Are there any considerations regarding dispensing equipment and B10?

When considering whether to offer biodiesel blend products for sale, BP recommends that Branded Marketers consult with their fuels experts and authority having jurisdiction (AHJ) to fully understand the implications for compatible, listed and approved dispensing equipment for diesel with greater than 5% volume biodiesel content. The BP Technical Bulletin for Biodiesel Blends B6 – B20 provides useful reference sources.

What diesel labeling changes will be taking place?

Minnesota Weights and Measures has indicated that the blue FTC Biodiesel Blend 5 – 20% label is appropriate year round to cover B10 blends in summer and B5 blends in winter. Please note: If you winterize with No.1 (which is exempt from the biodiesel content mandate and may contain zero biodiesel), the resultant blend will be below 5% by volume biodiesel content and the FTC label is no longer valid. This means you will be required to remove or cover up the FTC Biodiesel Blend 5 – 20% label for the periods when you winterize with No. 1.

In Minnesota, BP also requires a mandatory consumer notice label to be applied to the diesel fuel dispenser. Details can be found via the revenant link in your Minnesota B10 support pack.

You must initially apply the new FTC and BP consumer notice labels to diesel dispensers when the site first takes receipt of B10, and no later than July 1, 2014.

Minnesota Weights and Measures has indicated it will be actively enforcing labeling code and non-compliance will likely lead to a dispenser being red tagged.

What is happening with diesel product naming protocols?

In Minnesota, product naming for diesel with greater than 5% biodiesel content by volume must be called a Biodiesel Blend, and a diesel product containing up to and including 5% biodiesel by volume must be named Diesel.

With a potential change to the Minnesota law defining the term “diesel,” Minnesota Weights and Measures has indicated it will not red tag sites for continuing to use the term “diesel” for B6–B20 blends when carrying out its enforcement program. As such, BP has no current plans to change the BP Diesel® naming protocol, but will review its position once there is clarity over potential law changes.

When should I be switching to and from B10?

The law takes effect July 1, 2014 meaning that you must be dispensing B10 from that date. In subsequent years, you should plan your logistics so that you are dispensing B10 from April 1st. You may switch back to B5 from October 1st each year. It is your responsibility to allow adequate time to turn your retail tanks and properly label your dispensers to meet the July 1st Minnesota requirement.

In 2014, B10 will be available from the rack starting June 1st in order to provide an opportunity to turn underground storage tanks over to B10 in time for July 1st. In subsequent years, B10 will be available from the rack beginning March 1st in order to provide options for the April 1st deadline planning.

Product availability

<table>
<thead>
<tr>
<th></th>
<th>B5</th>
<th>B10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jun</td>
<td>Mar – Sep</td>
<td>Mar – Sep</td>
</tr>
<tr>
<td>Sep</td>
<td>Mar – Sep</td>
<td>Mar</td>
</tr>
</tbody>
</table>
What do I need to do when switching product in my Underground Storage Tank (UST)?

In order to ensure compliance with the minimum biodiesel content, it is recommended that you run your UST down to as low a level as is practicable when transitioning from B5 to B10 products. When transitioning from B10 to B5 it is less critical as the product will still meet the minimum biodiesel content. Please consult with your environmental professionals.

Does the BP Fuels Guarantee still apply?

The BP Fuels Guarantee applies to all branded product sales. All terms of the guarantee apply, but it should be noted that the guarantee does not cover claims as a consequence of misfueling with a product that has not been recommended for use by the vehicle manufacturer.

Are there any resources available to help me in responding to consumer enquiries?

A consumer brochure will be distributed to Branded Marketers in mid-June to help explain the biodiesel content changes. There is also the BP Quality and Technical Service Hotline at 1-800-841-5255 that is available to customers and consumers. You may also suggest to consumers that they consult with their vehicle manufacturer.

Are there any implications for consumer vehicles in moving to B10?

The DOE / EPA fuel economy website provides the following advice to consumers: “Most vehicle manufacturers approve blends up to B5, and some approve blends up to B20. Check with your owner’s manual or vehicle manufacturer to determine the right blend for your vehicle, since using the wrong blend could damage your engine and/or void the manufacturer’s warranty.”

