

CONVERTION FACTORS, DENSITIES AND LOWER CALORIFIC VALUES

Average values for the year 2021

Products and units	Conversion factor to boe	Density ¹ (t/m ³)	Lower calorific value (kcal/kg)
Anhydrous ethanol	m ³ 3,841	0,79100	6.750
Hydrated ethanol	m ³ 3,666	0,80900	6.300
Asphalt	m ³ 7,219	1,02500	9.790
Pure biodiesel (B100)	m ³ 5,698	0,88000	9.000
Green petroleum coke	m ³ 6,277	1,04000	8.390
Dry natural gas	10 ³ m ³ 4,685	0,00074	8.800
Wet natural gas	10 ³ m ³ 5,286	0,00074	9.930
Refinery fuel gas	10 ³ m ³ 4,714	0,00078	8.400
Gasoline A	m ³ 5,552	0,74200	10.400
Gasoline C	m ³ 5,101	0,75425	9.400
Aviation gasoline	m ³ 5,536	0,72600	10.600
LPG	m ³ 4,408	0,55200	11.100
NGL	m ³ 4,469	0,58000	10.710
Naphtha	m ³ 5,368	0,70200	10.630
Bunker	m ³ 6,899	1,00000	9.590
Diesel oil	m ³ 6,104	0,84000	10.100
Fuel oil ²	m ³ 6,989	1,01300	9.590
Lubricating oil	m ³ 6,370	0,87500	10.120
Other energy products	m ³ 6,340	0,86400	10.200
Other non-energy products	m ³ 6,340	0,86400	10.200
Paraffin	m ³ 6,141	0,82000	10.410
Oil	m ³ 6,229	0,84976	10.190
Jet fuel	m ³ 5,978	0,79900	10.400
Lamp kerosene	m ³ 5,978	0,79900	10.400
Solvent	m ³ 5,624	0,74100	10.550

Source: ANP.

¹At 20 °C temperature and 1 atm for natural gas as well as oil and natural gas products. ²Fuel oil ATE e BTE.

Prefixes of SI Units

(k) quilo = 10³

(M) mega = 10⁶

(G) giga = 10⁹

(T) tera = 10¹²

(P) peta = 10¹⁵

(E) exa = 10¹⁸

Relationships between Units

1 m³ = 6,28981 barris

1 barril = 0,158987 m³

1 joule (J) = 0,239 cal

1 BTU = 252 cal

1 bep = 1.390 Mcal

1 tep = 10.000 Mcal