The Sediment Formation in Long-Term Stored Biodiesels and Blends with respect to Fatty Acid Profile of Biodiesel

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ABSTRACT

Biodiesel is composed of Fatty Acid Methyl Esters (FAME). In the present investigation, the sediment formation in long-term stored biodiesel and blends with Petroleum Diesel (PD) were studied with respect to fatty acid profile of biodiesel. For the study, Cotton Seed Oil Methyl Esters (CSOME) and Palm Stearin Methyl Esters (PSME) and their blend with PD in the volume ratio of 10%, 20%, 30%, 40%, 50% and 100% were stored in Low Density Poly Ethylene made plastic containers each of 500 ml capacity. The samples were collected equally each of 300 ml in each container with air tight caps and stored in a dark place. The samples have been observed after two years. Sediment formation is observed in CSOME blends only. No sediment is found in PSME blends. The reason is being that CSOME is rich in unsaturated FAME and PSME in saturated FAME. The color of the sediments varied from thick brown color for low blend of 10% to pale brown for 100 % pure CSOME biodiesel. The samples were collected in to petri dishes and left as it was on a flat surface. After a span of one week, when observed again, all the collected sediments are found spread in to the other portions of the petri dish except for pure 100% CSOME. This indicates gel nature of the all the samples except for 100% CSOME that indicates the presence solid content.

Keywords: Biodiesel and blends, long-term storage, sediment formation, fatty acid profile, unsaturated and saturated FAME

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