Sources for further information

239.77 Biodiesel Content Mandate
https://www.revisor.leg.state.mn.us/statutes/?id=239.77

Minnesota Biodiesel Program Minnesota Department of Agriculture
http://www.mda.state.mn.us/en/renewable/biodiesel

1Biodiesel - Advantages / Disadvantages DOE / EPA Fuel Economy Website
http://www.fueleconomy.gov/feg/biodiesel.shtml
What is a Biodiesel Blend?

Biodiesel (B100) is a diesel fuel substitute made up of fatty acid methyl esters derived from plant oils or animal fats. A biodiesel blend is a mixture of biodiesel conforming to the requirements of the ASTM D6751 specification with the remainder being a distillate grade diesel fuel meeting the requirements of the ASTM D975 specification. Biodiesel blends containing up to 5 percent biodiesel are often regulated as diesel fuel. Biodiesel blends containing 6 to 20 percent biodiesel are referred to as B6-B20. To learn more about B6-B20 biodiesel blends please refer to ASTM D7467.

To learn more about biodiesel (B100) please refer to the BP Technical Bulletin titled Biodiesel and ASTM D6751.

How is a B6-B20 Biodiesel Blend Different from Diesel?

Because B6-B20 biodiesel blends are not categorized as diesel fuel, they have different properties and specifications than diesel. Diesel fuel must be made to comply with the guidelines defined in ASTM D975, while B6-B20 must be made in accordance to ASTM D7467. State regulations may mandate specific blended volumes of B100. Therefore individuals should check with their respective state regulators for more information.

What do These Differences Mean?

For Consumers

Vehicle Warranties

Not all engine manufacturers have approved biodiesel blends greater than five percent for their engines. BP recommends that vehicle owners consult their owner’s manual or engine manufacturer for the latest recommendation on the use of biodiesel blends in their equipment.

Energy Content

The energy content of biodiesel (B100) is approximately 7 percent less than the energy content of diesel fuel. However, low volume biodiesel blends such as B6-B20 have a similar energy content to diesel fuel. This can be seen in the table below that compares the energy content per gallon of diesel fuel (B0), biodiesel (B100) and various biodiesel blends. All values in the table were obtained from the US Department of Energy.¹

<table>
<thead>
<tr>
<th></th>
<th>BTU/Gallon</th>
<th>Energy % compared to diesel</th>
<th>% Energy Loss compared to diesel</th>
</tr>
</thead>
<tbody>
<tr>
<td>B0</td>
<td>128,450</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>B6</td>
<td>127,916</td>
<td>99.6</td>
<td>0.4</td>
</tr>
<tr>
<td>B10</td>
<td>127,560</td>
<td>99.3</td>
<td>0.7</td>
</tr>
<tr>
<td>B11</td>
<td>127,471</td>
<td>99.2</td>
<td>0.8</td>
</tr>
<tr>
<td>B20</td>
<td>126,670</td>
<td>98.6</td>
<td>1.4</td>
</tr>
<tr>
<td>B100</td>
<td>119,550</td>
<td>93.1</td>
<td>6.9</td>
</tr>
</tbody>
</table>

For Retailers

Labeling

Labeling requirements for B6-B20 are set by the Federal Trade Commission (FTC). The FTC states that dispensers selling blends containing more than five but no more than twenty percent biomass-based diesel or biodiesel shall be labeled contains biomass-based diesel or biodiesel in quantities between 5 percent and 20 percent. To learn more please refer to the Federal Trade Commission’s rules and regulations.

Different states may require different product naming conventions. Check with your state weights and measures department to determine the correct naming convention for your market. You may no longer be able to use “Diesel” as the product description on the Main Identification Device unit (MID) and dispensers. When blending a No. 1 diesel fuel label changes may be required.
Equipment at Retail Sites

Biodiesel blends may be more susceptible to fuel filter plugging due to a greater potential for degradation, water absorption, and bacterial growth. Keeping the storage tank dry will help minimize these problems. To learn more about handling biodiesel, please refer to biodiesel handling guide published by the National Renewable Energy Laboratory.2

New Equipment

For a marketer to sell B6-B20 to the public, and to comply with laws and regulations, it is important to use compatible, listed and approved equipment when storing and dispensing B6-B20 to the public. Underwriter Laboratory (UL), the Nationally Recognized Testing Laboratory (NRTL) that issues listings, has issued guidance on blends above B5.3 To learn more, site owners should consult with their own safety, regulatory, operational, and legal compliance experts.

