

3 Wood, Biomass & Solid Mineral Fuels

Preface

The selection of the right type and size of fuel is essential if satisfactory service from the appliance is to be ensured. For this purpose reference is made, at the heading of each section of Part 1 Appliances, to the appropriate section of Part 3 - Wood, Biomass & Solid Mineral Fuels, listing suitable approved fuels, with any special note made in the **Appliance Feature Icon** area. HETAS carries out test work for fuel manufacturers and producers which, combined with a quality assurance scheme, enables the fuel to carry a HETAS or Woodsure Approved Fuel logo which the consumer should look for.

Most of the appliances listed will burn a wide range of fuels, although some are designed to burn a specific type. The appropriate fuel producers or fuel distributors should be consulted to ensure that fuel suitable for the appliance and duty required is available locally before finally deciding on an appliance. Appliances which are designed to burn only wood pellets or chips require specialised fuels. The appliance manufacturer will give advice about choosing the correct fuels to use with their appliance and the storage conditions for these fuels. Use of the incorrect fuel, e.g. size or quality, will affect appliance performance and where specialised fuels are required may adversely affect the operation of the appliance.

Smokeless fuels not listed under Approved Fuels are, from time to time, authorised for use in Smoke Control Areas by Defra. Advice on the suitability of such a fuel should be obtained from a member of the Approved Coal Merchants Scheme in the area in which that fuel is sold.

Petroleum coke is not recommended by HETAS for use on solid fuel burning appliances because its use can result in serious damage to grates and other appliance components in the fuel bed area. However, a number of products which contain petroleum coke or are blends of petroleum coke with other fuels have been tested and approved. For these fuels approval is conditional on the manufacturer applying and maintaining stringent product control. Some appliance manufacturers restrict the use of these fuels to appliances with high chrome or chrome steel bottom grates, which may be supplied as an optional extra. This appliance manufacturer's restriction is noted in the **Appliance Feature Icon** area against the appliance name in **Part 1 - Appliances Burning Solid Mineral Fuels & Wood**.

In no circumstances should HETAS Approval of such fuels be taken as implying a general approval of briquettes or blends containing petroleum coke or as giving approval of the use of petroleum coke on its own.

Wood & Biomass Fuels

Biomass is a generic term used to describe material that is derived from living or recently living organisms. In fuel terms, biomass is plant matter which is converted into heat by combustion. For the domestic market in the UK, the main raw material for biomass fuels is wood. This is sourced from indigenous forests and also imported from continental Europe and elsewhere. Depending on the end use, this can be either hard wood or soft wood.

There are a number of wood/biomass fuels generally available:

- Wood logs – produced from trees split and cut into pieces typically 40-150mm diameter and 200-500mm long.
- Wood briquettes – a reconstituted fuel produced from sawdust from sawmills and other wood processing plants. They are extruded at high pressure through a die to produce roughly cylindrical fuel typically 50-75mm diameter and 150-300mm long.
- Wood pellets – another reconstituted fuel from sawmill and other timber byproducts extruded through small dies at high pressure to produce pellets typically 6mm diameter and up to 40mm long.
- Wood chips – a lower grade fuel produced by chipping wood into small pieces typically less than 45mm.
- Hog fuel - similar to wood chip but processed using blunt tools such as flails and hammers to create the defined particle size.

The importance of biomass as a fuel lies in its status as being classified as Carbon Lean. Low carbon fuels such as wood and biomass operate in what is known as a closed carbon cycle. The growing tree absorbs CO₂ from the atmosphere using sunlight in the process known as photosynthesis. When the tree matures and is cut down for use as a fuel, this CO₂ is released back into the atmosphere during combustion. Provided additional trees are planted to replace the ones cut down, then the CO₂ released can be re-absorbed by these new trees as they grow. Ensuring that there is sufficient replanting carried out to replace trees cut down for fuel is described as being sustainable. Put simply, Biomass takes carbon out of the atmosphere while it is growing, and returns it as it is burned. If it is managed on a sustainable basis, biomass is harvested as part of a constantly replenished crop.

As sources of conventional fuel become scarcer, the use of wood and biomass becomes more and more attractive.

