



WOOD FUEL QUALITY ASSURANCE SCHEME

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WOOD FUEL QUALITY ASSURANCE scheme for Ireland

WFQA

The Wood Fuel Quality Assurance (WFQA) scheme was established in 2009

The need for the agreement was identified at a wood fuel workshop by wood fuel suppliers

There was unanimous agreement that the industry needed a quality assurance scheme for wood fuel to inspire customer confidence and promote market growth



WOOD FUEL QUALITY ASSURANCE scheme for Ireland

Working Group

An industry led group including consumer representatives supported by



Department of Agriculture, Food and the Marine



SEAI Sustainable Energy Authority of Ireland



NSAI National Standards Authority of Ireland



IrBEA Irish BioEnergy Association



Waterford Institute of Technology

Waterford IT



Quality Parameters

Wood Chip

- Size
 - Chipper / not shredder
- Moisture
 - Dry round timber
 - Floor dry chip
- Delivery



Wood Logs

- Species
 - Hardwood
 - Softwood
- Moisture
 - Dry round wood
 - Seasoned logs
- Size/length



Quality Parameters

Wood Pellet

- Dust Level
 - Robustness / manufacturing
 - Moisture
- Moisture
 - 8% standard
- Ash / constituents
 - High hearthwood content
- Delivery

Wood Briquette

- Dust Level
 - Robustness / manufacturing
 - Moisture
- Moisture
 - 8% standard
- Wood Content
 - Hardwood / Softwood
 - High hearthwood content
- Size/length
- Packaging

Wood Chip Quality

Raw Material

Raw Material- PULP



- Low Fines
- Controllable Moisture
- Low Ash

Raw Material- BRASH



- High fines level
- High moisture
- High Ash
- Low Cost



Raw Material- Willow

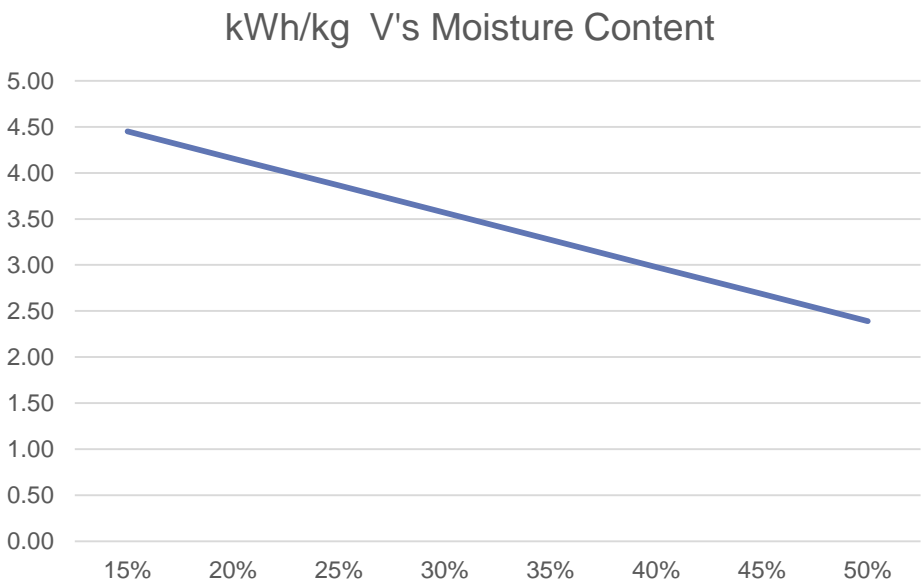


- Higher fines
- Moisture
- Ash
- Cost

Wood Chip Quality

Moisture

Energy and Moisture



Energy Content in Wood Fuels							
Moisture content	MJ		KWH		% Energy loss		
	/WET kg	/DRY kg	/WET kg	/DRY kg			
0%	19.2	19.2	5.33	5.33	0%		
8%	17.5	19.0	4.86	5.29	1%	Pellets & Briquettes	
15%	16.0	18.8	4.45	5.24	2%	Firewood	Woodchip
20%	15.0	18.7	4.16	5.20	3%		
25%	13.9	18.5	3.86	5.15	3%		
30%	12.8	18.3	3.57	5.10	4%		
35%	11.8	18.1	3.27	5.04	6%		
40%	10.7	17.9	2.98	4.96	7%		
45%	9.7	17.6	2.68	4.88	8%		
50%	8.6	17.2	2.39	4.78	10%		
60%	6.5	16.2	1.80	4.50	16%		
Formula		mj/kg = 19.2 - (MC*.2119)					

