

University of Anbar

College of Engineering

Chemical & Petrochemical Engineering

Oil properties Laboratory, 3rd stage 2023-2024

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Experiment 5: Flash Point by Closed Cup Method

Definition

Flash point: It is the lowest temperatures of the oil at which application of test flame causes the vapor above the sample to ignite with a distinct flash inside the cup.

Aim

1- To determine flash point of given sample of oil using Pensky Marten's apparatus by closed cup method.

Featured

Conforms to ASTM D93-10 and related specifications

The apparatus consists of a brass cup and cover fitted with shutter mechanism without shutter mechanism (open cup), test flame arrangement, hand stirrer (closed cup), thermometer socket, etc., heated with energy regulator, a thermometer socket made of copper.

Significance and Use

Again, as the name suggests, the flash point in the closed cup method is conducted inside a closed vessel which is not open to the outside atmosphere. The lid is sealed and the ignition source is introduced into the vessel itself, allowing for a closer approximation to real-life conditions (such as those found inside a fuel tank).

Experiment procedure

1. Clean the oil cup thoroughly and fill the oil cup with the sample oil to be tested up.
2. Insert the thermometer into the oil cup through a provision, measures the temperature rise.
3. Using the Energy regulator, control the power supply given to the heater and rate of heating.
4. The oil is heated slowly when temperature of oil rises; it is checked for the flash point for every one degree rise in temperature.
5. Repeat the experiment 2 or 3 times with fresh sample of the same oil.
6. Take the average value of flash and fire points.

Precautions

1. Stirrer the oil bath continuously to maintain the uniform temperature of sample oil.

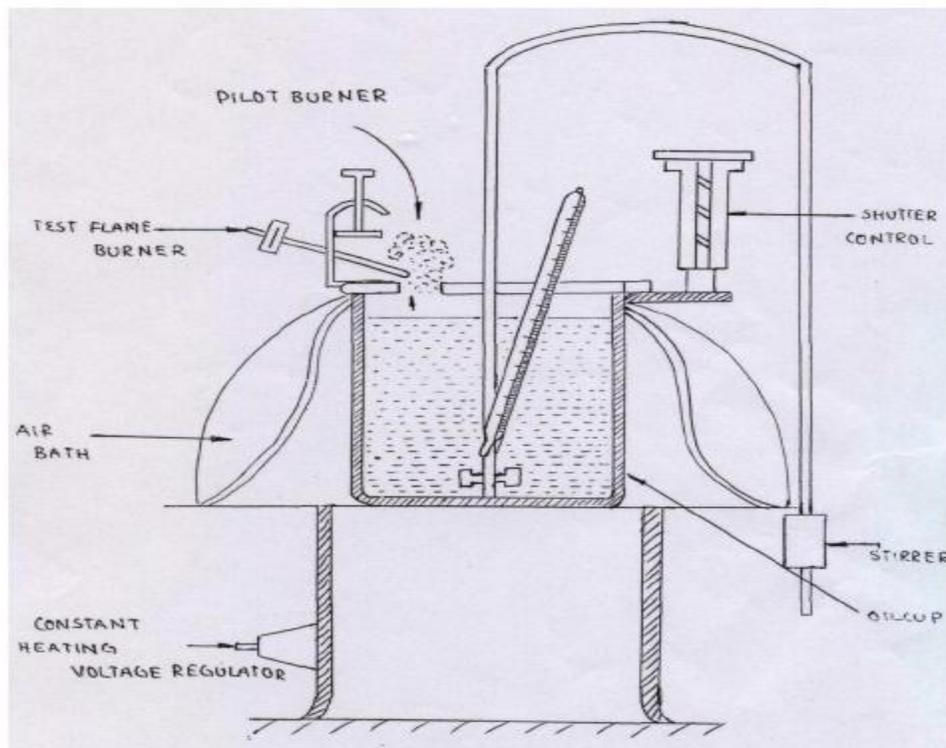


Figure 1 Typical flash point appearance



Figure 2 Flash point device.

Results

Sample	Flash point °c			Mean flash point °c
Diesel				
Kerosene				

Discussion Section

- 1- What is the difference between open and closed cup methods?
- 2- What is the difference between flash point in open and closed method?
- 3- What are the four main closed cup flash point testing methods?
- 4- Discuss your results and observations. You should also write a brief summary of your work and results.