Myriad Technical Update

Waste Wood Legislative Framework

MYRIAD CEG GROUP
Cleaner Energy Generation

WHAT IS WASTE WOOD?

Who is this guide for?

This guide has been specifically written for anyone operating or looking to purchase a waste wood burning plant. This guide is not definitive and specialist advice must be sought prior to progressing the project.

What is Waste Wood?

BSI PAS 111:2012 is a document commissioned by WRAP in association with BSI that defines wood waste material into grades A, B, C and D. The industry have adopted these grades but the handling and treating of waste wood is subject to waste regulation and waste management controls. In England, the regulatory body is the Environment Agency (EA) or the Local Authority, in Wales the regulatory body is Natural Resources for Wales and in Scotland it is SEPA.

WASTE WOOD GRADES

Industry currently uses visual methods to identify wood grades. This is often unreliable, and a simple guide to classification would be very helpful for improved classification reliability. For example, it is not always understood by site operatives which European Waste Codes should be assigned to the wood as it arrives on site or even if it is hazardous.

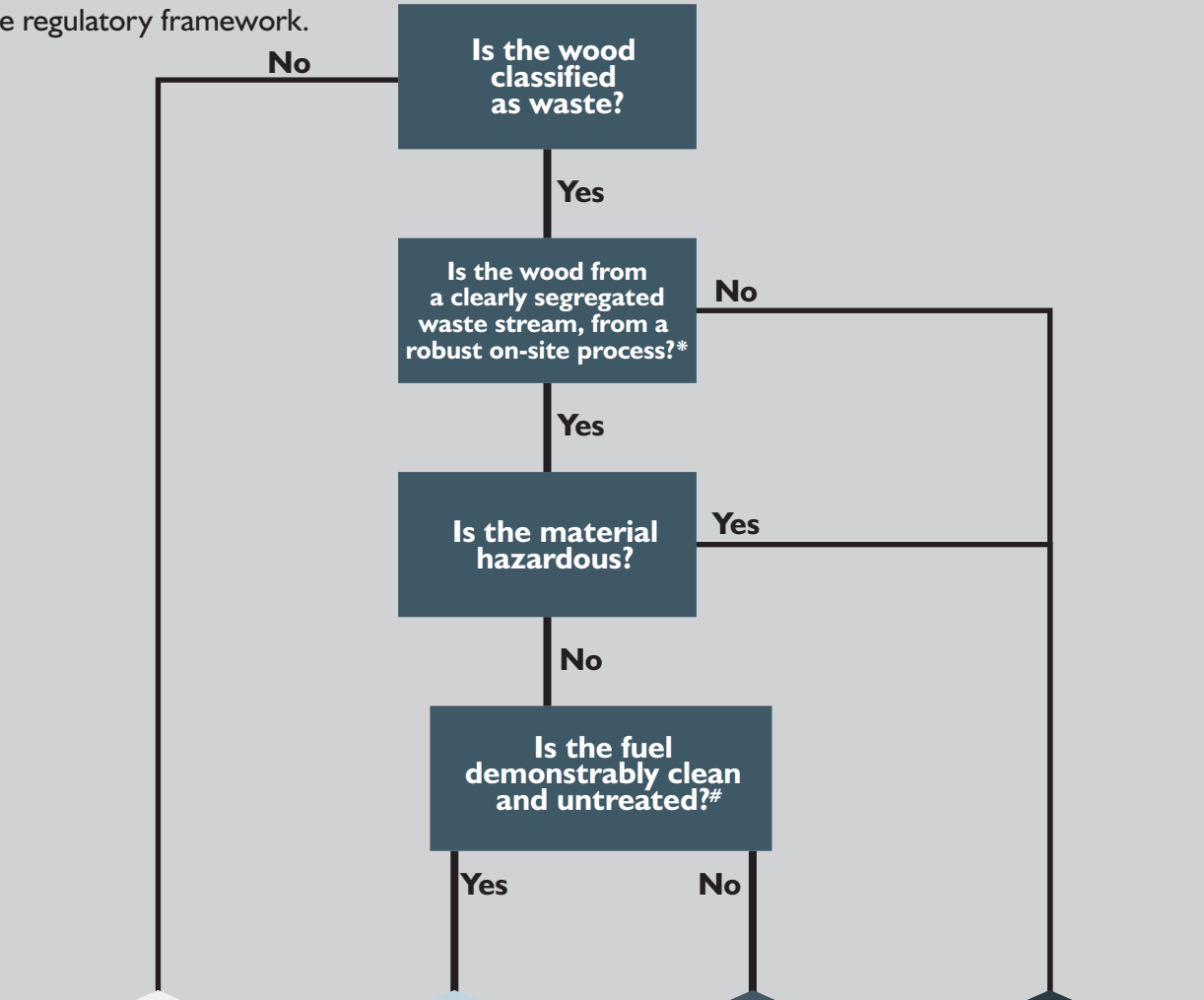
Treated waste wood is wood that has been treated by being injected, impregnated, sprayed, infused (soaked) or surface coated with any organic or inorganic substances for the purposes of preserving or protecting it or for changing its appearance. Some of these treatments may not be obvious and visible. Surface coating includes varnishes and paints, glues and non-natural veneers.

