

**Recommendation:** Three of the four regional W&M Associations recommended similar changes to NCWM Publication 21. The Committee studied the proposed changes and voted to move the item forward using the changes proposed by the SWMA. The SWMA recommended that the following text replace Publication 21, Section IV, paragraph B.

B. Types of Sample Containers

**Sample containers may be clear or brown glass bottles or metal cans. A clear bottle is advantageous when conducting a visual examination for cleanliness, free water or solid impurities, while brown glass bottles provide protection from light. The samples to be tested for octane or cetane should be protected from light because the light can alter the characteristics of the samples. (See ASTM Research Report RR: D02-1502 for documented effects). Plastic-coated bottles are available which provide protection from shattering. The only suitable metal containers are seamless aluminum bottles or metal cans with seams soldered on the exterior surface with a flux of rosin in a suitable solvent, which is easily removed with gasoline.**

Text to be replaced

B. Types of Sample Containers

Sample containers may be clear or brown glass bottles, aluminum bottles, or metal cans. The clear bottle is advantageous because it may be examined visually for cleanliness, and also allows visual inspection of the sample for free water or solid impurities. The brown glass bottle affords some protection from light. Plastic coated bottles are available which provide protection against shattering. The only suitable metal cans are those with the seams soldered on the exterior surface with a flux of rosin in a suitable solvent that is easily removed with gasoline or seamless aluminum bottles. NFPA 30A 9.2 (1994 edition) states "No delivery of any Class I or Class II liquid shall be made into portable containers unless the container is constructed of metal or is approved by the authority having jurisdiction, has a tight closure, and is fitted with a spout or is so designed that the contents can be poured without spilling." If a jurisdiction is operating in an area where NFPA requirements are adopted, this should be considered in selecting sample containers that will be used at retail locations. Screw caps made of either plastic or metal may be used; the caps should provide a vapor tight closure seal. The screw caps must be protected with liners made of metal foil, teflon, polyethylene, or other material that will not be destroyed by or affect the sample product. Sample containers can be cleaned and used repeatedly as long as they are still serviceable. The caps should be used once and then disposed of, this will help prevent leakage and loss of reliability of the sample.

## 237-4 I Biodiesel Fuel

**Source:** Central Weights and Measures Association (CWMA)

**Recommendation:** Amend EFR Section 1. Definitions, Section 2. Standard Fuel Specifications, and Section 3. Classification and Method of Sale of Petroleum Products as follows:

*Section 1. Definitions*

~~1.8. Biodiesel. — means a blend consisting of diesel fuel and a substantial amount of esterified animal fats and/or vegetable oil(s).~~

Replace with new definitions:

**1.8. Biodiesel – means a fuel comprised of mono-alkyl esters of long chain fatty acids derived from vegetable oils or animal fats, designated B100 (source: Standard ASTM D 6751).**

**Comments:** Steve Howell, MARC-IV, representing the biodiesel industry testified at the Interim Meeting on each of the three proposed sectional changes. Mr. Howell is the technical director of the National Biodiesel Board (NBB) and serves as chairman of the ASTM Biodiesel Task Force.

The biodiesel industry supports the proposed new definition that is the equivalent to ASTM's definition and also recommends adding an additional definition for biodiesel blends. "Biodiesel blends" are blends of biodiesel and diesel fuel. Mr. Howell stated that the current definition contained in NIST Handbook 130 for biodiesel is incorrect and should be changed. ASTM, along with the biodiesel industry, has worked to define what biodiesel is and is not. ASTM standards also define the difference between pure biodiesel, or B100, and blends of biodiesel with petroleum diesel. The ASTM specification for biodiesel has been developed to insure satisfactory engine operation with B20 (20 percent biodiesel) blends and blends less than 20 percent biodiesel. Adopting the definitions that ASTM has developed for biodiesel will eliminate confusion between industry standard biodiesel and other materials that have been inappropriately called biodiesel (i.e., coal slurries, raw vegetable oils, partially reacted oils, etc.) that can cause serious engine problems. It will also assist in minimizing confusion on the type of product a consumer purchases, such as biodiesel B100 or a blend of biodiesel with petroleum diesel.

