

CONVERSION FACTORS

The data which have been supplied by the countries in original units are converted to the common unit, terajoules (TJ), by using standard conversion factors or, in the case of solids, specific factors, where available, as indicated below.

Specific factors are displayed for production and for imports. The ones for production are also used for exports and stock changes. All the other flows use a conversion factor which is a weighted average between both. Where no specific factor is listed for a particular country, the standard factor is used to convert all data.

Standard conversion factors for liquid fuels are determined on the basis of the net calorific value for each product.

The conversion of fuelwood (solid volume, 9.135 GJ/m³) is based on an average 20-30% moisture content. When data on the transformation of fuelwood into charcoal are incomplete, estimations assume that it requires 6 cubic metres of fuelwood to produce 1 metric ton of charcoal, equivalent to an approximately 53% transformation efficiency on an energy basis

For users wishing to convert the data from terajoules (TJ) to other common units: one thousand tons of coal equivalent (1,000 TCE) has traditionally been defined as comprising 29.3076 TJ, and one thousand tons of oil equivalent (1,000 TOE) as 42.6216 TJ. One calorie corresponds to 4.1868 joules and is the amount of energy which will raise the temperature of one gramme of water by one degree Celsius.

NET CALORIFIC VALUES

(Terajoules per thousand metric tons, unless otherwise stated)

Hard coal	25.80
Brown coal	14.00
Peat	9.76
Oil shale	8.90
Coal coke	28.20
Patent fuel	20.70
Brown coal briquettes (BKB)	20.70
Coal tar	28.00
Coke-oven gas (original unit is TJ)	1.00
Gasworks gas (original unit is TJ)	1.00
Recovered gases (original unit is TJ)	1.00
Other coal products	20.00
Peat products	9.76
Conventional crude oil	42.30
Natural gas liquids	44.20
Additives and Oxygenates	30.00
Other hydrocarbons	36.00
Feedstocks	43.00
Refinery gas	49.50
Ethane	46.40
Liquefied petroleum gas	47.30
Naphtha	44.50
Aviation gasoline	44.30
Motor gasoline	44.30
Gasoline-type jet fuel	44.30
Kerosene-type jet fuel	44.10
Other kerosene	43.80
Gas-diesel oil	43.00
Fuel oil	40.40
White spirit and SBP industrial spirits	40.20
Lubricants	40.20
Paraffin waxes	40.20
Petroleum coke	32.50
Bitumen (asphalt)	40.20
Other oil products	40.20
Natural gas (original unit is TJ on a GCV basis)	0.90
Fuelwood, wood residues and by-products (10 ³ m ³)	9.14
Bagasse	7.72
Animal waste (original unit is TJ)	1.00
Black liquor (original unit is TJ)	1.00
Other vegetal material and residues (original unit is TJ)	1.00
Biogasoline	26.80
Biodiesels	36.80
Bio jet kerosene	40.00
Other liquid biofuels	27.40
Biogases (original unit is TJ)	1.00

NET CALORIFIC VALUES (continued)

(Terajoules per thousand metric tons, unless otherwise stated)

Industrial wastes (original unit is TJ)	1.00
Municipal wastes (original unit is TJ)	1.00
Charcoal	29.50
Nuclear heat (original unit is TJ)	1.00
Electricity (GWh)	3.60
Heat (original unit is TJ)	1.00

