

Wood chip fuel particle size standards

There have been several wood fuel standards used in the UK in the past few years, these include:

Önorm M7133

Introduced by the Austrian Standards Institute.

Particle sizes include G30/G50 and G100 was also used in addition.

Withdrawn in 2011 when all EU member states were required to use EN14961.

EN 14961

European standard ratified in 2010 for non-industrial biomass fuels.

There was some alignment between the Önorm and the EN standard particle size classes, i.e. G30 is almost equivalent to P16B and G50 is similarly equivalent to P45A.

Withdrawn in 2015 and replaced with the ISO 17225.

ISO 17225

European standard ratified in 2014.

Again, there was some alignment between the ISO and the Önorm and the EN standards for particle size classes but the ISO standard is less stringent.

Generally, boiler manufacturers are still using the EN standard.

Equivalence between the standards ^{*(1)}

Önorm M7133	EN 14961-4 Wood chips	EN 14961-1 Hog fuel	ISO 17225
	P16 A		
G30	P16 B	P16	P16 S
G50	P45 A		P31 S
	P45 B	P45	
G100	P63	P63	P45 S
	P100	P100	
		P125	

**(1) These equivalences are approximate and confirmation from the boiler manufacture should be sought before purchasing equipment or wood fuel.*

Detailed tabular description of the particle size standards

Önorm M7 133

Designation	Fines fraction <4% of all particles should be:	Small fraction <20% of all particles should be between...	Main fraction 60% - 100%, the bulk of the material, should be between...	Course fraction	Cross sectional area of any particle	Max length of any particle.
G30	<1mm	1-3mm	3-16mm	<20% should be >16mm	<3cm ²	85mm
G50	<1mm	1-6mm	6-32mm	<20% should be >32mm	<5cm ²	120mm
G100	<1mm	1-11mm	11-63mm	<20% should be >63mm	<10cm ²	250mm

EN 14961-4 wood chips

Designation	Fines fraction ($<3.15\text{mm}$) Proportion of fines should be:	Main fraction At least 75% (wt) must be between:	Course fraction	Cross sectional area of oversized particles	Max length of any particle
PI6 A	$<12\%$ (wt)	$3.15 < P < 16\text{mm}$	$<3\%$ should be $>16\text{mm}$	$<1\text{cm}^2$	31.5mm
PI6 B	$<12\%$ (wt)	$3.15 < P < 16\text{mm}$	$<3\%$ should be $>45\text{mm}$	$<1\text{cm}^2$	120mm
P45 A	$<8\%$ (wt)	$8 < P < 45\text{mm}$	$<6\%$ should be $>63\text{mm}$	$<5\text{cm}^2$	120mm
P45 B					350mm
P63	$<6\%$ (wt)	$8 < P < 63\text{mm}$	$<6\%$ should be $>100\text{mm}$	$<10\text{cm}^2$	350mm
PI00	$<4\%$ (wt)	$16 < P < 100\text{mm}$	$<6\%$ should be $>200\text{mm}$	$<18\text{cm}^2$	350mm

EN 14961-1 hog fuel (shredded)

Designation	Fines fraction	Main fraction At least 75% (wt) must be between:	Course fraction	Cross sectional area of oversized particles	Max length of any particle
PI6	Fine fraction is particles $<3.15\text{mm}$	$3.15 < P < 16\text{mm}$	$<6\%$ should be $>45\text{mm}$	$<1\text{cm}^2$	120mm
P45		$3.15 < P < 45\text{mm}$	$<10\%$ should be $>63\text{mm}$	$<5\text{cm}^2$	350mm
P63		$3.15 < P < 63\text{mm}$	$<10\%$ should be $>100\text{mm}$	$<10\text{cm}^2$	350mm
PI00	Proportion of fines are defined separately, referenced by F06, F10, F12, F15, F20 and F25	$3.15 < P < 100\text{mm}$	$<10\%$ should be $>125\text{mm}$	$<18\text{cm}^2$	350mm
PI25		$3.15 < P < 125\text{mm}$	$<10\%$ should be $>150\text{mm}$	$<18\text{cm}^2$	350mm
P200		$3.15 < P < 200\text{mm}$	To be specified by fuel supplier		
P300		$3.15 < P < 300\text{mm}$	To be specified by fuel supplier		

ISO 17225-4

Designation	Fines fraction ($<3.15\text{mm}$) Proportion of fines should be:	Main fraction At least 75% (wt) must be between:	Course fraction	Cross sectional area of any particle	Max length of any particle
PI6 S	$<15\%$ (wt)	$3.15 < P < 16\text{mm}$	$<6\%$ should be $>31.5\text{mm}$	$<2\text{cm}^2$	45mm
P31 S	$<10\%$ (wt)	$3.15 < P < 31.5\text{mm}$	$<6\%$ should be $>45\text{mm}$	$<4\text{cm}^2$	150mm
P45 S	$<10\%$ (wt)	$3.15 < P < 45\text{mm}$	$<6\%$ should be $>63\text{mm}$	$<6\text{cm}^2$	200mm

Herz transport systems

System dimensions

Herz auger dimensions				Hydraulic ram stoker	
Auger size	Transport Auger diameter	Stoker auger diameter	No. of stoker augers	Stoker width	Suggested conveyor width
TS220	180mm	150mm	1 or 2 ^{*(2)}	600mm	600mm
TS330	280mm	250mm	1 or 2 ^{*(2)}	600mm	600mm
TS550	500mm	350mm	2	600mm	600mm
<i>*(2) Number of stoker augers is dependent upon boiler power</i>					

Herz auger selection

EN 14961 Wood chips	Minimum auger size required for clean biomass	EN 14961 Hog fuel	Minimum auger size required for shredded waste wood
PI6 A	TS150	PI6	TS220
PI6 B	TS220		
P45 A	TS220	P45	TS330
P45 B	TS330		
P63	TS330	P63	TS550
PI00	TS550	PI00	Hyd ram stoker
		PI25	Hyd ram stoker
		P200	Hyd ram stoker