**The Committee recommends:**

1. Adopt the ASTM definition for Biodiesel B100 as proposed.

**1.8.1 Biodiesel Blend. – A fuel comprised of a blend of biodiesel fuel with petroleum-based diesel fuel, esignated BXX.**

**1.8.2 In the abbreviation, BXX, the XX represents the volume percentage of biodiesel fuel in the blend.**

2. Adopt a definition for a Biodiesel Blend, as outlined in ASTM D 6751 below:

*Section 2. Standard Fuel Specifications*

**2.13.1 B100 biodiesel shall meet the most recent version of ASTM D 6751, Standard Specification for Biodiesel Fuel (B100) Blend Stock for Distillate Fuels**

**2.13.2 Biodiesel and diesel blends shall meet the following requirements: the base diesel fuel shall meet the requirements of ASTM 975, and the biodiesel blend stock shall meet ASTM D 6751.**

**2.13.3 Exception - biodiesel may be blended with diesel fuel whose sulfur or aromatic levels are outside Specification D 975 Grades 1-D, 2-D, and low sulfur 1-D and 2-D, provided the finished mixture meets pertinent national and local specifications and requirements for these properties.**

**Comments:** There is no specification for biodiesel contained in Section 2, of NIST Handbook 130 as there are for other fuels. The proposed change would adopt the current language contained in ASTM specification D 6751. The proposed amendment would help ensure that the customer receives fuel that meets ASTM specifications.

The ASTM specification for diesel fuel D 975, containing biodiesel in blends of B20 or below, is likely to change very soon. This new group of fuels is being termed a "fill and go" category of D 975. Separate "fill and go" specifications are also being considered for other fuels such as water-emulsified and ethanol-emulsified diesel. The anticipated change is to place specifications on fuels, which require no engine modifications but are different than conventional petroleum-based diesel fuels that include different parameters than those currently contained in D 975.

The D 975 "fill and go" specification may also impact biodiesel specification D 6751 as it relates to the properties that either parent fuel must meet prior to blending biodiesel B20 and below. If ASTM adopts new specifications, it is hoped that the NCWM would consider similar adoption.

Assuming that the Conference will adopt ASTM changes or modifications to D 975 or D 6751, adopting the language in the current ASTM specification seems to be a prudent course of action.

**Recommendation:** Adopt the specification language as proposed.

*Section 3. Classification and Method of Sale of Petroleum Products*

**3.13 Biodiesel**

**3.13.1 How to Identify Biodiesel.** – Biodiesel shall be identified by the capital letter B followed by the numerical value volume percentage. (Example: B20)

**3.13.2 Retail Dispenser Labeling.** – Each retail dispenser of biodiesel shall be labeled with the capital letter B followed by the numerical value volume percent biodiesel and ending with the word ‘biodiesel.’ (Example: B20 biodiesel)

**3.13.3 Exemption.** – Diesel fuel containing two percent or less biodiesel is exempted from requirements 3.13.1 and 3.13.2.”

**Discussion:** Laws and regulations require that accurate and adequate information be placed on commodities allowing consumers to make price and quantity comparisons. For our economy to function properly consumers must also be able to rely on manufacturers product “claims”. Products must meet manufacturer specifications and claims.

When ASTM first developed the biodiesel specification in 1993, it proposed a specification for biodiesel use as a pure fuel, called B100. Through the ballot process, several engine companies expressed reservations that they had no experience with using biodiesel in blends over 20 percent with diesel fuel (B20). B20 has now been used successfully in over 40 million on-road miles over the last 10 years with no changes to the fuel systems on conventional diesel engines. With the higher cost of biodiesel, very few customers used blends higher than B20, and neither the biodiesel industry nor the engine industry was interested in investing the money and resources needed to meet a B100 standard.

Since B20 was the highest level product envisioned with commercial potential, and since the engine community would not support inclusion higher than 20 percent without further testing, the ASTM standard was changed from an independent B100 standard to a blend stock standard. The ASTM Biodiesel Task Force developed D 6751 as the set of properties that B100 must meet before being blended into diesel fuel up to 20 percent biodiesel by volume. For blends higher than B20, the user should consult with their engine company prior to use. The major questions with blends over B20 are related to costs, rubber and gasket compatibility with high blend of biodiesel and cold flow properties of high blends.