NET CALORIFIC VALUES OF SOLID FOSSIL FUELS
GJ/ton

PRODUCTION, EXPORTS AND CHANGES IN STOCKS

HARD COAL	2009	2010	2011	2012
Standard factor	25.8	25.8	25.8	25.8
Argentina	24.7	24.7	24.7	24.7
Australia	28.7	27.2	27.1	27.0
Bangladesh	20.9	20.9	20.9	20.9
Botswana	23.6	23.6	23.6	23.6
Brazil	18.6	18.6	18.6	18.6
Bulgaria	17.4	17.4	17.4	17.4
Canada	24.7	24.6	24.7	24.7
Chile	15.5	17.1	15.7	17.4
China	20.9	20.9	20.5	20.5
Colombia	27.2	27.2	27.2	27.2
Czech Republic	27.1	27.1	26.7	26.9
Egypt	25.5	25.5	25.5	25.5
France	26.0	26.0	26.0	26.0
Georgia	24.5	25.0	25.0	25.0
Germany	28.0	27.5	29.3	27.4
India	24.3	24.3	24.3	24.3
Indonesia	26.1	26.1	26.1	25.8
Italy	26.6	26.6	26.6	26.6
Kazakhstan	18.6	18.6	18.6	18.6
Korea, Democratic People's Republic of	25.9	26.0	26.2	26.2
Korea, Republic of	19.3	19.3	19.3	18.6
Kyrgyzstan	18.6	18.6	18.6	18.6
Mexico	29.3	29.3	29.3	29.3
New Zealand	29.3	29.5	29.7	29.7
Niger	23.0	23.0	23.0	23.0
Norway	28.1	28.1	28.1	28.1
Pakistan	19.8	19.8	19.8	18.8
Peru	28.7	28.7	28.7	29.3
Poland	23.7	23.9	23.7	23.7
Russian Federation	26.1	26.0	26.1	26.0
South Africa	23.6	23.7	23.6	23.6
Spain	18.3	17.7	18.6	18.4
Sri Lanka	26.4	26.4	26.4	26.4
Tajikistan	18.6	18.6	18.6	18.6
Turkey	18.9	25.1	24.9	23.7
Ukraine	23.8	23.6	23.5	24.9
United Kingdom	25.1	25.1	24.4	24.5
United States	27.0	27.1	26.6	26.5
Uzbekistan	18.6	18.6	18.6	18.6
Viet Nam	23.4	23.4	23.4	23.4
Venezuela (Bolivarian Republic of)	29.3	30.6	30.6	30.6
Zambia	24.7	24.7	24.7	24.7
Zimbabwe	27.0	27.0	27.0	27.0

NET CALORIFIC VALUES OF SOLID FOSSIL FUELS
GJ/ton

PRODUCTION, EXPORTS AND CHANGES IN STOCKS

BROWN COAL	2009	2010	2011	2012
Standard factor	14.0	14.0	14.0	14.0
Albania	9.8	9.8	9.8	9.8
Australia	13.6	12.8	13.0	13.0
Bosnia and Herzegovina	13.5	13.3	13.5	13.6
Bulgaria	7.0	7.0	7.0	7.0
Canada	17.9	17.1	17.1	17.0
Czech Republic	12.7	12.7	12.3	12.3
Estonia	9.0			
Germany	9.0	9.1	9.0	9.0
Greece	5.3	5.4	5.4	5.4
Hungary	7.3	7.3	7.2	7.2
India	9.7	9.5	9.5	9.5
Indonesia	20.0	20.0	20.0	22.0
Korea, Democratic People's Republic of	17.6	17.6	17.6	17.6
Kazakhstan	14.7	14.7	14.7	14.7
Mexico	19.4	19.4	19.4	19.4
Mongolia	14.4	14.4	14.4	14.4
Montenegro	9.2	9.2	9.2	9.2
New Zealand	19.9	20.0	19.9	19.9
Philippines	22.1	22.1	22.1	22.1
Poland	8.9	8.6	8.4	8.3
Romania	8.1	7.9	7.9	7.8
Russian Federation	14.9	14.9	14.9	14.9
Serbia	8.0	8.0	8.0	8.0
Slovakia	10.6	10.8	10.6	10.4
Slovenia	11.0	11.0	11.2	10.7
Spain	10.0	8.6	13.4	13.8
Tajikistan	14.7	14.7	14.7	14.7
Thailand	12.1	12.1	12.1	12.1
T.F. Yugoslav Republic of Macedonia	7.3	7.4	7.2	7.1
Turkey	8.8	9.5	9.3	8.7
United States	18.4	18.3	18.3	18.2
Uzbekistan	14.7	14.7	14.7	14.7
COKE OVEN COKE	2009	2010	2011	2012
Standard factor	28.2	28.2	28.2	28.2
Australia	27.0	27.0	27.0	27.0
Austria	29.0	29.0	29.0	29.0
Belgium	27.7	27.7	29.3	29.3
Bosnia and Herzegovina	26.9	26.9	26.9	26.9
Brazil	30.5	30.5	30.5	30.5
Canada	27.4	28.8	27.5	27.5

