

**2.9.1:** *What is your view on the need to develop a mandated national fuel quality standard for biodiesel?*

A standard is essential for the acceptance and credibility of biodiesel by the automotive industry and the engine manufacturers, as well as the motoring public and industry. The standard needs to be strict to avoid warranty issues and prevent problems with low quality biodiesel as seen in Europe. The consumer must also have confidence that there is means by which they can be assured of what there buying, and a standard provides a means of quality assurance for producers.

**2.9.2:** *What is your view on harmonisation of any Australian biodiesel standard with European and/or US biodiesel specifications?*

The standard for biodiesel should be as strict as the European standard but with the flexibility of multiple feedstocks. Feedstocks sources have shown to have little effect on the performance of the engine other than the gel point and this can be managed in the same way petroleum diesel has seasonal gel points.

Harmonisation with the European and US standards will also ensure immediate acceptance of the fuel in Australia, as many diesel engine and vehicle makes are European or US.

Any major variations to these standards (such as ethanol instead of methanol) should only be accepted in the standard once there has been further research to support this. This raises the question of whether there should be ability for a revision and amendments down the track.

**3.2:** *Do you consider that an Australian standard for biodiesel should prescribe feedstocks or production technologies, or should the standard only address characteristics and composition of biodiesel?*

The standard should focus on the characteristics and composition of the biodiesel. The quality of the process will determine the Total and Free Glycerol levels. The issues with feedstocks are commented on further on.

The source of the feedstock can also be an issue. If the feedstock is sourced from an unsustainable supply, this compromises the legitimacy of the industry.

**4:** *Do you wish to comment on any aspects of the impacts of biodiesel use raised in this chapter? (Chap 4 – Impacts on Use)*

No.

**5.3:** *What are your views on biodiesel blends?  
Sections 6, 8, 9 and 10 should be referred to when commenting on this section.*

Blending should be allowed in the same manner as in Germany - up to 5% or 100% biodiesel with full exemption. This allows for biodiesel to be used as a lubricity additive immediately and production capacity to be expanded. Once the strict fuel standards come into effect in 2006, B20 blends should then be considered.

These have proven to show that the benefits of biodiesel are carried across in blends in a slightly higher proportion than the ratio of biodiesel to petro-diesel.

A major consideration in the Australian Market is fuel quality and blends. If biodiesel is sold as a blended product, there are two issues: 1) Quality and standard of the petro-diesel and 2) proof of quality of the biodiesel portion once the fuel is blended.

- 1) While the standard for petro diesel is that much lower than the standard for biodiesel, it potentially makes it harder to prove where a fuel problem lies and if biodiesel is involved, it is more likely to be blamed as the 'new kid on the block' rather than the sub-standard 'additives' in the petro-diesel. This not necessarily an issue with the petroleum majors but smaller blenders would be encouraged to add 'extenders' to their bio-diesel blends to increase their margins.
- 2) There have been cases in Europe where lower quality biodiesel has been used in blends where the quality issues are reduced in proportion to the blend level. In a couple of cases, the sub-standard biodiesel has contributed to failures and all biodiesel has been tarnished.

**6.1:** Stakeholders are specifically requested to provide comment on:

(a) an appropriate Australian specification for sulfur in biodiesel; and

(b) an appropriate test method for determining the sulfur content of biodiesel.

- a) Sulfur should be limited to 50ppm (as per Australian diesel requirements for 2006)
- b) The ASTM D 5453 test should be applied to biodiesel in Australia.

**6.2:** Stakeholders are specifically requested to provide comment on:

(a) an appropriate Australian specification for carbon residue in biodiesel; and

(b) an appropriate test method for determining carbon residue of biodiesel.

- a) 100% distillation < 0.05% mass
- b) ASTM D 4530

**6.3:** Stakeholders are specifically requested to provide comment on:

(a) an appropriate Australian specification for phosphorous content in biodiesel; and

(b) an appropriate test method for determining phosphorous content in biodiesel.

- a) < 10ppm
- b) European or US standard.