As a blend-stock standard, the ASTM Biodiesel Standard was developed in a manner similar to that of 1-D and 2-D diesel fuel, which are also frequently blended in the commercial marketplace as a means to improve the cold flow properties of 2-D in winter months. If the parent fuels meet their respective specifications, they can be blended and there is no separate set of specifications for the blended mixture. The current requirement of the biodiesel specification is as follows: if biodiesel meets D 6751 and diesel meets D 975 (either 1-D or 2-D), then the two can be blended up to 20 percent biodiesel and there is no separate set of properties required for the B20 mixture. For example, as with 2-D, blends of B20 can contain higher levels of 1-D for improved cold flow properties in winter. This method has served industry and consumers well, especially in the formative stages of biodiesel development.

There are two issues that come up from time to time. The first issue is that since biodiesel costs more than conventional diesel, there is the possibility that fuel distributors will advertise that they are putting in more biodiesel than they are delivering and, thus, derive undue profits. If a distributor claims that they are selling B20 or B2 and they are putting in less than one half of one percent, the distributor is misrepresenting the product. The biodiesel industry claims this is not a pump labeling issue but an enforcement issue.

The second issue is the claim that biodiesel is being blended with diesel fuel when products such as raw vegetable oil or other oils, which do not meet D 6751, are blended with diesel fuel. The biodiesel industry claims this is an enforcement issue. The National Biodiesel Board has established a quality control program (BQ-9000) that oversees producers and suppliers of biodiesel. Use of BQ-9000-certified suppliers is an effective means to mitigate this potential issue, as is requiring that the distributor provide proof of EPA biodiesel registration. To obtain an EPA registration for biodiesel the

supplier must commit to meeting D 6751. Again, aggressive competition, as well as the educational and promotional activities by the industry, have mitigated the requirement that biodiesel must meet D 6751. NCWM adoption of the D 6751 language will help in those efforts.

While B20 and lower levels of biodiesel fuel are considered “fill and go” and require no changes to the engine or fuel system, levels of biodiesel higher than B20 may need to have different gaskets and hoses. While blending biodiesel greater than 20 percent does not readily occur in today’s market place, it may in the not too distant future. Therefore, the biodiesel industry supports accurate labeling for all fuel dispensers and encourages the NCWM to adopt these recommendations.

As the price of biodiesel moves closer to the price of diesel fuel and biodiesel ceases to be a niche product blended into diesel for the Energy Policy Act of 1992 (EPA) compliance (cleaner air and superior lubricity and cetane), it becomes just one of the myriad compounds which could make up conventional diesel fuel. Refiners could blend in biodiesel to reduce the sulfur content or aromatic content of the finished blend. They could use it to replace their existing lubricity additives. If the price of biodiesel was more equal to diesel, they may add 1 percent today, 5 percent the next day, and 20 percent the next day. As long as the finished blend meets the D 975 “Fill and Go” specification, the level of biodiesel could range as high as 20 percent.

The proposed pump labeling requirement (requiring that pumps containing over 2 percent biodiesel be labeled with the blend percentage) would essentially eliminate that flexibility and could significantly reduce the amount of biodiesel that is eventually used and consumed. ASTM is currently developing a Biodiesel “Fill and Go” specification for D 975 that is not based on the parent fuels, but on the finished fuel and what is satisfactory for operation in a diesel engine. This may also mean changes to D 6751, which is a stand-alone specification. The current thinking is that the upper biodiesel concentration limit for the D 975 “Fill and Go” specification will be 20 percent although it is possible that it could be higher or lower. Whatever the concentration of biodiesel, if the finished blend meets the D 975 “Fill and Go” specification, the fuel is D 975-grade diesel fuel and would have to be labeled such. According to industry, existing labeling contained in NIST Handbook 130 is sufficient.

If the NCWM adopts the future D 975 “Fill and Go” specification and any changes required for D 6751, then it appears prudent to place the pump labeling exemption at 20 percent biodiesel at the present time, with the understanding that it might be higher or lower in the future based on the outcome of the ASTM “Fill and Go” recommendations.

Ron Hayes, State of Missouri, recommended adding a section requiring fuel suppliers to disclose the biodiesel content on delivery tickets or bills of lading, if the biodiesel content exceeds the appropriate level for dispenser labeling requirements.

