

111d Issues with Biodiesel Purity and the Current Us Biodiesel Standard

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Biodiesel is a renewable, alternative fuel source for compression ignition engines. Biodiesel is currently governed by two international standards: the European Standard, EN 14214:2002, and the US Standard, ASTM D 6751. To meet the ASTM D 6751 standard, a biodiesel sample should satisfy specifications of a sequence of tests including: flash point (ASTM D 93/ ASTM D 3828 or D 6450); water and sediment (ASTM D 2709 / ASTM D 1796); viscosity (ASTM D 445); sulfated ash (ASTM D 874); sulfur content (ASTM D 5453/ D 1266/ D 2622/ D 3120 or D 4294); corrosion (ASTM D 130); cetane number (ASTM D 613); cloud point (ASTM D 2500 / 3117); acid number (ASTM D 664 / D 3242 or D 974) carbon residue (ASTM D 4530 / D 189 or D 524), total glycerin (ASTM D 6584); free glycerin (ASTM D 6584); phosphorus content (ASTM D 4951) and distillation temperature (ASTM D 1160). An interesting fact about the ASTM D 6751 test sequence is that the purity of biodiesel in terms of methyl esters conversion is not assessed. The purpose of this paper is to discuss whether low grade biodiesel with a low methyl ester conversion could still pass the ASTM D 6751 test standard. Use of biodiesel with low conversion is a significant issue since the unconverted triglycerides could polymerize and eventually build up in the fuel lines causing partial plugging of these lines which could cause significant power losses.