Converting Equipment

Legacy retail sites may have dispensing infrastructure and underground storage tank (UST) systems that are not compliant or listed (by UL) for biodiesel blends containing more than 5 percent biodiesel. In these cases the NRTL has determined that they are not suitable for conversion. Retail site owners should assess their individual sites to confirm compliance with B6-B20 requirements.

Leak Detection

The National Work Group on Leak Detection has published information regarding biodiesel leak detection.4

Site owners should consult with their equipment manufacturer to ensure their leak detection devices are suitable for their intended use and the Authority Having Jurisdiction to ensure that the devices are approved.

Resources

BP diesel® B6 to B20 Ultra Low Sulfur No. 2 Diesel

PRODUCT DESCRIPTION
BP diesel® B6 to B20 is a quality, ultra low sulfur diesel fuel blend containing biodiesel blend stock in concentrations from 6%vol (B6) through 20%vol (B20).

This fuel meets or exceeds the requirements of the ASTM D7467 specification for Diesel Fuel Oil, Biodiesel Blend (B6 to B20). BP diesel® B6 to B20 also meets US EPA requirements for 15ppm max ultra low sulfur diesel fuel.

The biodiesel blend stock (B100) meets the ASTM D6751 specification and is manufactured in conformance with the biodiesel industry BQ9000 requirements.

APPLICATION
BP diesel® B6 to B20 can be used in on-road or off-road heavy duty trucks, automotive, transit bus, and stationary diesel engine applications that are compatible with biodiesel blends up to B20.*

FEATURES
Ultra Low Sulfur
BP Diesel B6-B20 is an ultra low sulfur diesel fuel (ULSD), with ULSD being an integral part of the latest generation Clean Diesel vehicles. Also part of Clean Diesel are newer engine technologies, such as electronic controls, common rail, fuel injection, variable injection timing, improved combustion chamber configuration, and turbocharging. The final piece of Clean Diesel is advanced after-treatment systems for cleaning engine exhaust gas. These systems include diesel particulate filter to reduce particulate matter, selective catalytic reduction to reduce nitrogen oxides (NOx), and diesel oxidation catalyst. All three of these emission technologies are enabled by ULSD. As a whole, these three components—ultra low sulfur diesel, modern engine technology, and advanced after treatment—are the latest Clean Diesel technologies.

Power**, Performance, and Protection too
A workhorse fuel, BP diesel® B6 to B20 helps your diesel engine unleash its potential by enabling both its power and performance — helping it to deliver the fuel efficiency you expect over a gasoline engine.

BP diesel® B6 to B20 contains lubricity-improving additives that help protect your diesel fuel system from wear for years to come. It’s also blended and additized to provide good storage stability and to help resist corrosion in your vehicle’s fuel system.

Reliable** Quality You Can Depend On
The BP Fuels Guarantee is more than a statement. In the unlikely event that a consumer experiences fuel system trouble due to the use of BP diesel® B6 to B20, we’ll reimburse them for the repairs. They simply call us at +1.800.333.3991 to report the problem. They’ll also need to provide their BP receipt and mechanic’s repair bill. We’ll review the claim, and any BP fuel related repairs will be reimbursed to the consumer.

Cold Flow Properties
Cold weather operability of BP Diesel B6 to B20 may be degraded by the elevated biodiesel blend levels. The use of additives or dilution with No.1 diesel may be necessary to help keep fuel flowing in extremely low temperatures, helping to prevent fuel “gelling” and storage or handling problems.

*BP recommends that vehicle owners consult their owner’s manual or engine manufacturer for the latest recommendation on the use of biodiesel blends in their equipment.