**Recommendation:** The Committee recommends this item be maintained informational to allow for comments from all interested parties.

**1.8.1 How to Identify Biodiesel and Biodiesel Blends.** – Biodiesel and biodiesel blends shall be identified by the capital letter B followed by the numerical value volume percentage. (Examples: B20, B100)

**1.8.2 Retail Dispenser Labeling.** – Each retail dispenser of biodiesel or biodiesel blends shall be labeled with the capital letter B followed by the numerical value volume percent biodiesel and ending with the words “biodiesel blend.” (Example: B20 biodiesel blend)

**1.8.3 Exemption.** – Diesel fuel containing “two”? or “twenty”? (select one for final proposal) percent or less biodiesel is exempted from requirements 3.13.1 and 3.13.2.

**1.8.4 Documentation for Dispenser Labeling Purposes.** – When the biodiesel blend exceeds “two”? or “twenty”? (select one for final proposal) percent biodiesel, the retailer shall be provided, at the time of delivery of the fuel, a declaration of the volume percent biodiesel on an invoice, bill of lading, shipping paper, or other documentation. This documentation is only for dispenser labeling purposes; it is the responsibility of any potential blender to determine the amount of biodiesel in the diesel fuel prior to blending.

**237-5            D            E diesel**

**Source:** Central Weights and Measures Association (CWMA)

**Recommendation:** To request that E diesel be added to the agenda of the Committee as a "Developing Item".

**Justification:**

- (a) There is currently no consensus specification for E diesel, and a specification may need to be developed at a later date.
- (b) It may become necessary to develop "retail" labeling guidelines for E diesel.
- (c) If development of specification and labeling guidelines need to be developed, it may become necessary to assign this effort to the Petroleum Subcommittee or a specially selected Task Group.

**Background:** E diesel is a blend of Standard Number 2 diesel fuel containing up to 15 percent ethanol by volume. The blend also contains 0.2 to 5.0 percent by volume proprietary additives to maintain certain fuel properties and blend stability. Currently E diesel does not have to conform to any specification designating properties.

E diesel is being sold commercially for off-road applications and is being used in several on-road demonstration fleets. A group of E diesel stakeholders have formed the E diesel consortium to address the technical and regulatory issues with this fuel.

The Consortium has also approached ASTM about developing an E diesel specification.

At the CWMA Interim Meeting in September 2002, E diesel Consortium representative Robert Reynolds provided an update on the activities of the E diesel Consortium and requested that E diesel be put on the Committee agenda as a "Developing Item."

**237-6            V            Nozzle Requirements for Diesel Fuel**

**Source:** Central Weights and Measures Association (CWMA)

**Background:** Consumers are dispensing diesel fuel into non-diesel vehicles despite the proper labeling of retail motor fuel dispensers. The Committee feels that the following recommendation will help eliminate the problem.

**Recommendation:** Amend NIST Handbook 130, Uniform Engine Fuels, Petroleum Products, and Automotive Lubricants Regulation, Section 3. Diesel Fuel, as follows:

**3.3            Diesel Fuel**

**3.3.X.    Nozzle Requirements for Diesel Fuel. -- Each dispensing device from which diesel fuel is sold shall be equipped with a nozzle spout having a terminal end with an outside diameter of not less than 23.63 mm (0.930 in).**

**237-7            V            Premium Diesel, Single Definition**

**Source:** Southern Weights and Measures Association (SWMA)

**Background:** SWMA proposed a change to the EFR by deleting the energy content and fuel injector cleanliness requirement.

Justification for changes:

A single definition for premium diesel is imperative for this rule to gain acceptance by states. NCWM passed this definition under the assurance that the Working Group (WG) would continue to monitor and work toward a better solution. The SWMA believes that action must be taken based on ASTM activities, recently reviewed survey data, and work group discussions that have included engine manufacturing representatives.

Thermal Stability – Engine manufacturers have expressed that a standard of 80 percent should provide an adequate fuel. There was no recommended change to this value from the premium diesel work group. Data reviewed indicates this value should be achievable in most cases.

Energy Content – Fungible issues continue to exist. Engine manufacturer representatives have indicated that removing the requirement would be satisfactory.