Grade	Material description	Typical source of material	Typical materials	Typical non – wood content prior to processing
A	Non-treated, Non-Virgin	Distribution. Retailing. Packaging. Secondary manufacture, e.g. joinery. Pallet reclamation.	Visibly clean recycled wood waste, mainly from packaging, scrap pallets, offcuts.	Nails and metal fixings. Minor amounts of paint, and surface coatings.
B	Grade B is now not recognised. Waste wood material is either demonstrated to be clean and untreated (Grade A), treated but non-hazardous (grade C) or hazardous (Grade D).			
C	Treated, Non-Virgin	All above, plus municipal collections, recycling centres transfer stations and civic amenity recycling sites.	All of the above plus fencing products, flat pack furniture made from board products and DIY materials. High content of panel products such as chipboard, MDF, plywood, OSB and fibreboard.	Nails and metal fixings. Paints coatings and glues, paper, plastics and rubber, glass, grit. Coated and treated timber (non CCA or creosote).
D	Treated, Non-Virgin and Hazardous	All of the above plus fencing, track work and transmission pole contractors.	Fencing, transmission poles, railway sleepers, cooling towers.	Copper / chrome / arsenic (CCA) preservation treatments and creosote.

Taken from the following PAS III and EA documents:
http://www.wrap.org.uk/content/bsi-pas-111-processing-wood-waste
http://www.organics-recycling.org.uk/uploads/article2892/Wood%20Briefing_28Aug2014V1%20final.pdf

APPLICABLE REGULATIONS

How do I know what regulations apply to me?
Use this flow chart to select the most appropriate regulatory framework.



Virgin Timber

Clean Air Act

Biomass boiler suitable for forestry wood chips

Virgin

Grade A

EPR Part B permit from Local Authority or a U4 waste exemption

Industrial boiler suitable for more difficult fuels

A

Grade C

IED chapter IV (WID) 850° compliant boiler

Fuel input <3T/hr
SWIP plant schedule 13A permit from Local Authority

Fuel input >3T/hr
Part A permit from Environmental Agency

C

Grade D

IED chapter IV (WID) 1100° compliant boiler

Part A permit from Environmental Agency†

D

* Some treatments are visible and some are invisible. EA are waiting for industry to demonstrate exactly what level of invisible treatments are prevalent.

If the material comes from construction/demolition/civic amenity sites then it will be very difficult to adequately demonstrate that the material does not contain halogenated organic compounds or heavy metals, which if it does then the material is considered to be grade C.

† Min 10T/day, <10T/day is not allowed

EMISSION REGULATIONS

Clean Air Act

- No specific emission limits but the equipment must not produce dark smoke and be registered as an exempt appliance if in a Smoke Control Area. The D1 calculation must be performed to establish the flue height.

Industrial Emissions Directive (IED)

- The IED is the governing Directive if you are burning treated waste wood as it is likely to contain halogenated organic compounds or heavy metals. This includes wood wastes from construction and demolition sites and contaminated wood waste recovered from transfer stations. The IED requirements are set out in the Environmental Permitting Regulations (EPR).
- With respect to burning wood, the IED covers combustion plant >50MW for non-waste and incineration/co-incineration of treated waste wood >3T/hr. Both of these configurations will need a Part A permit from the Environment Agency. Where heat is recovered it will always be co-incineration. The Medium Combustion Plant Directive applies to 50MW units irrespective of the fuel type although the IED takes precedence for waste installations Art.5(7).
- If the plant is burning treated wood waste at <3T/hr then it is a Small Waste Incineration Plant (SWIP), not a Part A process.