**“Power” compares diesel engine performance vs. a comparable gasoline engine, and the higher torque typical of a diesel engine. “Reliable” Refers to generally meeting the appropriate ASTM specification for this fuel.

Powerful, Reliable, Promotes Clean Diesel
### Product Information  BP diesel®  B6 Thru B20 Ultra Low Sulfur No. 2 Diesel

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>TEST METHOD</th>
<th>LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acid Number, mg KOH/g, max</td>
<td>D664</td>
<td>0.3</td>
</tr>
<tr>
<td>Ash, wt. %, max.</td>
<td>D482</td>
<td>0.01</td>
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<tr>
<td>Biodiesel Content, vol.% (1)</td>
<td>D7371</td>
<td>6 – 20</td>
</tr>
<tr>
<td>Cetane Index, min.</td>
<td>D976</td>
<td>40</td>
</tr>
<tr>
<td>Cetane Number, min.</td>
<td>D613</td>
<td>40</td>
</tr>
<tr>
<td>Cloud Point (base fuel), °F, max.(2)</td>
<td>D2500</td>
<td></td>
</tr>
<tr>
<td>Summer (3/1 – 9/30)</td>
<td>+20</td>
<td></td>
</tr>
<tr>
<td>Winter (10/1 – 2/29)</td>
<td>+15</td>
<td></td>
</tr>
<tr>
<td>Conductivity @ 20°C, cu, min.</td>
<td>D2624</td>
<td>25</td>
</tr>
<tr>
<td>Copper Corrosion, 3 hrs @122 °F, max.</td>
<td>xD130</td>
<td>3</td>
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<tr>
<td>Distillation, °F</td>
<td>D86</td>
<td></td>
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<tr>
<td>Temp.@ 90%, recovered, max</td>
<td>650</td>
<td></td>
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<tr>
<td>Flash Point, °F, min.</td>
<td>D56, D93</td>
<td>125</td>
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<tr>
<td>Lubricity, HFRR @ 60°C, micron, max.</td>
<td>D6079</td>
<td>520</td>
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<tr>
<td>Ramsbottom Carbon Residue</td>
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<td></td>
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<tr>
<td>on 10% bottoms, mass %, max.</td>
<td>D524</td>
<td>0.35</td>
</tr>
<tr>
<td>Stability,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxidation, hrs, min.</td>
<td>EN 15751</td>
<td>6</td>
</tr>
<tr>
<td>Sulfur, total, ppm, max.</td>
<td>D5453, D7039</td>
<td>15</td>
</tr>
<tr>
<td>Viscosity, cSt @ 40°C, min.</td>
<td>D445</td>
<td>1.9 – 4.1</td>
</tr>
<tr>
<td>Water &amp; Sediment, vol.%, max.</td>
<td>D2709</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Notes

(1) Varies by region. Biodiesel blend stock conforms to ASTM D6751.

(2) Cold weather operability may be degraded by elevated biodiesel blend levels. The cloud point will vary due to the biodiesel (B100) composition and concentration. The use of additives or dilution with No.1 diesel may be necessary. Call BP Quality & Technical Service for details.
Diesel and Biodiesel Blend
Rack Availability and Product Codes

Rack availability

ULS2 PRODUCT FAMILY

<table>
<thead>
<tr>
<th>PRODUCT FAMILY</th>
<th>Rack Availability</th>
<th>Product Codes</th>
</tr>
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<tbody>
<tr>
<td>B5</td>
<td>Jan–Jun, Oct–Mar</td>
<td>355278</td>
</tr>
<tr>
<td>B5</td>
<td>Jun–Sep</td>
<td>376680</td>
</tr>
<tr>
<td>B10</td>
<td>Mar–Sep, Oct–Mar</td>
<td>378721</td>
</tr>
<tr>
<td>B10</td>
<td>Mar</td>
<td>378689</td>
</tr>
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</table>