<p><b>6.4:</b> Stakeholders are specifically requested to provide comment on:  (a) an appropriate Australian specification for ester content in biodiesel; and  (b) an appropriate test method for determining ester content in biodiesel.  Section 6.8 -Total contamination should be referred to in conjunction with this section.</p>
<p>a) <math>\geq 98\%</math> esters  b) Gas Chromatograph</p>
<p><b>6.5:</b> Stakeholders are specifically requested to provide comment on:  (a) an appropriate Australian specification for kinematic viscosity of biodiesel; and  (b) an appropriate test method for determining kinematic viscosity of biodiesel.</p>
<p>a) 1.9- 5 mm<sup>2</sup>/s  b) ASTM D445</p>
<p><b>6.6:</b> Stakeholders are specifically requested to provide comment on:  (a) an appropriate Australian specification for the cetane number of biodiesel; and  (b) an appropriate test method for determining the cetane number of biodiesel.</p>
<p>a) <math>&gt; 47</math>  b) ASTM D613</p>
<p><b>6.7:</b> Stakeholders are specifically requested to provide comment on:  (a) an appropriate Australian specification for sulfated ash content of biodiesel; and  (b) an appropriate test method for determining the sulfated ash content of biodiesel.  Comment is also requested on oxidated ash specifications and test methods.</p>
<p>a) <math>\leq 0.02\%</math> (m/m)  b) ASTM D 874  c) Oxidative reduction is likely to be too inaccurate.</p>
<p><b>6.8:</b> Stakeholders are specifically requested to provide comment on:  (a) an appropriate Australian specification for total contamination of biodiesel; and  (b) an appropriate test method for determining total contamination of biodiesel.</p>
<p>a) <math>&lt; 24\text{mg/kg}</math>  b) EN 12662</p>
<p><b>6.9:</b> Stakeholders are specifically requested to provide comment on:  (a) an appropriate Australian specification for acid value/number of biodiesel; and  (b) an appropriate test method for determining acid value/number of biodiesel.</p>
<p>a) <math>\leq 0.5\text{mg KOH/NaOH per g}</math></p>

b) ASTM D664
<p><b>6.10:</b> Stakeholders are specifically requested to provide comment on:  (a) an appropriate Australian specification for iodine value/number for biodiesel; and  (b) an appropriate test method for determining iodine value/number for biodiesel.  <i>Note: Iodine number is of particular interest in the Australian context as it is known that stakeholders intend on using a variety of feedstocks to produce biodiesel.</i></p>
<p>a) No limit (tests in US have shown Iodine has no effect on operability other than Gel point)  b) Set seasonal requirement for biodiesel sold at bowser (as per petro-diesel) bulk customers can order as required.</p>
<p><b>6.11:</b> Stakeholders are specifically requested to provide comment on:  (a) an appropriate Australian specification for linolenic acid methyl ester content in biodiesel;  (b) an appropriate test method for determining linolenic acid methyl ester content in biodiesel;  (c) an appropriate Australian specification for polyunsaturated (&gt; 4 double bonds) methyl ester content in biodiesel; and  (d) an appropriate test method for determining polyunsaturated (&gt; 4 double bonds) methyl ester content in biodiesel.</p>
<p>a) None  b) N/A  c) None  d) N/A</p>
<p><b>6.12:</b> Stakeholders are specifically requested to provide comment on:  (a) an appropriate Australian specification for mono- and diglyceride content in biodiesel; and  (b) an appropriate test method for determining mono- and diglyceride content in biodiesel.</p>
<p>a) <math>\leq 0.8\%</math> (m/m) mono &amp; <math>\leq 0.2\%</math> (m/m) di  b) Gas chromatography</p>
<p><b>6.13:</b> Stakeholders are specifically requested to provide comment on:  (a) an appropriate Australian specification for triglyceride content in biodiesel; and  (b) an appropriate test method for determining triglyceride content in biodiesel.</p>
<p>a) <math>\leq 0.2\%</math> (m/m)  b) prEN 14105</p>

