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Corrosive Property Study of Different Bio Fuels

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***Abstract*:-Biodiesel has recently received increasing attention because of many advantages such as higher cetane number and flash point compared to diesel fuel.**
However, corrosion of engine parts exposed to biodiesel or biodiesel-diesel fuel blends is still a critical challenge in the biodiesel industry. In the existing literature, there is still a lack of systematic studies including corrosion process in light alloy and changes in mechanical and fuel properties of engine parts (such as brass) after exposure to biodiesel.
:- Therefore, in this study, (1) waste sunflower oil biodiesel (WSOB, B100) was supplied and blended with diesel fuel (B0) at the volume ratios of 10%, 20%, and 40%, which are called as B10, B20, and B40, as usual.

Keywords: Corrosion Performance, , Petrol, Diesel and Kerosene, methen

I. NTRODUCTION

In recent years, rapid exhaustion of world petroleum reserves, rising prices of fossil fuels, and growing environmental concerns have propelled researchers to seek for renewable energy sources (Chien et al., 2009; Behc¸et et al., 2015).

Biodiesel is one of the most promising alternative clean fuels to diesel fuel. Biodiesel is generally produced by means of transesterification reaction in which triglycerides in a vegetable oil or fat react with a simple monohydric alcohol (usually methanol or ethanol) in the presence of a suitableThe most common brass is nominal brass which contains 70% copper and 30% zinc. It is also known as “cartridge brass” this brass is subjected to dezincification if left for long times in water, the zinc disappears and the metal has a dull copper color as copper is all that is left on the surface. Brass with less than 15% zinc is sup- catalyst, after ten days of immersion were taken using Optical Microscope. The photomicrographs were done without etching to reveal the surface property at a magnification of 700 The samples were prepared for the study by cutting brass into 1 cm_2 coupons and soaking them in different small plastic containers containing petrol, kerosene and diesel. The corrosion rate of each sample for a specific period of immersion (120, 240, 360, and 480, 600 and 720 hours) was determined on average of three samples exposed under the same condition and test media in different container. The finding showed that brass is resistant to corrosion after long hours of contact in chosen liquid fossil fuels..

II. COPPER STRIP CORROI ON APPARAT US

Double walled stainless steel chamber bath outer chamber made of mild steel sheet attractive painted. As per IP 154 and IS 1448 (P-15) to accommodate 3 & 6 Bombs. Temperature is controlled by Electronic Digital Temperature Controller (Without S.S. Bomb)

- Water Bath for 3 S.S. Bombs
- Water Bath for 6 S.S. Bomb

III. METHOD

The samples were cut into coupons of 36 pieces using shearing machine and arc saw. The plastic containers were first washed with detergent, rinsed in distilled water and allowed to dry for hours. They were filled with testing fluids which were petrol, kerosene and diesel. Each of the measured samples was inserted into identified plastic containers. Complete immersion in testing fluid was ensured for periods of 120, 240, 360,
480, 600 and 720 hours. Proper cleaning of each sample was ensured after removal using water and mentholated spirit. After each period the samples were removed and weighed to determine the weight loss. The data were collected from the experiment and analyzed. Photomicrogrsamples

IV. RESULTS AND DISCUSSION

Corrosion rates of brass in petrol, kerosene and diesel were low after long immersion period. Corrosion rate of brass in petrol was the highest, followed by brass in kerosene (both almost have the same pH of about 6.95 and alittle increase from acidic to alkalis). Brass in diesel has the least corrosion rate and the pH was slightly less thanthat of kerosene and diesel which increase toward neutral. Diesel was most viscous among petrol and kerosene

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Biodiesel (RME) was synthesized from commercial rapeseed oil and methanol catalyzed by NaOH. The commercial diesel (number 0) was purchased from China Sinopec Corp. The physical and chemical properties of the prepared biodiesel

V. WORKING

The working of our project basically explain by using the five blocks as follows

a) Battery.
b) Motor Controller Circuitry.
c) Electric motor.
d) Chain and Sprocket.

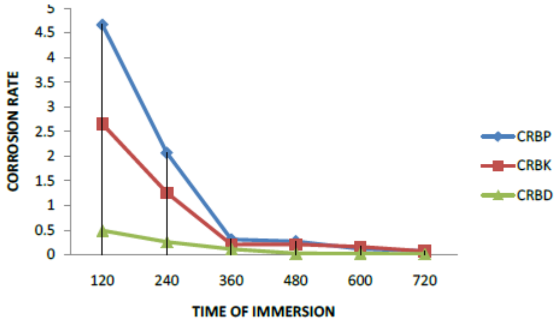

Figure 1. Corrosion Rate (mm/y) against time of immersion (hours) of Brass in Petrol, Kerosene and Diesel.

Fig.1 Copper strip corrosion apparatus

Table 3. Corrosion performance of brass in diesel.

Time	Wi [g]	Wf [g]	Wd [g]	Wl [g/m^2]	pH	Cr [mm/yr]
120	2.35	2.3558	0.0058	58	5.55	0.4946
240	2.435	2.4412	0.0062	62	5.75	0.2644
360	1.88	1.8842	0.0042	42	6.00	0.1194
480	1.845	1.8465	0.0015	15	6.025	0.03198
600	1.64	1.6416	0.0016	16	6.025	0.0273
720	1.695	1.6964	0.0014	14	6.025	0.0199

Area = 0.0001 m^2.

Fig.3 Functions of Pins

Fuel is filled and stored in a tank of some type. The fuel will interact with materials and impurities in both storage tank and fuel system. The fuel will also be exposed to various ambient conditions suchastemperature moisture and exposure to oxygen in air. Examples of dependence are vapor pressure, connected to high and low temperatures, deposits depending of low temperature solubility and oxidationstabilitydepending

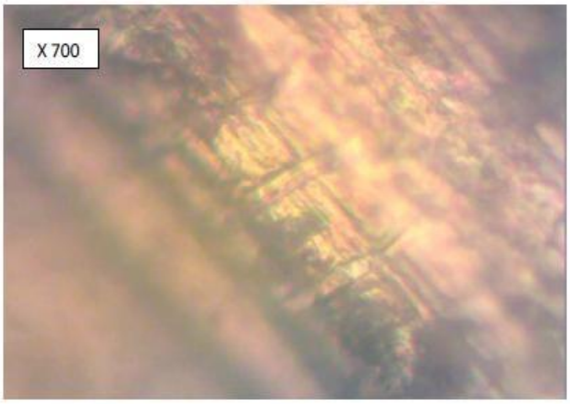

Figure 5. Photomicrograph of brass in kerosene after 10 days immersion ×700.

CONCLUSION

In conclusion, the influence of liquid petroleum products on the corrosion rate of brass was investigated and the following findings were deduced from the study. The corrosion rates of brass in petrol, kerosene and diesel were low after a long period of contact.Corrosion rate was highest for brass in petrol than in kerosene, and the rate was least in diesel at early hours of immersion. Energy content of isobutanol is 33 MJ/kg (26.5 MJ/l) representing around 82% of volumetric energycontent of gasoline. Densities of butanol isomers are higher than those for gasoline, which improves volumetric fuel economy to some extent. Theoretically, volumetric fuel consumption increases some3.5% when 16 vol-% butanol is blended with non-oxygenated gasoline.

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