NET CALORIFIC VALUES OF SOLID FOSSIL FUELS
GJ/ton

PRODUCTION, EXPORTS AND CHANGES IN STOCKS

COKE OVEN COKE	2009	2010	2011	2012
China	28.5	28.5	28.4	28.4
Colombia	20.1	20.1	20.1	20.1
Czech Republic	28.6	28.2	28.2	28.4
Estonia	28.5	28.5	28.5	28.5
Finland	29.3	29.3	29.3	29.3
France	28.0	28.0	28.0	28.0
Germany	28.7	28.7	28.7	28.7
Hungary	29.7	30.0	29.7	29.5
Italy	29.0	29.0	29.0	29.0
Japan	29.4	29.4	29.4	29.4
Korea, Republic of	29.3	29.3	29.3	28.9
Mexico	26.5	26.5	26.5	26.5
Netherlands	28.5	28.5	28.5	28.5
New Zealand	29.5	29.5	29.5	29.5
Poland	27.7	26.9	27.8	28.1
Slovakia	28.3	28.3	28.3	28.4
South Africa	26.5	26.5	26.5	26.5
Spain	30.1	28.5	26.8	26.8
Sweden	28.1	28.1	28.1	28.1
Turkey	27.9	27.7	27.5	28.2
United Kingdom	28.3	28.3	28.3	28.3
United States	28.8	28.8	28.8	28.8
PATENT FUEL	2009	2010	2011	2012
Standard factor	20.7	20.7	20.7	20.7
France	32.0	32.0	32.0	32.0
Germany	31.4	31.4	31.4	31.4
Hungary	22.0	22.0	22.0	22.0
Korea, Republic of	19.3	19.3	19.3	18.6
Russian Federation	29.0	29.0	29.0	29.0
Ukraine	29.3	29.3	29.3	29.3
United Kingdom	31.0	31.0	31.0	31.0
BROWN COAL BRIQUETTES	2009	2010	2011	2012
Standard factor	20.7	20.7	20.7	20.7
Australia	22.0	21.0	21.0	21.0
Czech Republic	23.6	23.4	21.6	21.6
Germany	21.1	21.5	21.3	21.1

NET CALORIFIC VALUES OF SOLID FOSSIL FUELS
GJ/ton

PRODUCTION, EXPORTS AND CHANGES IN STOCKS

PEAT	2009	2010	2011	2012
Standard factor	9.8	9.8	9.8	9.8
Austria	8.8	8.8	8.8	8.8
Burundi	14.7	14.7	14.7	14.7
Falkland Islands (Malvinas)	9.5	9.5	9.5	9.5
Finland	10.2	10.2	10.2	10.1
Ireland	8.8	8.4	8.6	9.1
Sweden	12.5	12.5	12.5	12.5

OIL SHALE	2009	2010	2011	2012
Standard factor	8.9	8.9	8.9	8.9
Israel	2.9	2.9	2.9	2.9

