

## 4 Reference

- Specific gravity of construction by-products  
(4005 Recycling ratio of construction by-products)

Soil from Construction	Specific gravity	Wood	Specific gravity	Waste from Construction	Specific gravity
Loam	1.6	Hinoki Cypress	0.44	Reinforced Concrete	2.50
Normal Soil	1.7	Cryptomeria Japonica	0.38	Concrete	2.35
Clay	1.7	Castanea	0.62	Asphalt Concrete	2.35
Sand	1.7	Japanese Red Pine	0.52	Cement Mortar	2.10
Sand Gravel	1.9	Japanese Black Pine	0.58	Bituminous Material	1.10
Gravel	1.8	Momi Fir	0.44		
Soft Rock	2.1	Average	0.50		
Average*1	1.8				

\*1: The specific gravity of "Soil from Construction" is calculated by 1.8t/m<sup>3</sup> this year.

- Carbon Dioxide (CO<sub>2</sub>) Emission Factor every Electrical Power Industry  
(4006 Emission of CO<sub>2</sub> per 1m<sup>3</sup> transmission input)

Electrical Power Industry	Emission Factor (t-CO <sub>2</sub> /kWh)	Electrical Power Industry	Emission Factor (t-CO <sub>2</sub> /kWh)
Hokkaido	0.000681	Kansai	0.000516
Tohoku	0.000589	Chugoku	0.000717
Tokyo	0.000521	Shikoku	0.000706
Chubu	0.000509	Kyushu	0.000617
Hokuriku	0.000628	Okinawa	0.000763

- Carbon Dioxide (CO<sub>2</sub>) Emission Factor  
(4006 Emission of CO<sub>2</sub> per 1m<sup>3</sup> transmission input)

Fuel	Unit *4	Heat of Combustion MJ/Unit	Emission Factor kgCO <sub>2</sub> /MJ	Remark
Crude Oil	L	38.2	0.0690	*2: Add Natural Gas Liquid (NGL) and Petroleum Asphalt, this year.
Natural Gas Liquid (NGL)*2	L	35.3	0.0680	
Gasoline	L	34.6	0.0688	*3: Heavy Crude Oil type B/C uses numerical value of type C. Last year, it used type B.
Naphtha	L	34.1	0.0652	
Kerosene	L	36.7	0.0685	
Diesel	L	38.2	0.0692	*4: The unit; "Nm <sup>3</sup> " is a "Normal cubic meter". It is a unit volume only for the true quantity that does not depend on Boyle-Charles's Law (Combined Gas Law).
Heavy Crude Oil type A	L	39.1	0.0716	
Heavy Crude Oil type B/C *3	L	41.7	0.0716	
Petroleum Asphalt *2	kg	42.3	0.0760	
Coke	kg	35.6	0.0930	
Liquefied Petroleum Gas (LPG)	kg	50.2	0.0586	
Liquefied Natural Gas (LNG)	kg	54.5	0.0508	
Natural Gas (exclude LNG)	Nm <sup>3</sup>	40.9	0.0510	
Coal	kg	26.6	0.0900	
Coal Coke	kg	30.1	0.1080	
Coke Oven Gas	Nm <sup>3</sup>	21.1	0.0403	
Blast Furnace Gas	Nm <sup>3</sup>	3.41	0.1080	
Converter Gas	Nm <sup>3</sup>	8.41	0.1080	
Coal Gas	Nm <sup>3</sup>	41.1	0.0513	