However, Chapter IV of the IED still applies, i.e. you will need all the same monitoring and controls as a WID installation (now termed chapter IV), but the permit is a Schedule 13A permit (now termed Schedule 13) from the LA, as opposed to a Part A permit from the EA.

Environmental Permitting Regulations (EPR)

The EPR (England and Wales) 2010 require regulators to control certain activities which could harm the environment or human health. The Regulations were introduced in 2010, replacing the 2007 regulations which encompassed the Pollution Prevention and Control (PPC) and Waste Management Licensing (WML) regulations. Local Air Pollution Control was also transferred into these regulations.

The EPR amendment in 2013 transposes the requirements of the Industrial Emissions Directive (IED) into the EPR.

Installations defined under Part A(1) are regulated by the Environment Agency while Part A2 and B are regulated by local authorities.

Chapter 5 of the EPR covers waste management, and section 5.1 covers the incineration and co-incineration of waste.

Waste type	Throughput	EPR reference	Permit required
Clean and untreated	<50kg/hr	Schedule 3: Exempt facilities and waste operations Part 1: Exempt waste operations Chapter 2: Use of waste Section 2: Descriptions and specific conditions	U4 exemption available Regulator: Local Authority
Wood waste which does not contain halogenated organic compounds or heavy metals as a result of treatment with wood preservatives or coatings	50kg to 3T/hr	Schedule 1: Activities, installations and mobile plant Part 2: Activities Chapter 5: Waste management Section 5.1: Incineration and co-incineration of waste Part B(v)	Part B permit Regulator: Local Authority
Wood waste which may contain halogenated organic compounds or heavy metals as a result of treatment with wood preservatives or coatings	50kg to 3T/hr	Schedule 1 Part 2: Activities Chapter 5: Waste management Section 5.1: Incineration and co-incineration of waste Part B(v)	Schedule 13 permit for a SWIP Regulator: Local Authority
Non-Hazardous wood waste	>3T/h	Schedule 1 Part 2: Activities Chapter 5: Waste management Section 5.1: Incineration and co-incineration of waste Part A(1)(b)	Part A permit, subject to Best Available Techniques applies. Regulator: EA
Hazardous wood waste	< 10T/day	Not allowed	N/A
Hazardous wood waste	> 10T/day	Schedule 1 Part 2: Activities Chapter 5: Waste management Section 5.1: Incineration and co-incineration of waste Part A(1)(a)	Part A permit for burning grade D waste wood. Best Available Techniques applies. Regulator: EA,SEPA or NRA

EMISSION LIMITS

Emission limit values the plant must achieve

For plant less than 1MW the PG1/12 is the most appropriate framework although the Local Authority must confirm this.

Emission limit values as defined by PG1/12(13):

Element	Emission limit
CO	<1MW 250 mg/m3 >1MW 150 mg/m3
Particulates	60 mg/m3
NOx	400 mg/m3
Organic compounds	20 mg/m3
Chlorine (Hydrogen Chloride) If burning painted or coated wood where WID does not apply.	100 mg/m3
Hydrogen Cyanide If burning melamine faced wood	5 mg/m3
Formaldehyde If burning plywood, chipboard, fibreboard	5 mg/m3

The monitoring should be via continuous or an annual test, depending upon permit

Medium Plant Combustion Directive

For plant between 1 and 50MW (thermal input) the Medium Plant Combustion Directive applies. It fills the regulatory gap at EU level between large combustion plants (>50 MWth), covered under the IED and smaller appliances (heaters and boilers <1 MWth) covered by the Ecodesign Directive. If the plant falls into Chapter III or IV of the IED then the IED takes precedence.

All newly registered plant will require a permit from the 20th of December 2018 in order to operate. Carbon Monoxide emissions will be recorded for all installations. Plant registered before 20th December 2017 and operational before 20th December 2018 will have less stringent ELV's and have longer to meet them. January 2024 if it is over 5MW (2029 for smaller plant) with emissions limits applying from January 2025 (2030 for smaller plant).

