

## CONVERTION FACTORS, DENSITIES AND LOWER CALORIFIC VALUES

Average values for the year 2018

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

Source: ANP.

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

### Prefixes of SI Units

(k) kilo = 10<sup>3</sup>  
(M) mega = 10<sup>6</sup>  
(G) giga = 10<sup>9</sup>  
(T) tera = 10<sup>12</sup>  
(P) peta = 10<sup>15</sup>  
(E) exa = 10<sup>18</sup>

### Relationships between Units

1 m<sup>3</sup> = 6,28981 barrels  
1 barrel = 0,158987 m<sup>3</sup>  
1 joule (J) = 0,239 cal  
1 BTU = 252 cal  
1 boe = 1.390 Mcal  
1 toe = 10.000 Mcal