

Transport Fuels: Biodiesel (B5, B20 and B100)



Overview

Biodiesel is an emerging alternative to conventional (mineral) diesel. It is essentially a 'drop-in' fuel, meaning that most diesel vehicles can use it without modification.

Biodiesel is blended with mineral diesel and sold as B5 (5% biodiesel and 95% mineral diesel, by volume) or B20 (20% biodiesel and 80% mineral diesel, by volume).

Pure biodiesel (B100) is also sold without any mineral diesel content.

What is Biodiesel?

Biodiesel is typically created from organic materials such as tallow, waste greases and canola oil. Research is underway into cost-effective biodiesel production from algae and other non-crop sources.

Biodiesel is produced by the transesterification of animal fats and vegetable oils, and further refined, such that it meets the Australian Biodiesel Fuel Standard.

Pure biodiesel (B100) has about 90% of the energy density of mineral diesel. B20, therefore, has around 98% the energy density of mineral diesel. Biodiesel and blends offer much the same utility as mineral diesel.

Can my Vehicle Run on Biodiesel?

B5 must meet the same standards as mineral diesel and, as such, diesel may contain up to 5% biodiesel without labelling – your vehicle may already run on biodiesel.

Most modern diesel engines are unlikely to experience issues running on B20, however you should confirm with the vehicle's manufacturer that the engine is certified for use with biodiesel blends above 5%.

The majority of the Adelaide Metro bus service has been fuelled by either B5 or B20 for some years, with positive results.

Pure biodiesel use is less common, as there are special precautions and handling procedures. As with B20, ensure the vehicle's manufacturer is willing to certify the use of B100. Some engines have been designed specifically for B100 and there have been various successful trials of B100 in regular diesel vehicles.

Biodiesel has stronger solvent properties than mineral diesel and, when you first switch, it may dissolve existing solid residues in your fuel system – that is, clean it. You may need to change your fuel filter.

Further information:

Email: DPTI.LowEmissionVehicles@sa.gov.au

Web: www.lowemissionvehicles.sa.gov.au



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Cost Effectiveness of Biodiesel

Biodiesel has a slightly lower energy density than mineral diesel. It also tends to be cheaper.

You can consider B5 to be cost effective at about the same price as conventional diesel – what is sold as conventional diesel may well be B5.

As a rule of thumb, B20 needs to be just a few cents cheaper per litre to offer fuel savings.

B100 needs to be around 20% less than the price of mineral diesel.

For more accurate assessment, see our on-line fuel price comparison. 

Where do I Buy Biodiesel?

Most biodiesel is sold in bulk for depot-based refuelling. It is not currently available at retail service stations in South Australia.

Why consider Biodiesel?

- Many diesel vehicles can use a biodiesel blend without modification. You can use B5 knowing it must meet mineral diesel standards.
- Compared to diesel, greenhouse gas emissions are 4.5% lower with B5, 18% lower using B20 and over 99% lower – that is, almost eliminated – using B100.
- Biodiesel reduces particulate matter and carbon monoxide emissions.
- It is domestically sourced, reducing Australia's dependence on oil imports.
- Biodiesel offers potential cost savings.

What issues are there?

- Before using biodiesel, you should confirm vehicle compatibility.
- Biodiesel can be less stable, and should be used early to avoid oxidation or exposure to light.
- At low temperatures (below 5°C) it can become viscous and lose fluidity.
- Nitrous oxide emissions may increase if you use biodiesel.
- Biodiesel has stronger solvent properties than mineral diesel, potentially dissolving solid residue in the fuel system on first use. Spillage can affect paintwork and should be wiped away.
- Rubber hoses, seals, etc, in older vehicles may experience quicker degradation with biodiesel. Most vehicles since 1993 use synthetic components, eliminating this issue.

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See Also:

- [Transport Fuels](#)
- [Transport Fuels: Conventional Fuels](#)
- [Transport Fuels: Liquefied Petroleum Gas \(LPG\)](#)
- [Transport Fuels: Natural Gas \(CNG and LNG\)](#)
- [Transport Fuels: Ethanol \(E10 and E85\)](#)
- [Transport Fuels: Electricity](#)
- [Transport Fuels: Emerging and Future Fuels](#)
- [Toolbox: Fuel Comparison](#)

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