The MPCD will be implemented under amendments to the EPR with permits issued by the EA,SEPA or NRA. Plant falling within an AQMA may well have stricter ELV's imposed than those featuring in the tables below.

Emission limit values as defined by the MPCD for existing plants:

Element	Emission Limit
CO	As yet undefined
SO2	200
NOx	650
Particulates	1-5MW: 50 >5MW: 30

Emission limit values as defined by the MPCD for new plants:

Element	Emission Limit
CO	As yet undefined
SO2	200
NOx	1-5MW: 500 >5MW: 300
Particulates	1-5MW: 50 5-20MW: 30 >20MW: 20

EMISSION LIMITS

Industrial Emission Directive

Annex VI, Part 3 if the IED defines the emission to air from waste incinerators.

Daily average emission limit values as defined by the IED for new plants:

Element	Emission Limit (mg/m3)
Total dust	10
Total Organic compounds (TOC)	10
Hydrogen Chloride (HCl)	10
Hydrogen Flouride (HF)	1
Sulphur Dioxide (SO2)	50
Nitrogen monoxide (NO) and nitrogen dioxide (NO2	200
Heavy metals: Sb + As + Pb + Cr + Co + Cu + Mn + Ni + V	0.5
Heavy metals: Hg	0.05
Heavy metals: Cd + Tl	0.05
Dioxins & Furans	0.1
CO	50

The monitoring should be via continuous or an annual test, depending upon permit

FAQ

What type of boiler system do I need?

When you know what type of material you have access to and wish to use as a fuel, you will need to select a boiler.

Grade	For a process where a Part B permit is required	For a process where a Part A permit is required
A	Industrial, heavyweight WID version will not be required	Industrial, heavyweight IED (WID) boiler will not be required
B	N/A	N/A
C	Industrial, heavyweight WID version will be required	Industrial, heavyweight IED (WID) boiler will be required to maintain combustion chamber @850°C
D	N/A	Industrial, heavyweight IED (WID) boiler version will be required to maintain combustion chamber @1,100°C

Does burning waste wood affect my RHI payments?

- If your RHI application is based on an RHI emission certificate then you need to ensure this certificate specifically lists the material you are using in your boiler. If you do not, you will be breaching the RHI terms and you may be fined and even asked to repay your RHI payments.
- Your annual RHI declaration asks whether you have made any changes to fuel or your system. You must be open about any changes you make to your fuel. Again, not doing so could be regarded as a breach.

Are there situations where I would be exempt from needing a permit?

Yes, there are exemptions granted in the EPR.

A U4 exemption (Ch2.Section2.4) is where you are burning the waste wood (grade A only) as a fuel, applicable if:

- Material input <50Kg/hr and <400kW
- <10T stored on site

A D6 exemption (Ch3.Section2.4) is where you are disposing of the waste wood (grades A & C only) by incineration, applicable if:

- Material input <50Kg/hr and <400kW
- <5T stored on site
- You are only burning your own waste

If I buy waste wood from a BSL registered fuel supplier, do I still need a permit?

- Yes, EPR permitting requirements still apply, unless you have an exemption. Burning any kind of waste wood as a fuel (including clean grade A recycled, even if its mixed in with virgin wood) means you must have an Environmental Permit to do so, either from the local authority or from the Environment Agency.

FAQ

What sort of records do I need to keep?

- If you are audited by OFGEM you will need to have evidence of wood fuel purchases (from BSL suppliers or you can also self supply) that corresponds with the kWh generated on your meter, irrespective of whether you have been burning virgin or waste wood.
- You will need to find a way to measure and record the volume of fuel that you are using, which may require some thought for users of waste wood.

Can I burn waste wood in my biomass boiler?

- Possibly. There are operational, legal and technical challenges, both to ensure good combustion but also to ensure the emissions are at the levels allowed for the type of fuel, the site location and the plant size.
- You need to ensure the boiler manufacturer can guarantee the equipment will burn the material legally (good emissions), efficiently, safely and will still maintain the boiler warranty and give the equipment a long life (burning some materials can significantly reduce the lifetime of the boiler). Failure to burn waste wood in an appropriate appliance without the necessary permit may lead to prosecution.

