

# Transport Fuels: Conventional Fuels



## Overview

For many years, petrol and diesel have been the preferred fuels in South Australia. Diesel use has dominated the heavy vehicle fleet, while petrol has been the preferred fuel for light vehicles.

This demarcation is breaking down, however, especially with the increase of diesel-fuelled light vehicle models entering the market.

Petrol and diesel are both products of fractional distillation of crude oil. Petrol and diesel are, therefore, fossil fuels. While relatively low cost, use of these fuels results in significant greenhouse gas emissions and air toxic emissions.

Newer vehicles burn conventional fuels cleaner and use them more efficiently, with considerable improvements in recent years.

### Petrol in South Australia

There are several petrol variants on the market, mainly differentiated by their research octane number (RON).

A higher RON means the fuel is more resistant to detonation and, therefore, can be used in higher compression engines or in leaner fuel/air mixtures.

Petrol products available in SA include:

- Regular unleaded petrol (91RON);
- Premium unleaded petrol (95RON); and
- Ultra-premium unleaded petrol (98RON).

OPAL is a low aromatic hydrocarbon variant sold in some remote areas.

### *Which Type of Petrol Should I Use?*

Consult your owner's manual to see what your vehicle is designed to operate on.

If your vehicle is designed to use 95RON or 98RON petrol, using lower RON petrol will cause its performance to suffer and, over time, damage may occur.

For vehicles specifically designed to run on regular unleaded petrol using a premium variant won't improve performance. It won't cause damage, though it will cost more.

If your vehicle can operate on a range of octane ratings, a higher RON is likely to deliver an improvement in performance.

### Diesel in South Australia

Differences between the available diesel products are not as significant as those between petrol products.

#### Further information:

Email: [DPTI.LowEmissionVehicles@sa.gov.au](mailto:DPTI.LowEmissionVehicles@sa.gov.au)

Web: [www.lowemissionvehicles.sa.gov.au](http://www.lowemissionvehicles.sa.gov.au)



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Some retailers offer alternative diesel product with solvent additives to help dissolve residues, cleaning the fuel system.

## Alternatives to Conventional Fuels

### Alternatives Specific to Petrol

Ethanol blends are increasingly accepted by drivers as a 'drop-in' replacement to petrol. Most petrol vehicles in South Australia can use an ethanol blend without modification. <sup>□</sup>

Gaseous fuels, such as LPG and CNG, are potential alternatives to petrol. Use of these fuels requires a dedicated or dual-fuel vehicle. LPG and CNG vehicles can be purchased, or existing vehicles can be converted. <sup>□</sup>

### Alternatives Specific to Diesel

Biodiesel blends are a 'drop-in' alternative to mineral diesel. <sup>□</sup>

Gaseous fuels such as LPG, CNG and LNG, also, can replace mineral diesel. These are not drop-in fuels for diesel vehicles but require a dedicated or converted vehicle. <sup>□</sup>

### Other Alternatives

Electric vehicles are also emerging, some of which can be fuelled on electricity and/or conventional fuels. Hybrid vehicles can offset fossil fuel use by capturing and reusing energy normally lost when braking. <sup>□</sup>

## Precautions, Emissions and Costs

- Diesel and petrol engines are fundamentally different. Petrol is used in spark ignition engines and diesel is used in compression ignition engines.
- Therefore, petrol and diesel are not interchangeable. If you fill your vehicle with the wrong fuel, *don't start it!* The fuel tank will need to be drained.

- Compression ignition engines are, typically, more efficient. All else being equal, a diesel vehicle is likely to have lower greenhouse gas emissions than a comparable petrol vehicle.
- Petrol tends to outperform diesel for air toxic emissions, especially particulate emissions. Later model diesel vehicles employ sophisticated emissions control systems that have gone a long way to closing that gap.
- Diesel and petrol are broadly available, though premium unleaded petrol variants may not be as readily accessible as regular unleaded.
- The price of diesel is typically higher than petrol, largely balanced by diesel's higher efficiency.

7361474 (7/2/13)

### See Also:

- [Transport Fuels](#)
- [Transport Fuels: Liquefied Petroleum Gas \(LPG\)](#)
- [Transport Fuels: Natural Gas \(CNG and LNG\)](#)
- [Transport Fuels: Ethanol \(E10 and E85\)](#)
- [Transport Fuels: Biodiesel \(B5, B20 and B100\)](#)
- [Transport Fuels: Electricity](#)
- [Transport Fuels: Emerging and Future Fuels](#)

#### Further information:

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