

Title: A Simple Test for Acetone in Bio-diesel!

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Scientists at the Indian Institute of Science Education and Research, Mohali developed a color test to detect acetone—a potential cosolvent for biodiesel production to reduce heating requirements, agitation/ultrasonication, centrifugation, excess chemicals and washing—and tertiary butyl hydroquinone (vegetable oil antioxidant) levels in biodiesel and vegetable oil, respectively.

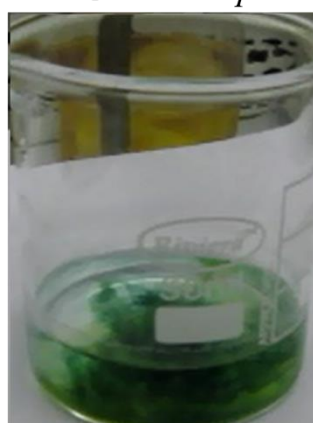
Soybean oil + Acetone + TBHQ



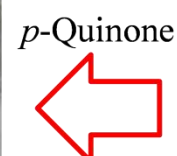
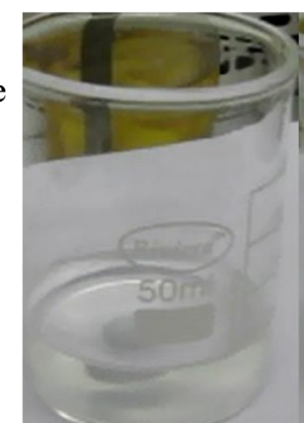
Blue Colour



Blue-Green complex



Acetone + Methoxide



we report a new color test developed in our laboratory which is quick and simple and can be used for detecting the presence of acetone. If a base is added to a mixture containing trace amounts of acetone, followed by addition of negligible amount of *p*-quinone, results in green-blue color effect. Same effect is seen on addition of only *p*-quinone to BDF containing residual methoxide alongside acetone. We developed this test quite by chance, while synthesizing BDF from the mixture of soybean oil (Fortune brand, India) and acetone at room temperature. On addition of sodium methoxide, the solution turned blue for a few seconds and eventually became brown-red in colour. This phenomenon could not be seen with coconut and mustard oil. This made us suspect the connection between the blue colour effect and additives in these vegetable oils. Meantime, we came across *J. of Pharmaceutical Sciences*, **1982**, 71, 834, where a blue-color test was used to detect phytonadione (Vitamin K₁) in vegetable oils. Besides, blue colour has also been reported with some persistent radicals such as 2,4,6-tri(tert-butyl)phenoxy radicals. This led us to conclude that the blue color effect in our case was due to tert-butyl hydroquinone (TBHQ) present in the soybean oil as preservative. TBHQ partially gets converted to tert-butyl quinone and in presence of acetone and methoxide it responds to the test. TBHQ is also added to BDF as corrosion inhibitor. Our test can also be used for detecting the presence of TBHQ type preservatives in both vegetable oils and BDF.