Wood is divided into two major classes, either hardwood or softwood. Hardwoods are typically slow growing deciduous broadleaved trees such as Beech, Ash and Oak. They have tightly packed annual growth rings reflecting the fact that they are slow growing. Softwoods are typified as being fast growing evergreens or coniferous species such as Pine, Spruce and Fir. Their annual growth rings are bigger reflecting faster growth.

The major concern in terms of combustion is the moisture content of the wood. Freshly harvested timber can have moisture contents up to 60%. Burning with these levels of moisture causes a number of problems;

- As wood moisture increases, then its useful energy reduces since energy is used up to drive off the excess moisture. At 60% moisture, energy content can be as low as 1.7kWh/kg, rising to 4kWh/kg at 20% moisture.
- Trying to burn wet wood can contribute to excessive smoke due to incomplete combustion and tarry deposits on the lining chimney leading to increased risk of chimney fires and flue blockage.

Fuel Quality Schemes

HETAS and Woodsure have been heavily involved in the development of fuel standards as members of the technical committees, and has also been active in promoting these standards through a number of fuel quality assurance schemes.

Woodsure



Woodsure is an independent not for profit organisation that has worked with the industry to raise standards of the fuel supply throughout the UK. HETAS and Woodsure work together to deliver the Woodsure scheme.

The Woodsure fuel scheme is now well established and growing steadily. HETAS has partnered with Woodsure to deliver this scheme and provides a template for suppliers to follow to fulfil the standard.

The scheme standard is based on the European technical standards such as ISO 17225 Parts 1 to 6 (superceding EN 14961 Parts 1 to 6 in 2014) and the overarching quality standard EN 15234-1. The scheme covers all the various forms of woody biomass; firewood logs, wood chip, woody pellets, wood briquettes and hog. In addition Woodsure has a test centre that can test fuel quality and can act as an independent quality assessor in a dispute.

Fuel suppliers undergo an assessment of their production processes and are required to demonstrate that they can consistently supply fuel to these high standards. Once the supplier has passed the assessment they can demonstrate this to their customers by using the current Woodsure logo.

For further information please contact:

Woodsure, Severn House, Unit 5, Newtown Trading Estate, Green Lane, Tewkesbury, Gloucs. GL20 8HD

info@woodsured.co.uk

01684 278188

www.woodsured.co.uk

ENplus



ENplus quality certification is a major step towards establishing wood pellets as a widely used energy source. The numerous National Standards and Certifications have been replaced by one uniform system based on the ISO 17225-2 standard for wood pellets. The Certification scheme was adopted by the European Pellet Council in January 2011 and thus enjoys the support of large parts of the European pellet sector. A key advantage of ENplus is that pellet quality is managed throughout the entire supply chain from production, storage and transport all the way to the end consumer.

The quality requirements for pellet producers and pellet traders who wish to certify are laid down in the ENplus Handbook. Producers and Traders are subjected to independent audits of their processes and samples of product are also tested to ensure compliance with the standards.

The ENplus scheme ensures that there is a chain of custody from the Producer through the Trader to the end user. Any bulk delivery of pellets (even ones produced by an ENplus Producer) cannot be called ENplus pellets if they are delivered by a non-registered Trader. Similarly only ENplus pellets bought from an ENplus Producer can be delivered by an ENplus Trader to an end user as ENplus pellets. Non ENplus pellets cannot be called ENplus just because they have been delivered by an ENplus Trader.

HETAS is the Certification Body for ENplus in the UK and all applications from UK based pellet producers and traders must be made through us. The UK Pellet Council holds the Licensing rights for the scheme in the UK. HETAS can only accept applications from Producers or Traders based in the UK. Applicants not based in the UK should apply to their own National Pellet Council or directly to the European Pellet Council.



The UK Pellet Council was set up following an industry meeting on 17th November 2011 and is hosted by the Renewable Energy Association (REA). It aims to provide a single body to represent the best interests of all parties directly involved in the UK pellet trade from biomass of any source. The Council oversees UK implementation of the European Pellet Council's ENplus scheme. For more information on the REA and the UK Pellet Council visit the UK Pellet Council or REA websites.