Moisture Testing

Electronic Meters

- Fast (seconds)
- Prone to inaccuracy
- Expensive

Oven Test

- Slow (5 hours)
- Accurate
- Inexpensive

Moisture Testing – Oven Method

- Weigh Sample Tray

230g



Moisture Testing – Oven Method



- Weigh Sample

= 345g (W1)

Moisture Testing – Oven Method



- Place in oven at 105 celcius
- Weigh after 4 hours
- Weigh each hour until constant weight is reached
- Record Final Weight

= 315g (W2)

Moisture Testing – Oven Method

- Calculations

- $M.C. = \frac{W_1 - W_2}{W_1} \times 100\%$

-

- $M.C. = \frac{345 - 315}{345} \times 100\%$

-

- $M.C. = \frac{30}{345} \times 100\% = 30 \div 345 \times 100 = 8.7\%$

Wood Chip Quality

Particle Size

Particle Size

EN 17225-4

Particle size of graded wood chips

Dimensions (mm), ISO 17827-1					
Main fraction (minimum 60 w-%), mm ^a		Fines fraction, w-% (≤ 3,15 mm)	Coarse fraction, w-%, (length of particle, mm)	Max. length of particles ^b , mm	Max. cross sectional area of the coarse fraction ^c , cm ²)
P16S	3,15 mm < P ≤ 16 mm	≤ 15 %	≤ 6 % (> 31,5 mm)	≤ 45 mm	≤ 2 cm ²
P31S	3,15 mm < P ≤ 31,5 mm	≤ 10 %	≤ 6 % (> 45 mm)	≤ 150 mm	≤ 4 cm ²
P45S	3,15 mm < P ≤ 45 mm	≤ 10 %	≤ 10 % (> 63 mm)	≤ 200 mm	≤ 6 cm ²

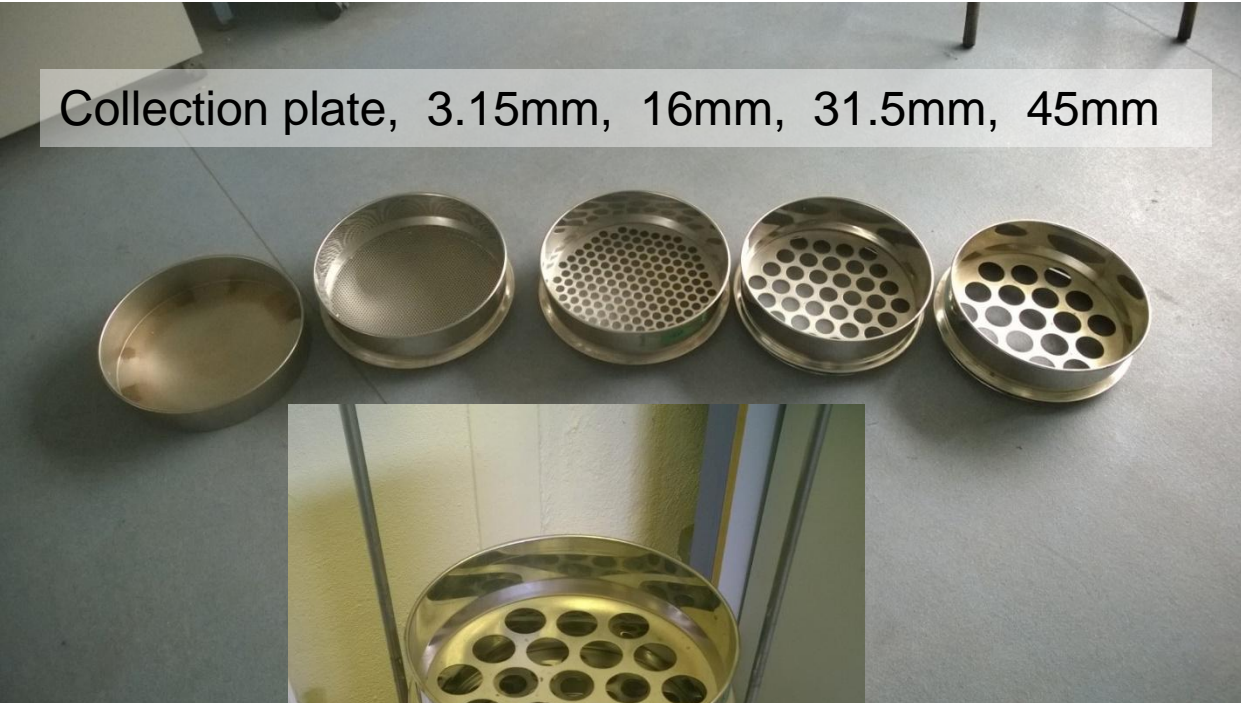
^a The numerical values (P-class) for dimension refer to the particle sizes passing through the mentioned round hole sieve size (ISO 17827-1). The lowest possible class should be stated. Only one class shall be specified for wood chips.

