

## Emissions Factors for Small Combustion Appliances

### PM<sub>10</sub> - Residential Type, <1MWth

Appliance Type	Fuel Type	Emissions Factor (g/GJ net)	Emissions per Household (kg/year)	Emissions per Hectare of Service Sector Floorspace (kg/year)
Open fireplace	Wood	840	95.8	12453
Open fireplace	Other Solid fuel	330	71.5	9295
Stoves	Biomass	760	34.7	4507
Stoves	Gas Oil	2.2	0.2	25
Stoves	Solid fuel (not biomass)	450	39	5070
Small boilers (single household scale, capacity ≤50kWth)	Biomass	480	13.7	1779
Small boilers (single household scale, capacity ≤50kWth)	Natural Gas	0.2	0	1.3
Small boilers (single household scale, capacity ≤50kWth)	Gas Oil	1.5	0.1	10.6
Small boilers (single household scale, capacity ≤50kWth)	Solid fuel (not biomass)	225	12.2	1584
Advanced Coal Combustion Techniques Stove	Coal fuels	240	13	1690
Residential High efficiency stoves	Wood	380	10.8	1408
Advanced/ecolabelled stoves and boilers	Wood	95	2.7	352
Stoves, Fireplaces, Saunas and Outdoor Heaters	Natural Gas	2.2	0.1	15
Stoves, Fireplaces, Saunas and Outdoor Heaters	Solid fuel (not biomass)	330	17.9	2324
Pellet stoves and boilers	Wood	60	2.9	378

**PM<sub>10</sub> - Non-Residential >50kW**

<b>Appliance Type</b>	<b>Fuel Type</b>	<b>Emissions Factor (g/GJ net)</b>	<b>Emissions per Household (kg/year)</b>	<b>Emissions per Hectare of Service Sector Floorspace (kg/year)</b>
Medium Size Boilers (>50 kWth to <= 1MWth)	Coal fuels	190	-	1338
Medium Size Boilers (>50 kWth to <= 1MWth)	Natural Gas	0.45	-	3
Advanced manual boiler	Coal fuels	140	-	986
Advanced automatic boiler	Coal fuels	78	-	549
Manual Boiler	Wood	163	-	604
Automatic Boiler	Wood	38	-	239

**PM<sub>2.5</sub> - Residential Type, <1MWth**

Appliance Type	Fuel Type	Emissions Factor (g/GJ net)	Emissions per Household (kg/year)	Emissions per Hectare of Service Sector Floorspace (kg/year)
Open fireplace	Wood	820	93.5	12157
Open fireplace	Other Solid fuel	330	71.5	9295
Stoves	Biomass	740	33.7	4388
Stoves	Gas Oil	2.2	0.2	25
Stoves	Solid fuel (not biomass)	450	39	5070
Small boilers (single household scale, capacity <=50kWth)	Biomass	470	13.4	1742
Small boilers (single household scale, capacity <=50kWth)	Natural Gas	0.2	0	1.3
Small boilers (single household scale, capacity <=50kWth)	Gas Oil	1.5	0.1	11
Small boilers (single household scale, capacity <=50kWth)	Solid fuel (not biomass)	201	10.9	1415
Advanced Coal Combustion Techniques Stove	Coal fuels	220	13.6	1771
Residential High efficiency stoves	Wood	370	10.5	1371
Advanced/ecolabelled stoves and boilers	Wood	93	2.7	345
Stoves, Fireplaces, Saunas and Outdoor Heaters	Natural Gas	2.2	0.1	15
Stoves, Fireplaces, Saunas and Outdoor Heaters	Solid fuel (not biomass)	330	17.9	2324
Pellet stoves and boilers	Wood	60	2.9	378

**PM<sub>2.5</sub> - Non-Residential >50kW**

Appliance Type	Fuel Type	Emissions Factor (g/GJ net)	Emissions per Household (kg/year)	Emissions per Hectare of Service Sector Floorspace (kg/year)
Open fireplace	Wood	50	5.7	741
Open fireplace	Other Solid fuel	60	13	1690
Stoves	Biomass	50	2.3	297
Stoves	Gas Oil	34	2.9	383
Stoves	Solid fuel (not biomass)	100	8.7	1127
Small boilers (single household scale, capacity ≤50kWth)	Biomass	80	2.3	297
Small boilers (single household scale, capacity ≤50kWth)	Natural Gas	42	2.2	280
Small boilers (single household scale, capacity ≤50kWth)	Gas Oil	69	3.7	486
Small boilers (single household scale, capacity ≤50kWth)	Solid fuel (not biomass)	158	8.6	1113
Advanced Coal Combustion Techniques Stove	Coal fuels	150	8.1	1056
Residential High efficiency stoves	Wood	80	2.3	297
Advanced/ecolabelled stoves and boilers	Wood	95	3.1	402
Stoves, Fireplaces, Saunas and Outdoor Heaters	Natural Gas	60	3.1	400
Stoves, Fireplaces, Saunas and Outdoor Heaters	Solid fuel (not biomass)	60	3.2	423
Pellet stoves and boilers	Wood	80	3.9	504

**NO<sub>2</sub> - Non-Residential >50kW**

<b>Appliance Type</b>	<b>Fuel Type</b>	<b>Emissions Factor (g/GJ net)</b>	<b>Emissions per Household (kg/year)</b>	<b>Emissions per Hectare of Service Sector Floorspace (kg/year)</b>
Medium Size Boilers (>50 kWth to <= 1MWth)	Coal fuels	160	-	1127
Medium Size Boilers (>50 kWth to <= 1MWth)	Natural Gas	73	-	487
Advanced manual boiler	Coal fuels	200	-	1408
Advanced automatic boiler	Coal fuels	165	-	1162
Manual Boiler	Wood	91	-	337
Automatic Boiler	Wood	91	-	573