



Use of Biodiesel Blends up to 20% (B20)

OEM Warranty Statements

All engine and vehicle manufacturers provide a material and workmanship warranty on the products they manufacture. Such warranties do not cover damage or problems caused by external factors or elements they don't produce or control, such as the type of fuel or additives used in the engine. Thus, if an engine experiences a failure that is caused by a fuel or a fuel additive – no matter if the fuel or additive is biodiesel, regular petroleum diesel, or an aftermarket additive -the damage generally will not be covered by the OEM's equipment and workmanship warranty.

Real world examples with diesel that would not be covered by warranty are fuel pump or injector damage caused by water, dirt contamination, or poor lubricity, as well as clogged filters caused by microbial contamination in diesel. Such issues are normally the responsibility of the fuel supplier and not the engine manufacturer and therefore should be covered by the fuel supplier's general liability insurance unless otherwise stated.

All major U.S. manufacturers now state that the use of up to 5% biodiesel (B5) is acceptable. Additionally, now more than 50% of the diesel OEMs also support up to B20 or higher blends in at least some of their diesel models. All manufacturers do require that the pure biodiesel fuel adhere to the quality standards specified by American Society of Testing and Materials standard (ASTM D 6751) prior to blending. Many OEMs are also recommending biodiesel and biodiesel blends only be purchased from BQ-9000 certified companies.

The specific biodiesel position and warranty statements for most of the major auto and equipment companies is available on the NBB web site at:

<http://www.biodiesel.org/resources/oems/>

The National Biodiesel Board (NBB) and the diesel engine, fuel injection, and vehicle companies formed a B20 Fleet Evaluation Team (B20 FET) to develop an informed, fact-based position on the use of up to a 20% biodiesel blend in diesel engine applications in the U.S. The B20 FET has identified a list of recommendations for users who wish to use B20 in their existing fleet titled, "Technical Recommendations for B20 Fleet Use Based on Existing Data".

As can be seen from the participant listing of the B20 FET members listed at the end of the Technical Recommendations, all the major diesel equipment companies are working with NBB on this effort. While these B20 recommendations are not intended to extend or supplant warranty limitations provided by an individual engine or equipment supplier, they represent the consensus of the members of the B20 FET. Again, please view the specific position and warranty statements provided to NBB by each OEM on the NBB web site as referenced above.

With biodiesel that meets the ASTM D 6751 specification, there have been over 100 million miles of successful, problem-free, real-world operation with B20 blends in a wide

variety of engines, climates, and applications. The steps taken by the biodiesel industry to work with the engine companies on implementing and regularly updating ASTM D6751 for pure biodiesel, as well as developing a new ASTM specification specifically for B6-B20 blends (ASTM D7467), provides confidence to users and engine manufacturers that their B20 experiences will be positive and trouble-free.

Technical Recommendations for B20 Use Based on Existing Data
B20 Fleet Evaluation Team: June 2005

Biodiesel is the pure, or 100 percent, biodiesel fuel. It is referred to as B100 or "neat" biodiesel.

Ensure the Biodiesel meets the ASTM specification for pure biodiesel (ASTM D 6751) before blending with petrodiesel. Encourage customers to purchase biodiesel and biodiesel blends only from companies that have been registered under the BQ-9000 fuel quality program.

Ensure your B20 supplier provides a homogenous product that meets the biodiesel blend specifications for B6-B20, ASTM D7467.

Customers should avoid long term storage of B20 to prevent degradation. Biodiesel should be used within six months.

Prior to transitioning to B20, it is recommended that tanks be cleaned and free from sediment and water. Check for water and drain regularly if needed. Monitor for microbial growth and treat with biocides as recommended by the biocide manufacturer.

Fuel filters on the vehicles and in the delivery system may need to be changed more frequently upon initial B20 use. Biodiesel and biodiesel blends have excellent cleaning properties. The use of B20 can dissolve sediments in the fuel system and result in the need to change filters more frequently when first using biodiesel until the whole system has been cleaned of the deposits left by the petrodiesel.

Be aware of B20's cold weather properties and take appropriate precautions. When operating in winter climates, use winter blended diesel fuel and make sure the B20 cloud point is adequate for the geographical region and time of year the fuel will be used.

Perform regularly scheduled maintenance as dictated by the engine operation and maintenance manual. If using B20 in seasonal operations where fuel is not used within 6 months, consider storage enhancing additives or flushing with diesel fuel prior to storage.

B20 Fleet Evaluation Team Members

Cummins, John Deere, International Truck and Engine Corp, Chrysler LLC, Caterpillar, Ford Motor Company, General Motors, Department of Defense, Siemens, Delphi Automotive Systems, Volkswagen, Engine Manufacturers Association, MARC-IV Consulting, ASG Renaissance, Bosch, FleetGuard, NREL, BMW of North America, Mack Trucks, Stanadyne Automotive Corporation, Suncor, CNH Global, Parker-Hannifin-Racor Division, and DENSO International America.