

Country Specific Net Calorific Values and CO₂ Emission Factors for use in the Annual Installation Emissions Report- 2021

Subject to revision, the following factors may be used for calculating CO₂ emissions for **2021 only**. They are based on Ireland's Specific Emission Factors used in the 2019 National Inventory reported to UNFCCC, unless otherwise stated. Please note that this table may be updated at anytime as new information becomes available. The operator must ensure that the most recent version of this table is used when calculating CO₂ emissions for submission in the verified Annual Installation Emissions Report.

Fuel Factors

Fuel	Emission Factor (t CO ₂ /TJ)	Oxidation factor
Coal	Site specific	1
Kerosene	71.4	1
HFO/RFO/MFO/LFO	76.00*	1
LPG	63.7	1
Diesel / Gas Oil	73.30	1
Natural Gas	56.036	1
Pet Coke	93.542	1
Crude Oil	Site specific	1
Peat	Site Specific	1
Peat Briquettes	98.86	1
Acetylene***	70.4	1

*This factor also applies for MFO and LFO. Please note that GO and LFO are different fuels with different emission factors.

Net Calorific Values

Fuel	NCV (TJ/kt)
Coal	Site specific
Kerosene	44.20
HFO/RFO/MFO/LFO	41.24*
LPG	47.16**
Diesel / Gas Oil	43.31
Natural Gas	Use bills****
Pet Coke	31.74
Crude Oil	Site specific
Peat	Site Specific
Peat Briquettes	18.55
Acetylene***	48

*This factor also applies for MFO and LFO. Please note that GO and LFO are different fuels with different calorific values. Gas oil (BS 2869 Class D), LFO (BS 2869 Class E).

** Average density 507.05 kg/m³ (g/l). Source: Flogas Ireland Ltd. analysis data for commercial propane (LPG), 2004.

***This is a Tier 1 NCV and Emission Factor. NCV based on averaged supplier's data. EF based on stoichiometric ratio.

****Note Gas bills show kWh based on Gross Calorific Value. **The conversion factor from gross to net calorific value may change year to year.**

Reporting of Natural Gas	
Step 1	Convert to Net Calorific Value by multiplying by 0.9019 and then convert to TJ by multiplying by 3.6×10^{-6} . Gas Bills show volume in m ³ corrected to 288.15 Kelvin. The Monitoring and Reporting Regulation requires the annual reporting of standardised (temperature 273.15 K, pressure 101,325 Pa) volume of gas consumed in addition to the net calorific value of the fuel (TJ/Nm ³).
Step 2	Convert the annual actual gas volume to the standardised gas volume (Nm³) as follows: $V_s (\text{Nm}^3) = (V_a * 273.15) / 288.15$ Where V _s is the standardised gas volume and V _a is the actual gas volume determined from the gas bills. (Bills report at standardised pressure of 101,325 Pa, therefore no pressure correction required)
Step 3	Calculate the net calorific value of the fuel (TJ/Nm³) as follows: $\text{TJ/Nm}^3 = \text{Annual TJ (as calculated above)} / \text{Annual standardised gas volume (as calculated above)}$