

Reference: Measurement and Units



Units of Measurement

Throughout our materials we use the International System (SI) of Units[®] with a few common exceptions.

Energy

The SI base unit for energy is the joule (J), which we use for most fuel energy content. For electricity, the watt-hour (Wh) is a common base unit. 1 Wh is 3,600 J.

Mass

The SI unit for mass is the kilogram (kg). We also use the tonne (t), which is 1,000 kg.

Volume

The SI base unit for volume is the cubic metre (m³). We also use the litre (L), which is 0.001 m³.

Greenhouse Gas Emissions

Greenhouse gas emissions (GGE) are expressed as a mass of carbon dioxide (CO₂) equivalent (kgCO₂e, tCO₂e, etc).

This unit expresses the global warming potential of greenhouse gas emissions as if they were CO₂, the major contributor. For example, 1 kg of methane (CH₄) has 25 times the warming potential of 1 kg of CO₂, therefore it can be regarded as 25 kgCO₂e.

Vehicle Fuel/Energy Consumption Rate

Liquid fuel consumption rate is expressed in litres per hundred kilometres (L/100km).

Electricity consumption rate is expressed in watt-hours per kilometre (Wh/km).

Gaseous fuel consumption is expressed as megajoules per kilometre (MJ/km).

Pressure

The SI unit for pressure is the Pascal (Pa). For tyre pressures, the most common measure is kilopascals (kPa).

Other Quantities

We use everyday measures of familiar quantities, such as: time (minutes, min / hours, h) angles (degrees, °); speed (kilometres per hour, km/h); temperature (degrees Celcius, °C); engine rotation (revolutions per minute, RPM).

Where imperial measures are still commonly used, we may present them alongside the SI unit. For example, tyre pressure is properly expressed in kilopascals (kPa), but often expressed in pounds per square inch (psi).

We never use obsolete units on their own.

Further information:

Email: DPTI.LowEmissionVehicles@sa.gov.au

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SI Prefixes

Units may be prefixed by one of the following in order to express quantities in more relatable numbers (typically 0.1 to 1,000):

- Micro (μ): 10^{-6} (millionth)
- Milli (m): 10^{-3} (thousandth)
- Centi (c): 10^{-2} (hundredth)
- Kilo (k): 10^3 (thousand)
- Mega (M): 10^6 (million)
- Giga (G): 10^9 (billion)
- Tera (T): 10^{12} (trillion)
- Peta (P): 10^{15} (quadrillion)

eg, 1 gigalitre (1 GL) is 1 billion litres (1,000,000,000 = 10^9). More prefixes exist, but aren't used in our materials.

Accuracy and Rounding

Values are rounded to within a practical margin, based on the context.

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See Also:

- [Vehicle Technologies](#)
- [Transport Fuels](#)
- [Vehicle Emissions](#)

External Links:

- [Green Vehicle Guide](#)
- [Fuel Consumption Database](#)
- [Truck Buyers Guide](#)

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