Product codes

<table>
<thead>
<tr>
<th>PRODUCT FAMILY</th>
<th>PRODUCT CODE</th>
<th>PRODUCT DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>B10</td>
<td>478347</td>
<td>BP ULS#2 B10</td>
</tr>
<tr>
<td>B10</td>
<td>478350</td>
<td>BP ULS#2 B10 DYED</td>
</tr>
<tr>
<td>B5</td>
<td>355278</td>
<td>BP ULS2 B5</td>
</tr>
<tr>
<td>B5</td>
<td>376680</td>
<td>BP ULS2 B5 DYD</td>
</tr>
<tr>
<td>B5</td>
<td>378721</td>
<td>BP ULS2 B5 W/CLD FLW</td>
</tr>
<tr>
<td>B5</td>
<td>378689</td>
<td>BP ULS2 B5 DYD W/CLD FLW</td>
</tr>
</tbody>
</table>
BP diesel® Regulatory Decals - Minnesota

Part # 820785

ULTRA-LOW SULFUR HIGHWAY DIESEL FUEL
(15 ppm Sulfur Maximum)

Required for use in all highway diesel vehicles and engines.
Recommended for use in all diesel vehicles and engines.

Sulfur Regulatory warning label

Part # 822623

NOTICE

This is not a BP branded product, and BP does not guarantee this product.

Compliant to MN state law, No. 2 diesel may contain greater than 5% biodiesel.

April through September
- 10% biodiesel
October through March
- 5% biodiesel

CHECK YOUR OWNER’S MANUAL TO SEE IF THIS FUEL CAN BE USED IN YOUR VEHICLE.

UNBRANDED diesel in Minnesota warning label

Part # 822626

NOTICE

Compliant to MN state law, No. 2 diesel may contain greater than 5% biodiesel.

April through September
- 10% biodiesel
October through March
- 5% biodiesel

CHECK YOUR OWNER’S MANUAL TO SEE IF THIS FUEL CAN BE USED IN YOUR VEHICLE.

Part # 821620

Biodiesel Blend
contains biomass-based diesel or biodiesel in quantities between 8 percent and 20 percent

FTC Biodiesel Regulatory Decal

BP diesel® in Minnesota warning label
Inside of pump riser is used to display the following decals:
- State specific warnings
- How to fuel instructions
- Local/municipal decals

For state, local, municipal decals, please follow those requirements, otherwise follow the plan-o-gram for decal placement.

Inside of pump riser is used to display the following decals:
- State specific warnings
- How to fuel instructions
- Local/municipal decals

For state, local, municipal decals, please follow those requirements, otherwise follow the plan-o-gram for decal placement.

Inside of pump riser is used to display the following decals:
- State specific warnings
- How to fuel instructions
- Local/municipal decals

For state, local, municipal decals, please follow those requirements, otherwise follow the plan-o-gram for decal placement.

Dispenser Graphics

BP diesel® fuel offer

**BP diesel® only**
Ovation dispenser

**3+1 with BP diesel®**
Ovation dispenser

**3+1 with BP diesel®**
Encore S dispenser
ULTRA-LOW SULFUR HIGHWAY DIESEL FUEL
(15 ppm Sulfur Maximum)

Required for use in all highway diesel vehicles and engines.

Recommended for use in all diesel vehicles and engines.

3 1/2"

2 1/2"

3"

Sulfur Regulatory
BP diesel® - Minnesota

Biodiesel Blend
FTC - Biodiesel Blend Regulatory Decal
BP diesel® - Minnesota

contains biomass-based diesel or biodiesel in quantities between 5 percent and 20 percent

Black Handwarmer

Nozzle Surround
Decal

Warning Label
BP diesel® - Minnesota

Nozzle Talker

NOTICE

Compliant to MN state law. No. 2 diesel may contain greater than 5% biodiesel.

April through September
• 10% biodiesel
October through March
• 5% biodiesel

CHECK YOUR OWNER’S MANUAL TO SEE IF THIS FUEL CAN BE USED IN YOUR VEHICLE.
MID Panels

BP diesel® fuel offer

BP diesel® - New Build

goalpost MID
BP diesel® - New Build

BP diesel price panel is below Invigorate

BP diesel® - Retrofit

modular MID
BP diesel® - Retrofit

BP diesel price panel is below Invigorate

BP diesel® - Minnesota Regulations 2014

PROJECT DESCRIPTION
SERIES DESIGN
PAGE

DATE: 05-08-14
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