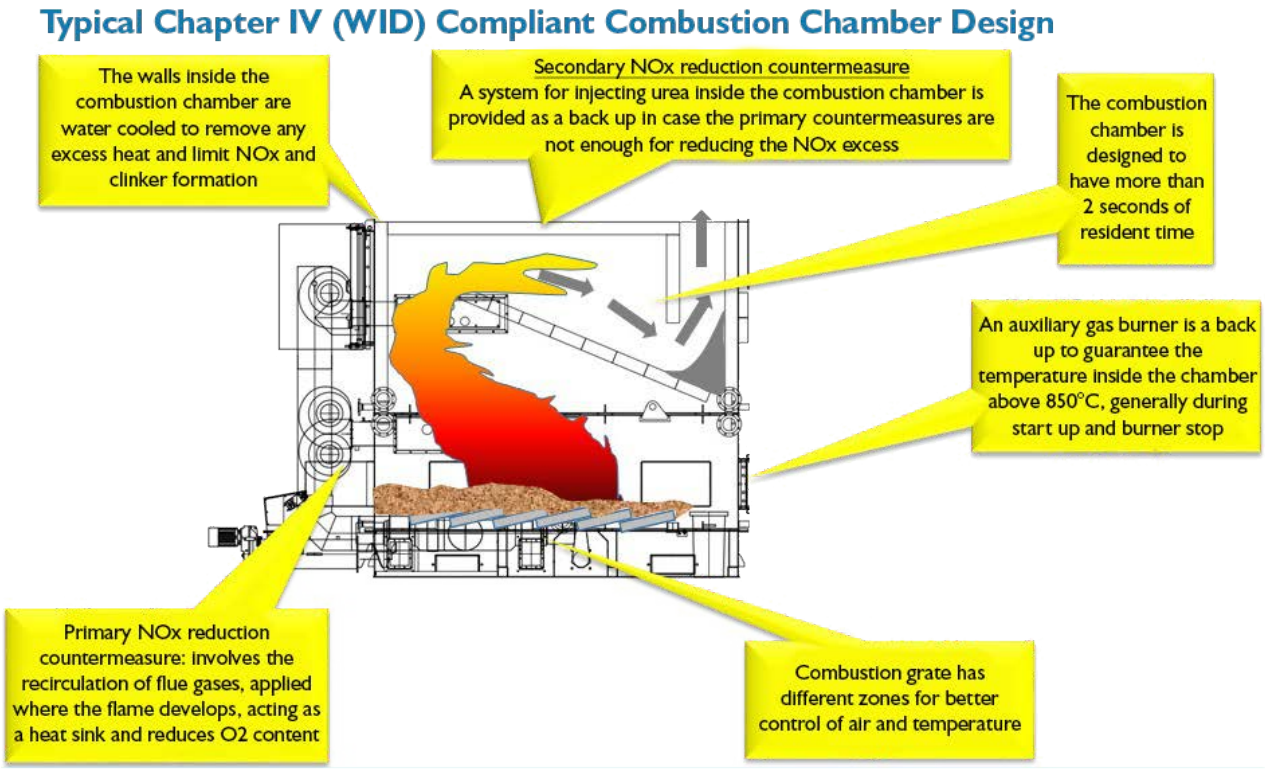
What is the difference between the Industrial Emissions Directive and the Waste Incineration Directive?

- The Waste Incineration Directive (WID) has now been amalgamated into the Industrial Emissions Directive (IED), but the operational requirements are unchanged. The IED states that a waste incineration plant must hold the gases generated by the incineration process at a temperature of at least 850°C for a minimum of 2 seconds. Typical industrial biomass combustion chambers hold the gases for only 1.4sec approximately, so a WID compliant combustion chamber should be specifically requested if this is what you need, as a WID compliant boiler is both larger and more expensive.
- It is important to enter discussion as early as possible with the EA or the local authority about the most appropriate equipment for the specific material at the site, or ask your Main Contractor to do this on your behalf.

What kind of technology should I be looking for from a boiler supplier?

- The diagram below shows some of the standard technology on a typical IED Chapter IV (WID) compliant combustion chamber. In addition to this, the dust content in the flue gases will need to be filtered out, typically by a cyclone and a bag/ mesh filter or by an electrostatic precipitator.

Typical Chapter IV (WID) Compliant Combustion Chamber Design



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