A complete listing of all certified Producers and Traders can be found on the EPC and UKPC websites

www.pelletcouncil.eu

www.pelletcouncil.org.uk

Finding the Right Wood & Biomass Fuel Supplier

The HETAS website has an extensive search facility to enable consumers and retailers to find all the types of solid fuels they are looking for. The Woodsure website also has a listing of approved Woodfuel providers. By entering their postcode, users can search for the various solid fuel types (log, pellet, briquette, chip and hog), returning listings of their local and national suppliers, and the applicable fuel quality scheme (*Woodsure* and *ENplus*).

Sourcing fuel from one of the accredited suppliers in the listing gives the consumer confidence that they are buying the best quality fuel for their appliance, and that it will function as the manufacturer intended. For fuel manufacturers, being part of these fuel quality schemes gives confidence that they are supplying fuels appropriate to the intended appliance and reduces the likelihood of unfounded allegations of fuel related system performance. Added value can also be acknowledged and rewarded.

Appliance manufacturers are supportive of fuel quality schemes because using the right quality fuel ensures that their equipment can operate reliably and any problems can be readily diagnosed.

Many of the appliances listed in this Guide burn wood logs which if from a renewable source are an environmentally friendly fuel that receives favourable treatment in Building Regulations ADL and its companion SAP.

For this advantage to be gained in smoke control areas the appliance must be Exempted by DEFRA. Such appliances have the icon  within their listings in **Part 1 - Appliances Burning Solid Mineral Fuels & Wood**.

To meet these statutory clean air requirements these wood log burning appliances should be fired with dry wood which has been seasoned – often the Statutory Instrument (SI) requires “firewood which has been split, stacked and air dried”.

The Biomass Suppliers List



The Biomass Suppliers List was introduced to provide RHI participants with a simple way to demonstrate their fuel complies with RHI sustainability requirements. Suppliers who wish to register their fuel(s) on the List will be required to submit data for audit by the BSL Administrator. Suppliers who successfully register fuel(s) on the RHI Biomass Suppliers List are permitted to label their products with the BSL mark.

The Biomass Suppliers List is a list of producers and traders of woody biomass fuels which have been assessed as meeting the Renewable Heat Incentive sustainability and land criteria requirements. Sustainability requirements include Greenhouse gas and land criteria standards.

By sourcing their woody biomass fuel from the list allows RHI participants to fulfil the RHI eligibility criteria. The BSL requires important evidence of sustainability and legality of listed wood fuel. HETAS and Woodsure are part of the consortium that manage the scheme and together we are also raising the awareness to consider fuel quality and the importance to purchase the correct fuel quality specified by biomass appliance manufacturers. Consumers' should look for the Woodsure and ENplus accreditation to ensure their boiler performs correctly.

The BSL is managed by a consortium including HETAS, Gemserv Ltd and Woodsure Ltd.

To get on the list, Producers, Traders and Producer-Traders apply to the BSL administrator via an online portal, submitting details of their raw materials, greenhouse gas limits, legality, drying methods, transport distances and other factors, to ensure that the emissions from the cultivation, processing and transport of the biomass fuel achieves a saving of at least 60% against the EU fossil fuel average for heat, when used in a boiler which achieves an average of 70% seasonal efficiency (≤ 34.8 g CO₂ per MJ).

The BSL Administrator lists companies that produce and trade fuels on its 'Find a Fuel' site:

biomass-suppliers-list.service.gov.uk/find-a-fuel

RHI participants sourcing their own raw materials from within their own estate, can - subject to certain requirements - register with the BSL as Self-Supplier.

More information on the BSL can be found at: biomass-suppliers-list.service.gov.uk

Collaborative Partners

HETAS works closely with various organisations concerned with the quality of wood fuels. We are collaborating with a number of partners to agree criteria that satisfy the national Assurance Scheme as well as local needs.

Grown in Britain

Grown in Britain is creating new sustainably-managed woodland to increase the supply of British timber destined for use by local people and businesses. Whether it's to heat our homes, in the construction of new buildings, or for retailers to create wood products that shape our everyday lives. The opportunities and the benefits of Grown in Britain are endless not just for the environment, but for people, wildlife, and our local economies.