Fuel Injector Cleanliness, along with the cafeteria approach, has been a very controversial component of this definition. The working group commitment to monitor the progress of L 10 as an ASTM test method is to report officially to the NCWM that the ASTM effort to pass this method has failed and the ASTM L 10 Surveillance Panel has dissolved. Even without the cost factor, the test can no longer be run. If a laboratory were to offer the test and a failure was cited, it is likely that the cited party would be able to successfully contest the results from a test. Unfortunately, the detergency criteria, which may well provide a benefit to the end user, can no longer be used.

**Recommendation:** Amend NIST Handbook 130, Uniform Engine Fuels, Petroleum Products, and Automotive Lubricants Regulation, Section 2 Standard Fuel Specifications, Subsection 2.2.1. Premium Diesel Fuel, as follows:

Add to Definitions:

**1.XX Lubricity. – a qualitative term describing the ability of a fluid to affect friction between, and wear to, surfaces in relative motion under load.**

Delete from the current Definitions:

~~1.17. **Energy Content.** means the gross energy content of the heating value of diesel fuel as defined by its heat of combustion; the heat released when a known quantity of fuel is burned completely under specific conditions as determined by ASTM Standard Test Method D240.~~

~~1.21. **Fuel Injector Cleanliness.** means a characteristic of the fuel which allows engine operation without fuel contribution to excessive injector deposits. (Added 1998)(Amended 1999)~~

Amend the following:

**2.21. Premium Diesel Fuel – Effective January 1, 2000, all products identified on retail dispensers, bills of lading, invoices, shipping papers, or other documentation with terms such as premium, super, supreme, plus or premier must conform to at least two of the following requirements:**

~~(a) **Energy Content** – A minimum energy content of 38.65 MJ/L, gross (138 700 BTU/gallon, gross) as measured by ASTM Standard Test Method D 240.~~

~~(b) **(a.) Cetane Number** - A minimum cetane number of 47.0 as determined by ASTM Standard Test Method D 613.~~

~~(c) **(b.) Low Temperature Operability** - A cold flow performance measurement which meets the ASTM D 975 tenth percentile minimum ambient air temperature charts and maps by either ASTM Standard Test Method D 2500 (Cloud Point) or ASTM Standard Test Method D 4539 (Low Temperature Flow Test, LTFT). Low temperature operability is only applicable October 1 - March 31 of each year.~~

~~(d) **(c.) Thermal Stability** - A minimum reflectance measurement of 80 percent as determined by ASTM Standard Test Method D 6468 using a green filter in the Octel America's Test Method No. F21-61 (180 min, 150 °C).~~

**(d.) Lubricity – A minimum load of 3100 grams as determined by ASTM D 6078. If an enforcement jurisdiction's single test of less than 2600 grams is determined, a second test shall be conducted. If the average of the two tests are less than 2600 grams, the sample does not conform to the requirements of this part.**

**(e) Fuel Injector Cleanliness**— A Coordinating Research Council (CRC) rating of 10.0 or less and a flow loss of 6.0 percent or less as determined by the Cummins L-10 Injector Depositing Test.

1. When a fuel uses a detergent additive to meet the requirement, upon the request of the Director, the fuel marketer shall provide test data indicating the additive being used has passed the Cummins L-10 Injector Depositing Test requirements when combined with Caterpillar 1-K (CAT 1-K) reference fuel. The Director may also request records or otherwise audit the amount of additive being used to ensure proper treatment of fuels according to the additive manufacturer's recommended treat rates.

1.1. Upon the request of the Director, the fuel marketer shall provide an official "Certificate of Analysis" of the physical properties of the additive.

1.2. Upon the request of the Director, the fuel supplier shall provide a sample of detergent additive in an amount sufficient to be tested with CAT 1-K reference fuel in a Cummins L-10 Injector Depositing Test. The regulatory agency requesting the sample shall be responsible for all costs of testing.