^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 a 10 litre sample may exceed the maximum length, if the cross sectional area is < 0,5 cm².

^d For measuring the cross sectional area it is recommended to use a transparent template, place the particle orthogonally behind the template and estimate the maximum cross sectional area of this particle with the help of the cm²-pattern.

Particle Size

Collection plate, 3.15mm, 16mm, 31.5mm, 45mm



Particle Size testing – Home made



Woodchip Test Sheet

Sample No	Sample Taken	Date/Time of test	Customer		Species		Moisture Test				
							Tray Wt	W1 (without Tray)	W2 (without Tray)	MW (W1-W2)	%M.C. (MW÷W1 X 100)
Fraction	Fines fraction, (≤ 3,15 mm)	on 3.15mm screen	on 16mm screen	on 31.5mm screen	on 45mm screen	on 63mm screen	Max particle length (mm) in 10 Litre sample	Max. cross sectional area, cm2 (coarse fraction)			
Weight							mm	cm2			
Total											
%											
P16	<15%	Minimum 60%	Max 6% larger than 31.5mm			Max 45mm	< 2cm2	P16S	Yes / No		
P31	<10%	Minimum 60%		Max 6% larger than 45mm		Max 150mm	< 4 cm2	P31S	Yes / No		
P45	<10%	Minimum 60%			Max 10% larger than 63mm	Max 200mm	< 6 cm2	P45S	Yes / No		

Class **Compliance** **RESULT**
(only lowest numbered class)

WOOD FUEL QUALITY ASSURANCE scheme



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Consumer Benefits



The WFQA scheme provides a simple but reliable way for consumers to purchase quality wood fuels that are accurately described and meet the supplier's stated product specifications.

Using WFQA wood fuel will ensure that the correct grade of wood fuel is matched to the wood burning appliance, ensuring optimal efficiency and heating and extends lifespan of product.



WOOD FUEL QUALITY ASSURANCE scheme

Producer Benefits



Producers can demonstrate that they have good processes in place to guarantee deliveries of the right product.

Product labelling is consistent across suppliers which enables the consumer to make an informed choice. – ***we're selling energy***

Producers can attain positive *differentiation* for their premium product.

Saving the environment can make you money!



WOOD FUEL QUALITY ASSURANCE scheme

Market Benefits

Increased confidence in the wood fuel sector
leading to sustainable growth

Quality wood fuel contributes to local economy, job
creation and community security

Quality wood fuel is an environmentally, economically
and socially sustainable energy resource

