

## Regulated Fleet Use of Biodiesel Frequently Asked Questions

### What is biodiesel?

Biodiesel is a clean burning alternative fuel produced from vegetable oils and animal fats. Biodiesel contains no petroleum, but it can be blended at any level with petroleum diesel to create a biodiesel blend. It can be used in compression-ignition (diesel) engines with no major modifications. Biodiesel is simple to use, biodegradable, nontoxic, and essentially free of sulfur and aromatics.

**Technical Definition:** *Biodiesel, n*—a fuel composed of mono-alkyl esters of long chain fatty acids derived from vegetable oils or animal fats, designated B100, and meeting the requirements of ASTM (American Society for Testing & Materials) D 6751.

### Can biodiesel be used to meet Energy Policy Act (EPAct) and Executive Order 13149 Requirements?

Federal agencies can meet up to 50% of their AFV acquisition credits by using biodiesel fuel. Under this biodiesel fuel use credits provision, fleets may choose to operate existing diesel vehicles that weigh more than 8,500 lbs. on blends of biodiesel in lieu of purchasing a new alternative fuel vehicle. For each 450 gallons of pure biodiesel purchased and consumed, an alternative fuel vehicle credit is awarded. To constitute a "qualifying volume" a 20% biodiesel blend (B20) or higher blend must be used. For example, if a fleet wished to qualify for the credit using 100 percent biodiesel it would need to purchase and use 450 gallons of B100 to receive one credit. Alternatively, if a fleet wanted to qualify for the credit using B20, it would need to purchase and use 2,250 total gallons of the B20 fuel. B20 is also approved as a compliance tool for Executive Order 13149.

### Is B20 approved for use in military vehicles?

Yes. In 1999, a memorandum from the Office of the Under Secretary of Defense deemed B20 suitable for use in administrative (commercial) vehicles where long-term storage is not an issue. However, biodiesel is not currently approved for use in tactical vehicles due to potential long-term storage issues.

### Do I need special storage facilities?

In general, the standard storage and handling procedures used for petroleum diesel should be used for B20. The fuel should be stored in a clean, dry, dark environment. Acceptable storage tank materials include aluminum, steel, fluorinated polyethylene, fluorinated polypropylene and teflon. Neat biodiesel and biodiesel blends should not be stored for longer than 6 months. If it becomes necessary to store biodiesel longer than 6 months, the acid value should be monitored or ask your fuel supplier to provide the fuel with storage enhancing additives.



### **Can I use B20 in my existing diesel engine?**

B20 works in any diesel engine with few or no modifications to the engine or the fuel system. B20 provides similar horsepower, torque and mileage as diesel. Biodiesel has a solvent effect that may release deposits accumulated on tank walls and pipes from previous diesel fuel storage. This affect is much more dramatic with B100 than with biodiesel blends like B20. The release of deposits may clog filters upon the initial use of B20 and should be closely monitored when switching to B20. Always ensure that only fuel meeting the biodiesel specification (D 6751) is used.

### **Are there any materials compatibility issues with B20?**

If it comes in contact with brass, bronze, copper, lead, tin, and zinc for a prolonged period of time B20 will degrade and create sediments. Lead solders and zinc linings should be avoided, as should copper pipes, brass regulators, and copper fittings. Affected equipment should be replaced with steel or aluminum. The effect of B20 on vulnerable materials is significantly reduced compared to higher blends.

Pure biodiesel can soften and degrade certain types of gasket, hose, and seal compounds like natural rubber, Buna-N, and nitrile, which can create fuel system leaks. This affect has NOT been observed with blends of B20 and lower over the last 10 years of B20 experience, so B20 or lower blends can be used without changes. If it is desired to use blends over B20, the engine or vehicle manufacturer should be contacted to determine if the seals, hoses, and gaskets are compatible with the blend being considered before use.

### **Can I use B20 in colder climates?**

Yes, B20 has been used in a variety of climates including winter usage in Northern Minnesota and Montana without cold flow problems. The cold flow properties of the B20 blend are mostly determined by the petroleum fraction of the blend. Most of the testing data shows a 3 to 5 °F increase in cold flow properties of a 20% blend of biodiesel and Number 2 diesel fuel and for many users this small increase has not resulted in cold filter plugging. If this is a concern, the cold flow properties of B20 can be enhanced by implementing the same solutions used with Number 2 diesel fuel: blend the fuel with kerosene, use cold flow enhancing additives, turn on fuel filter or fuel line heaters, or store vehicles in or near a building.

### **How do B20 emissions compare to petroleum diesel?**

Biodiesel is the only alternative fuel to have fully completed the health effects testing requirements of the Clean Air Act. The use of B20 in a conventional diesel engine results in substantial reductions of unburned hydrocarbons (-20%), carbon monoxide (-12%), and particulate matter (-12%) compared to emissions from diesel fuel. In addition, the exhaust emissions of sulfur oxides and sulfates (major components of acid rain) from biodiesel are essentially eliminated compared to diesel. Emissions of nitrogen oxides are slightly increased (+2%).



### **Is B20 better for human health than petroleum diesel?**

Yes, scientific research confirms that biodiesel exhaust has a less harmful impact on human health than petroleum diesel fuel. Biodiesel emissions have decreased levels of polycyclic aromatic hydrocarbons (PAH) and nitrated PAH compounds that have been identified as potential cancer causing compounds. Test results indicate PAH compounds in B20 were reduced by 13 percent.

### **How does B20 compare with other alternative fuels?**

When reviewing the high costs associated with other alternative fuel systems, many fleet managers have determined biodiesel is their least-cost-strategy to comply with state and federal regulations. Although biodiesel blends typically cost more than diesel fuel, use of biodiesel does not require major engine modifications. That means operators keep their fleets, their spare parts inventories, their refueling stations and their skilled mechanics. The only thing that changes is air quality.

### **Where can I purchase B20?**

Biodiesel is available anywhere in the US. The Defense Energy Support Center (DESC) will support biodiesel purchase requirements for military and civilian government fleets. They can be reached at [www.desc.dla.mil](http://www.desc.dla.mil). The National Biodiesel Board (NBB) also maintains a list of registered fuel suppliers. A current list is available on the biodiesel web site at [www.biodiesel.org](http://www.biodiesel.org) or by calling NBB at (800) 841-5849.

### **Who can answer my questions about biodiesel?**

NBB maintains the largest library of biodiesel information in the world. Most questions can be answered through a review of the information on the National Biodiesel Board website located [www.biodiesel.org](http://www.biodiesel.org). If further information is desired, you can email your question to the NBB at [info@biodiesel.org](mailto:info@biodiesel.org).