NET CALORIFIC VALUES OF SOLID FOSSIL FUELS
GJ/ton

IMPORTS

HARD COAL	2009	2010	2011	2012
Albania	27.2	27.2	27.2	27.2
Argentina	30.1	30.1	30.1	30.1
Austria	28.6	28.4	28.3	28.2
Azerbaijan	27.7	27.7	27.7	27.7
Bangladesh	20.9	20.9	20.9	20.9
Belarus	24.2	23.2	25.0	26.1
Belgium	26.9	27.5	27.5	27.4
Bosnia and Herzegovina	30.7	30.7	30.7	30.7
Brazil	30.5	30.5	30.5	30.5
Bulgaria	25.6	25.6	25.6	25.9
Canada	28.3	25.7	26.3	26.7
Chile	22.3	23.0	23.5	23.9
China	21.2	20.9	17.6	17.6
China, Hong Kong SAR	25.8	25.8	25.8	25.8
Colombia	27.2	27.2	27.2	27.2
Croatia	24.6	24.2	24.4	24.7
Czech Republic	26.7	26.8	26.7	26.6
Denmark	24.6	24.4	24.4	24.2
Egypt	25.5	25.5	25.5	28.2
Estonia	27.2	27.2	27.2	27.2
Finland	25.4	26.0	25.7	26.0
France	27.1	27.2	27.2	27.2
Georgia	24.5	25.0	25.0	25.0
Germany	26.7	27.0	26.3	26.4
Greece	26.0	26.9	23.9	27.2
Hungary	29.7	30.3	31.2	32.1
Iceland	28.1	28.1	28.1	28.1
India	24.3	24.3	24.3	24.3
Indonesia	26.7	26.7	26.7	28.2
Ireland	27.8	27.8	25.7	25.0
Israel	25.1	25.1	25.1	25.1
Italy	27.3	27.6	27.6	27.5
Japan	25.9	25.9	25.9	25.6
Kazakhstan	18.6	18.6	18.6	18.6
Korea, Democratic People's Republic of	25.8	25.8	25.8	26.7
Korea, Republic of	25.7	25.8	25.8	25.6
Kyrgyzstan	18.6	18.6	18.6	18.6
Latvia	26.2	26.2	26.2	26.3
Luxembourg	28.8	28.6	24.8	24.7
Mauritius	26.0	26.0	26.0	26.0
Mexico	29.6	29.6	29.6	29.6
Moldova, Republic of	18.6	18.6	18.6	23.7
Morocco	27.6	27.6	27.6	27.6
Namibia	22.7	22.7	22.7	22.7
Netherlands	25.4	25.7	25.4	25.4
New Zealand	28.3	27.8	28.2	28.1

NET CALORIFIC VALUES OF SOLID FOSSIL FUELS
GJ/ton

IMPORTS

HARD COAL	2009	2010	2011	2012
Norway	28.1	28.1	28.1	28.1
Pakistan	29.1	29.1	29.1	27.6
Peru	27.2	27.2	27.2	29.3
Poland	25.2	25.1	24.4	24.6
Portugal	25.6	25.7	25.0	25.2
Romania	27.1	26.8	26.5	26.5
Russian Federation	25.1	25.1	25.4	25.3
Serbia	23.2	23.1	23.0	23.0
Slovakia	28.2	28.3	28.0	28.1
Slovenia	23.9	25.3	25.3	25.4
South Africa	31.0	31.0	31.0	31.0
Spain	24.1	25.2	24.4	24.0
Sri Lanka	26.4	26.4	26.4	26.4
Sweden	28.9	29.2	28.8	28.6
Switzerland	28.1	28.1	28.1	28.1
T.F. Yugoslav Republic of Macedonia	25.7	26.9	27.0	27.1
Tajikistan	18.6	18.6	18.6	18.6
Thailand	26.4	26.4	26.4	26.4
Turkey	27.0	27.0	27.1	27.5
Ukraine	25.5	25.5	25.5	27.3
United Kingdom	25.7	26.1	26.1	25.8
United States	26.1	26.0	26.2	26.1
Uruguay	29.3	29.3	29.3	25.8
Viet Nam	23.4	23.4	23.4	23.4
Zambia	24.7	24.7	24.7	24.7
Zimbabwe	27.0	27.0	27.0	27.0
BROWN COAL	2009	2010	2011	2012
Albania	9.8	9.8	9.8	9.8
Austria	17.7	19.7	15.6	19.4
Bosnia and Herzegovina	11.8	11.8	12.0	9.3
Cambodia	19.9	19.9	19.9	19.9
Canada	19.1	18.2	18.2	18.2
Croatia	18.0	17.5	17.6	17.1
Czech Republic	13.9	14.6	18.7	13.1
France	17.0	17.0	17.0	17.0
Germany	17.6	9.1	9.1	9.1
Greece	4.3	4.4	4.2	4.0
Hungary	16.3	17.3	17.7	17.5
Ireland	19.8	19.8	19.8	19.8

