



OEM Warranty Statements and Use of Biodiesel Blends over 5% (B5)

As the biodiesel industry grows and thrives, the National Biodiesel Board is receiving an increasing amount of inquiries regarding the use of blends over 5% biodiesel. The purpose of this document is to more fully explain the current status of NBB's efforts with the diesel engine and equipment community and to provide guidance on the use of blends over B5.

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.

Most OEM dealers and customer service departments currently tell their customers the use of up to 5% biodiesel (B5) is acceptable, with the requirement 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 OEM's are also recommending biodiesel and biodiesel blends only be purchased from BQ-9000 certified companies. There are some OEM's who tell their customers biodiesel blends up to B20 are acceptable, while others say anything up to B100 is acceptable. There can even be dramatic differences in the OEM advice on using biodiesel blends within different departments or dealers within the same company or brand. These differences in warranty position and customer advice on biodiesel blends are related to the biodiesel knowledge level of the company or exact person contacted, the status of ASTM standards for biodiesel and biodiesel blends, and general questions about fuel quality and fuel stability.

The National Biodiesel Board (NBB) and the diesel engine, fuel injection, and vehicle companies have formed the 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 results will be based on a stakeholder assessment of actual fleet experience and controlled validation tests. The B20 FET has been active for over two years, and has identified a list of recommendations for users who wish to use B20 in their existing fleet. This list of recommendations titled, **"Technical Recommendations for B20 Fleet Use Based on Existing Data"** and dated June 2005 describes the specific advice for users who wish to use blends of B20. This would also apply to blends over B5 and below B20, such as B11 which is a popular blend in Illinois due to state tax



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considerations there.

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 limitation provided by an individual engine or equipment supplier, they represent the consensus of the members of the B20 FET. The specific position and warranty statements provided to NBB for most of the major equipment companies is available on the NBB web site at: <http://nbb.org/resources/fuelfactsheets>. In 2003 the National Biodiesel Board commissioned a survey of 53 fleet operators representing 50,821 diesel powered vehicles. Among biodiesel users surveyed, 96% of the respondents said that they would recommend biodiesel to other fleets. (The lone holdout cited cost, not performance as the reason for not recommending biodiesel at that time). 88% of those biodiesel users were operating on B20 or higher blends.

With biodiesel that meets the ASTM D 6751 specification, there have been over 50 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 approving and implementing ASTM D 6751 provides confidence to users and engine manufacturers that their B20 experiences will be positive and trouble-free.

Through cooperative programs currently underway with the US Department of Energy's National Renewable Energy Laboratory, the US Department of Agriculture's National Biodiesel Education Program, and the major OEM's, the NBB is actively working to provide the information, data, and quality assurances that will enable all diesel equipment companies to increase the blend level they recommend to their customers to B20. These activities include adding a stability parameter and other changes to the pure biodiesel specification, approving ASTM specifications for the properties of the finished blends of biodiesel up to B5 and for B20, implementation of the BQ9000 quality program and biodiesel blend supply companies, sharing more quantitative data with the OEM's through the B20 Fleet Evaluation Team and National Biodiesel Education Program efforts, as well as testing programs on new diesel technologies for 2007/2010 model years which will provide a 90% reduction in emissions of particulate matter and NOx compared to today's levels.

Once these efforts to secure B20 support with the OEM's is complete, we anticipate there will no longer be any doubt about whether blends of B20 and lower are OK. In the meanwhile, **if you follow the "Technical Recommendations for B20 Fleet Use Based on Existing Data", you can use B20 trouble free RIGHT NOW and help to clean up our environment while providing agricultural and manufacturing jobs and helping to eliminate our dependence on foreign sources of imported oil. Use B20—help start "The Drive to Independence™."**



Technical Recommendations for B20 Fleet 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.

A biodiesel blend is pure biodiesel blended with petrodiesel. Biodiesel blends are referred to as BXX. The XX indicates the amount of biodiesel in the blend (i.e., a B20 blend is 20 percent by volume biodiesel and 80 percent by volume petrodiesel).

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

Ensure the B20 blend meets properties for ASTM D 975, Standard Specification for Diesel Fuel Oils or the ASTM specification for B20 once it is approved.

Ensure your B20 supplier provides a homogenous product.

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. See the NREL Biodiesel Storage and Handling Guidelines for further information http://www.nrel.gov/vehiclesandfuels/npcf/pubs_biodiesel.html

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. If B20 is to be used in winter months, 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.

These recommendations on use of B20 are preliminary and are not provided to extend or supplant warranty limitation provided by an individual engine or equipment supplier. Use of B20 blends is solely at the discretion and risk of the customer and any harm effect caused by the use of B20 are not the responsibility of the engine or equipment maker.

B20 Fleet Evaluation Team Members

Cummins, John Deere, International Truck and Engine Corp, DaimlerChrysler, 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.