<p><b>6.14:</b> Stakeholders are specifically requested to provide comment on:  (a) an appropriate Australian specification for free glycerol content in biodiesel; and  (b) an appropriate test method for determining free glycerol content in biodiesel.</p>
<p>a) <math>\leq 0.02\%</math> (m/m)  b) ASTM D 6584</p>
<p><b>6.15</b> Stakeholders are specifically requested to provide comment on:  (a) an appropriate Australian specification for total glycerol content in biodiesel; and  (b) an appropriate test method for determining total glycerol content in biodiesel.</p>
<p>a) <math>\leq 0.25\%</math> (m/m)  b) ASTM D 6584</p>
<p><b>6.16:</b> Stakeholders are specifically requested to provide comment on:  (a) an appropriate Australian specification for alkaline metal content in biodiesel; and  (b) an appropriate test method for determining alkaline metal content in biodiesel.</p>
<p>a) <math>&lt; 5\text{mg/kg}</math> for (Na, K, Ca, Mg)  b) prEN 14108 &amp; prEN 14538</p>
<p><b>6.17:</b> Stakeholders are specifically requested to provide comment on:  (a) an appropriate Australian specification for biodiesel thermal stability; and  (b) an appropriate test method for determining thermal stability in biodiesel.</p>
<p>a) None  b) N/A</p>
<p><b>6.18:</b> Stakeholders are specifically requested to provide comment on:  (a) an appropriate Australian specification for oxidation stability in biodiesel; and  (b) an appropriate test method for determining oxidation stability in biodiesel.</p>
<p>a) None  b) N/A</p>
<p><b>6.19:</b> Stakeholders are specifically requested to provide comment on:  (a) an appropriate Australian specification for alcohol content in biodiesel; and  (b) an appropriate test method for determining alcohol content in biodiesel.  Section 7 provides further detailed information on alcohol.</p>
<p>a) Limit by flashpoint  b)</p>

<p><b>6.20:</b> Stakeholders are specifically requested to provide comment on:  (a) if needed, an appropriate Australian specification for cloud point in biodiesel; and  (b) an appropriate test method for determining cloud point in biodiesel</p>
<p>a) CFPP should be used</p>
<p><b>6.21:</b> Stakeholders are specifically requested to provide comment on:  (a) if needed, an appropriate Australian specification for cold filter plugging point of diesel; and  (b) an appropriate test method for determining the cold filter plugging point of biodiesel.</p>
<p>a) Seasonal/regional as per petroleum diesel (unless fuel tailored for individual bulk customers.)  b) Report to customer based on ASTM D 4539</p>
<p><b>6.22</b> Stakeholders are specifically requested to provide comment on:  (a) if needed, an appropriate Australian specification for distillation temperature of biodiesel; and  (b) an appropriate test method for determining the distillation temperature of biodiesel.</p>
<p>a) 90% recovered @ 360 deg C.  b) ASTM D 1160</p>
<p><b>6.23:</b> Stakeholders are specifically requested to provide comment on:  (a) if needed, an appropriate Australian specification for biodiesel calorific value; and  (b) an appropriate test method for determining biodiesel calorific value.  Section 6.24 – Density should be referred to when making comment on this section.</p>
<p>a) None  b) N/A</p>
<p><b>6.24</b> Stakeholders are specifically requested to provide comment on:  (a) if needed, an appropriate Australian specification for biodiesel density; and  (b) an appropriate test method for determining biodiesel density.  Section 6.23 – Calorific Value should be referred to when making comment on this section.</p>
<p>a) None  b) N/A</p>
<p><b>6.25:</b> Stakeholders are specifically requested to provide comment on:  (a) an appropriate Australian specification for biodiesel flash point; and  (b) an appropriate test method for determining the flash point of biodiesel.</p>