NET CALORIFIC VALUES OF SOLID FOSSIL FUELS
GJ/ton

IMPORTS

BROWN COAL	2009	2010	2011	2012
Israel	20.4	20.4	20.4	20.8
Italy	18.7	18.7	18.6	18.8
Kazakhstan	14.7	14.7	14.7	14.7
Korea, Republic of	20.9	20.9	20.9	21.4
Mexico	25.3	19.4	22.5	22.5
Montenegro	9.9	9.2	9.2	9.2
Netherlands	20.0	20.0	20.0	20.0
New Zealand	20.6	20.6	20.6	20.6
Philippines	22.1	22.1	22.1	22.1
Poland	8.7	8.7	8.4	8.5
Romania	22.6	22.6	24.6	24.5
Russian Federation	14.9	14.9	14.9	14.9
Serbia	17.0	17.0	17.0	17.0
Singapore	9.7	9.7	9.7	9.7
Slovakia	13.8	14.9	14.7	13.5
Slovenia	18.3	18.8	18.4	18.4
Switzerland	20.1	20.1	20.1	20.1
T.F. Yugoslav Republic of Macedonia	20.6	20.3	18.0	19.9
Ukraine	14.7	14.7	14.7	14.7
United States	19.5	19.5	18.5	17.9
Uzbekistan	14.7	14.7	14.7	14.7
COKE OVEN COKE	2009	2010	2011	2012
Australia	27.0	27.0	27.0	27.0
Austria	29.0	29.0	29.0	29.0
Belgium	27.7	27.7	29.3	29.3
Brazil	30.5	30.5	30.5	30.5
Canada	27.4	28.8	27.5	27.5
China	28.5	28.5	28.4	28.4
Czech Republic	27.1	27.5	27.4	28.5
Denmark	29.3	29.3	29.3	29.3
Finland	29.3	29.3	29.3	29.3
France	28.0	28.0	28.0	28.0
Germany	28.7	28.7	28.7	28.7
Greece	30.4	30.3	30.3	30.3
Hungary	28.3	29.3	29.4	29.6
Iceland	26.7	26.7	26.7	26.7
Italy	29.0	29.0	29.0	29.0
Japan	29.4	29.4	29.4	29.4
Korea, Republic of	29.3	29.3	29.3	28.9
Luxembourg	28.5	28.5	28.5	28.5

NET CALORIFIC VALUES OF SOLID FOSSIL FUELS
GJ/ton

IMPORTS

COKE OVEN COKE	2009	2010	2011	2012
Mexico	26.5	26.5	26.5	26.5
Netherlands	28.5	28.5	28.5	28.5
Norway	28.5	28.5	28.5	28.5
Peru	26.8	26.8	26.8	28.2
Poland	28.0	28.0	28.0	28.0
Portugal	29.2	29.4	29.6	29.6
Slovakia	27.3	28.2	28.2	28.0
Slovenia	29.5	29.5	29.5	29.6
Spain	30.1	28.5	26.8	26.8
Sweden	28.1	28.1	28.1	28.1
Switzerland	28.1	28.1	28.1	28.1
T.F. Yugoslav Republic of Macedonia	27.2	25.7	25.2	25.6
Turkey	27.9	27.9	27.9	28.2
United Kingdom	28.3	28.3	28.3	28.3
United States	28.8	28.8	28.8	28.8
Uruguay	28.5	28.5	28.5	28.5
PATENT FUEL	2009	2010	2011	2012
Austria	31.0	31.0	31.0	31.0
Belgium	29.3	29.3	29.3	30.5
France	32.0	32.0	32.0	32.0
Germany	31.4	31.4	31.4	31.4
Netherlands	29.3	29.3	29.3	29.3
Poland	23.2	23.2	23.2	23.2
Slovakia	28.0	28.0	28.0	28.0
United Kingdom	31.0	31.0	31.0	31.0
BROWN COAL BRIQUETTES	2009	2010	2011	2012
Austria	19.3	19.3	19.3	19.3
Belgium	20.1	20.0	20.0	20.7
Czech Republic	20.7	19.4	21.6	22.0
Denmark	18.3	18.3	18.3	18.3
Germany	19.9	20.3	21.3	20.9
Hungary	20.0	20.0	23.0	19.8
Luxembourg	20.1	20.1	22.2	22.2
Poland	17.5	17.5	17.5	17.6
Slovakia	23.8	17.0	17.0	17.0

NET CALORIFIC VALUES OF SOLID FOSSIL FUELS
GJ/ton

IMPORTS

PEAT	2009	2010	2011	2012
Finland	10.2	10.2	10.2	10.1
Sweden	12.9	12.9	12.9	12.9
T.F. Yugoslav Republic of Macedonia	11.4	11.5	9.6	9.1