

The purpose of this note is to provide an update on the current status of biodiesel as a replacement for fossil fuel in the heating market.

Oilheat has long been a source of safe, reliable & efficient home heating and has been including renewable, low carbon biodiesel (ASTM D6751) in the fuel stream for almost two decades. Now, with public policy in the Northeast dictating reductions in GHG emissions, the Oilheat industry is responding with increased biodiesel blends—reducing oilheat’s carbon footprint. The industry’s adoption of increased blends is embodied by the National Energy & Fuels Institute’s (formerly New England Fuel Institute) *Providence Resolution* calling for carbon reductions of 15% by 2023, 40% by 2030, and zero carbon by 2050. The 2023 target of 15% reduction will require a 20% biodiesel blend (B20).

Biofuel, Biodiesel or Bioheat®

- *Biofuel*: any fuel that is derived from biomass—that is, plant or algae material, animal waste or raw vegetable oil.
- *Biodiesel*: a liquid biofuel that meets ASTM D6751 specifications. Its properties are similar to ASTM D396 fuel oil and is used in blends with fuel oil for heating use.
- *Bioheat® fuel*: Registered trademarked name of blending of ASTM D6751 biodiesel with ASTM D396 fuel oil for use in home heating. *Bioheat®* is defined as up to 5% biodiesel (B5), *Bioheat Plus* is 6-20% biodiesel and *Bioheat Super Plus* is blends over 20% biodiesel®.

Bioheat® currently in the marketplace: Millions of homes are heated with Bioheat®

- Bioheat® was introduced into the oilheating marketplace in 2003.
- Hundreds of thousands of homes use blends of 20% or more biodiesel.
- More than 100 million gallons of biodiesel were blended for heating in 2019, this number is on the rise.
- New York City & surrounding counties have a mandate to use biodiesel in home heating—with escalating blends over time.
- Rhode Island also has a mandate to use biodiesel blends.
- Massachusetts includes biodiesel (used cooking oil feedstock) in its *Alternative Portfolio Standard*.

The Fuel: ASTM has approved specifications for blends up to B20 as defined in D396

- **Including grades up to B5:** 1.1.1 Grades No. 1 S5000, No. 1 S500, No. 1 S15, No. 2 S5000, No. 2 S500, and No. 2 S15 are middle distillate fuels for use in domestic and small industrial burners.
- **Including grades up to B20:** 1.1.2 Grades B6–B20 S5000, B6–B20 S500, and B6–B20 S15 are middle distillate fuel/biodiesel blends for use in domestic and small industrial burners.
- The Renewable Fuel Standard (RFS) administered by the U.S EPA supports U.S. market growth of advanced biofuels.
- Biodiesel is considered *America’s First Advanced Biofuel*.
- The biodiesel industry has a quality control assurance program for producers and marketers called BQ-900.

The Equipment: Due to B5 being an equivalent fuel to standard heating oil (ASTM 369 1.1.1), all heating equipment is rated to use 5% biodiesel

- Many manufacturers of heating appliances & components have already introduced B20 approved equipment into the market.
- A UL testing procedure for burners with B20 has been approved allowing for additional testing & product development.
- Laboratory & field data demonstrates that using B20 in current systems creates no unusual problems nor increased service issues.

Testing/Field Use: Large scale field use as well as laboratory testing demonstrate that operating with biodiesel blends up to 20% (B20) requires little or no modifications to the heating system

- Biodiesel was first introduced in 2003 allowing for close to two decades of field use and observation.
- Bioheat® (B20) has been tested in heating equipment for reliability, combustion, & safety by UL, National Renewable Energy Laboratory, Brookhaven National Laboratory, National Oilheat Research Alliance, Penn State University, and the National Biodiesel Board as well as many Oilheat equipment manufacturers.
- Some retailers have been delivering B20 or more for many years without reports of increases in service issues.
- A 2019 National Oilheat Research Alliance survey showed that among the 207 heating oil retailers responding, the inclusion of biodiesel had little impact on their service departments. These respondents represented over 182,000 users of 1-10% biodiesel, 97,000 users of 11-25% biodiesel and 17,100 users of 26-90% biodiesel.

Beyond B20: Industry testing and experience shows blends up to B20 to be viable “drop-in” fuel. As the demand to reduce GHGs even further requires B50 and beyond, properties, such as cold flow for outdoor storage and distribution, will have to be addressed. Solutions to these challenges are already being investigated by NORA, NBB, fuel additive manufacturers and heating oil retailers.

Find out more at: NORAweb.org/renewable-fuels, mybioheat.com



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