2. When a fuel marketer relies on the inherent cleanliness of the diesel fuel to pass the Cummins L-10 Injector Depositing Test or if the fuel requires a lower detergent additive level than the amount required when the additive is used with the CAT 1-K reference fuel, the fuel marketer shall provide, upon the request of the Director, annual test results from an independent laboratory that confirms the fuel meets the requirements of 2.2.1. (e). The time of fuel sampling and testing shall be at the Director's discretion. The Director may witness the sampling of the fuel and the sealing of the sample container(s) with security seals. The Director may request confirmation from the testing laboratory that the seals were intact upon receipt by the laboratory. The final test results shall be provided to the Director. All costs for sampling, transporting, and testing shall be the responsibility of the fuel supplier. If the annual test complies, any additional testing at the request of the Director shall be paid for by the regulatory agency.

(Added 1998) (Amended 1999)

**3.3.3. Labeling Properties of Premium Diesel**— All retail dispensers identified, as premium diesel must display either:

1. A label that includes all qualifying parameters as specified in 2.2.1. Premium Diesel Fuel affixed to each retail dispenser. The label shall include a series of check blocks clearly associated with each parameter. The boxes for the parameters qualifying the fuel must be checked. All other boxes shall remain unchecked. The marketer may check as many blocks as apply, or;

2. A label that includes only the parameters selected by a marketer to meet the premium diesel requirements as specified in 2.2.1. Premium Diesel Fuel. In either case, the label must display the following words:

"Premium Diesel Fuel" in a type at least 12 millimeters (2 inches) in height by 1.4 millimeters (1/16 inch) stroke (width of type.)

When applicable, as determined by the label option and qualifying parameters chosen by the marketer, the label must also display the following information and letter type size:

The words "Energy Content," "Cetane Number," "Low Temperature Operability," "Thermal Stability," and "Fuel Injector Cleanliness" in a type at least 6 millimeters (1/4 inch) in height by 0.75 millimeter (1/32 inch) stroke (width of type.)

A declaration of the minimum Energy Content (minimum 38.65 MJ/L gross [138 700 BTU/gallon]), if energy content is chosen as a qualifying parameter, in type at least 3 millimeters (1/8 inch) in height by 0.4 millimeter (1/64 inch) stroke (width of type.)

The minimum cetane number guaranteed (at least 47.0) if cetane number is chosen as a qualifying parameter, in a type at least 3 millimeters (1/8 inch) in height by 0.4 millimeter (1/64 inch) stroke (width of type.)

~~The date range of low temperature operability enhancement, (e.g., October—March,) along with the qualifying test method (ASTM D 4539 or ASTM D 2500), if low temperature operability is chosen as a qualifying parameter, in a type at least 3 millimeters (1/8 inch) in height by 0.4 millimeter (1/64 inch) stroke (width of type).~~

For Example:

~~—————**Premium Diesel Fuel**~~

~~High Energy Content ————~~

~~Cetane Number, 47.0 min —~~

~~Low Temperature Operability (Oct. Mar., LTFT) ————~~

~~Thermal Stability~~

~~Fuel Injector Cleanliness~~

or

~~—————**Premium Diesel Fuel**~~

~~Cetane Number, 47.0 min —~~

~~Low Temperature Operability (Oct. Mar., LTFT) ————~~

~~Thermal Stability —~~

~~The label must be conspicuously displayed on the upper half of the product dispenser front panel in a position that is clear and conspicuous from the driver's position.  
(Added 1998) (Amended 1999)~~

**7.1.1. Premium Diesel** -The following test methods shall be used to determine compliance with the applicable premium diesel parameters:

(a) ~~Energy Content —ASTM D 240~~

(b) **(a.)** Cetane Number - ASTM D 613

(c) **(b.)** Low Temperature Operability - ASTM D 4539 or ASTM D 2500 (according to marketing claim)

(d) **(c.)** Thermal Stability - ~~Octel America F21-61 (180 min., 150 EC)~~ ASTM D 6468 (180 min., 150°C).

**(d) Lubricity – ASTM D 6078**

(e) ~~\*Fuel Injector Cleanliness—The most recent edition of the Cummins L-10 Injector Depositing Test as endorsed by the ASTM L-10 Injector Depositing Test Surveillance Panel.~~

\* Upon ASTM approval of a standard test methods that are is derived from the above referenced methods, the ASTM standard test methods shall be used to determine compliance with the applicable premium diesel parameter.  
(Amended 1999, 2003)