<p>a) <math>\geq 120</math> Deg C b) ASTM D 93</p>
<p><b>6.26:</b> Stakeholders are specifically requested to provide comment on: (a) if needed, an appropriate Australian specification for dissolved water content in biodiesel; and (b) an appropriate test method for determining the dissolved water content of biodiesel.</p>
<p>a) None b) N/A</p>
<p><b>6.27:</b> Stakeholders are specifically requested to provide comment on: (a) an appropriate Australian specification for water and sediment content in biodiesel; and (b) an appropriate test method for determining water and sediment content in biodiesel.</p>
<p>a) <math>\leq 500</math>mg/kg b) ASTM D 2709</p>
<p><b>6.28:</b> Stakeholders are specifically requested to provide comment on: (a) an appropriate Australian specification for copper strip corrosion in biodiesel; and (b) an appropriate test method for determining copper strip corrosion in biodiesel.</p>
<p>a) No.1 (3h @ 50 deg C) b) EN ISO 2160</p>
<p><b>7:</b> Stakeholders are requested to comment on the issue of alcohol feedstock for the production of biodiesel and impacts on vehicle emissions and engine operability. Specifically stakeholders are asked to comment on the need, if any, to specify the alcohol that is used to produce biodiesel (as in the EU standard).</p>
<p>Methanol should be adopted now with the provision for ethanol once some of the potential operability issues have been resolved.</p>
<p><b>8:</b> Stakeholders are requested to comment on the impacts of blending biodiesel with diesel on engine operability and vehicle emissions. Section 10 – Vehicle Warranties and Labelling should be referred to when <i>commenting on this section.</i></p>
<p>ABC’s experiences with the trial have shown no noticeable effect from blending (in tank) in the operation of the engine. US EPA study information on emission impacts of biodiesel blends shows that the reduction in emissions is increased slightly with the</p>

<p>blends.</p> <p>Most of the warranty support (or lack of it) is based on limited information of biodiesel blends. It is also based on warranty claims where the biodiesel was of questionable quality.</p>
<p><b>9:</b> <i>Stakeholders are requested to comment on the impacts of biodiesel on diesel engine oil.</i></p> <p><i>Section 8 – Technical Analysis of the Impacts of Blending Biodiesel with Diesel on blending and 10 – Vehicle Warranties and Labelling should be referred to when commenting on this section.</i></p>
<p>Tests done in the US with biodiesel produced from Tallow and Soya Oil where the concentration of biodiesel was up to 50% by volume showed no negative effect on the performance of the oil or noticeable polymerization.</p>
<p><b>10.3:</b> <i>Stakeholders are requested to comment on the issue of biodiesel warranties for use in vehicles in Australia.</i></p> <p><i>Specifically stakeholders are asked to comment on any experience with negotiating warranties for biodiesel use.</i></p>
<p>The current position on warranties amongst engine &amp; vehicle manufacturers (E&amp;VMs) is mixed with some supporting biodiesel providing it meets a recognised standard. Other manufacturers will not warrant the use of biodiesel.</p> <p>It has been the experience of this stakeholder that in those cases where warranties are not supported for biodiesel use, the reason usually given by the E&amp;VM is lack of information, research or knowledge of biodiesel.</p> <p>In any case, it is important that consumers are aware that fuel producers are responsible for restitution in the event of the supply of faulty fuel and not the E&amp;VMs.</p> <p>Acceptance of biodiesel by the E&amp;VMs, in this stakeholder’s experience, is best achieved by organised trials between consumers, producers and the E&amp;VMs.</p> <p>Consumer demand for biodiesel is driving the support from the E&amp;VMs, some of whom are recognising the commercial advantage of increased sales by supporting warranties where other E&amp;VMs won’t.</p>
<p><b>10.4:</b> <i>Stakeholders are requested to comment on issues relating to the suitability of current infrastructure, or any requirements for specialised infrastructure, for the use of biodiesel.</i></p>
<p>Existing infrastructure is suitable for biodiesel distribution as shown by the trial operated by the ABC and APS.</p>

The components that need to be looked at are:

- Pump seals (need to be Viton)
- Viton Hoses.
- Check for contamination in the tank.
- Suitable filter on pump

**10.5:** *Stakeholders are invited to comment on the case for labelling of biodiesel/biodiesel blends and what information would be relevant to the end-user.*

All pumps should be fully labelled with information on the bowser and brochures stating any potential compatibility issues (as per brochure attached).

Bulk users and retail outlets should request certificates of analysis if there is uncertainty about the quality of the fuel supplied.

In order to eliminate debates over fuel quality, producers should be encouraged to provide certificates of analysis to ensure fuel quality and build consumer confidence to gain acceptance of biodiesel as a mainstream fuel.