wood pellets 0.5 litres	Wood chip 2 litres	Wood briquette 1 piece	Firewood 1 piece
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C: Minimum No. Increments (Packaged)

Fuel	Minimum	Calculation of amount of packages
Pellets	6 packages	$n = 5 + (0.025 * \text{Lot Mass in tonnes})$
Firewood	6 packages	$n = 5 + (0.025 * \text{Lot Mass in tonnes})$
Briquettes	6 packages	$n = 5 + (0.025 * \text{Lot Mass in tonnes})$

D: Minimum No. Increments (Stationary)

Fuel	Minimum	Calculation of amount of increments
Woodchip	11+	$n = 10 + (0.04 * \text{Lot Mass in tonnes})$
Pellets	11+	$n = 10 + (0.04 * \text{Lot Mass in tonnes})$
Briquettes	11+	$n = 10 + (0.04 * \text{Lot Mass in tonnes})$
Firewood	21+	$n = 20 + (0.06 * \text{Lot Mass in tonnes})$

E: Minimum No. Increments (Moving)

Fuel	Minimum	Calculation of amount of increments
Woodchip	6+	$n = 5 + (0.04 * \text{Lot Mass in tonnes})$
Pellets	6+	$n = 5 + (0.04 * \text{Lot Mass in tonnes})$
Briquettes	6+	$n = 5 + (0.04 * \text{Lot Mass in tonnes})$
Firewood	11+	$n = 10 + (0.04 * \text{Lot Mass in tonnes})$