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Natural Gas and Coal Measurements and Conversions

Natural gas measurements and conversions

1 cubic foot natural gas (NG) – wet = 1,109 Btu

1 cubic foot - dry = 1,027 Btu

1 cubic foot - dry = 1,087 kilojoules

1 cubic foot – compressed = 960 Btu

1 pound = 20,551 Btu

1 gallon - liquid = 90,800 Btu - HHV *

1 gallon – liquid = 87,600 Btu – LHV *

1 million cubic feet = 1,027,000 Btu

1 metric ton liquefied natural gas (LNG) = 48,700 cubic feet of natural gas

1 billion cubic meters NG = 35.3 billion cubic feet NG

1 billion cubic meters NG = .90 million metric tons oil equivalent

1 billion cubic meters NG = .73 million metric tons I NG

1 billion cubic meters NG = 36 trillion Btus

1 billion cubic meters NG = 6.29 million barrels of oil equivalent

1 billion cubic feet NG = .028 billion cubic meters NG

1 billion cubic feet NG = .026 million metric tons oil equivalent

1 billion cubic feet NG = .021 million metric LNG

1 billion cubic feet NG = 1.03 trillion Btus

1 billion cubic feet NG = .18 million barrels oil equivalent

1 million metric tons LNG = 1.38 billion cubic meters NG

1 million metric tons LNG = 48.7 billion cubic feet NG

1 million metric tons LNG = 1.23 million metric tons oil equivalent

1 million metric tons LNG = 52 trillion Btus

1 million metric tons LNG = 8.68 million barrels oil equivalent

1 million metric tons oil equivalent = 1.111 billion cubic meters NG

1 million metric tons oil equivalent = 39.2 billion cubic feet NG

1 million metric tons oil equivalent = .805 million tons LNG

1 million metric tons oil equivalent = 40.4 trillion Btus

1 million metric tons oil equivalent = 7.33 million barrels oil equivalent

1 million barrels oil equivalent = .16 billion cubic meters NG

1 million barrels oil equivalent = 5.61 billion cubic feet NG

1 million barrels oil equivalent = .14 million tons oil equivalent

1 million barrels oil equivalent = .12 million metric tons of LNG

1 million barrels oil equivalent = 5.8 trillion Btus

1 trillion Btus = .028 billion cubic meters NG

1 trillion Btus = .98 billion cubic feet NG

1 trillion Btus = .025 million metric tons oil equivalent

1 trillion Btus = .02 million metric tons LNG

1 trillion Btus = .17 million barrels oil equivalent1 short ton = 53,682.56 cubic feet

1 long ton = 60,124.467 cubic feet

1 cubic foot = .028317 cubic meters

1 cubic meter – dry = 36,409 Btu

1 cubic meter – dry = 38.140 megajoules

1 cubic meter = 35.314 cubic feet

Coal measurements and conversions

1 pound = 10,377 Btu

1 pound of coal = 10.948 megajoules

1 short ton (2,000 lbs.) of coal = 20,754,000 Btu

1 short ton = 21,897 megajoules

1 short ton = .907 metric tons

1 metric ton = 22,877,388 Btu

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- 1 metric ton = 24,137 megajoules
- 1 metric ton = 1.102 short tons
- 1 barrel oil equivalent = approximately .20 metric tons of hard coal
- 1 barrel oil equivalent = approximately .41 metric tons of lignite coal
- 1 metric ton oil equivalent = approximately 1.5 metric tons of hard coal
- 1 metric ton oil equivalent = approximately 3 metrics tons of lignite coal
- 1 metric ton hard coal = approximately 5 barrels oil equivalent
- 1 metric ton hard coal = approximately .67 metric tons of oil equivalent
- 1 metric ton lignite coal = approximately 2.5 barrels oil equivalent
- 1 metric ton lignite coal = approximately .33 metric tons of oil equivalent

* Energy contents are expressed as either High (gross) Heating Value (HHV) or Lower (net) Heating Value (LHV). LHV is closest to the actual energy yield in most cases. HHV (including condensation of combustion products) is greater by between 5% (in the case of coal) and 10% (for natural gas), depending mainly on the hydrogen content of the fuel. For most biomass feed-stocks this difference appears to be 6-7%. The appropriateness of using LHV or HHV when comparing fuels, calculating thermal efficiencies, etc. really depends upon the application. For stationary combustion where exhaust gases are cooled before discharging (e.g. power stations), HHV is more appropriate. Where no attempt is made to extract useful work from hot exhaust gases (e.g. motor vehicles), the LHV is more suitable. In practice, many European publications report LHV, whereas North American publications use HHV

(Source: Bioenergy Feedstock Network -- http://bio-energy.ornl.gov/)

References

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