University of Anbar

College of Engineering

Chemical & Petrochemical Engineering

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Experiment No. 1: Smoke point Test

Definition

Smoke Point: It is the max. flame height in mm at which the sample burns without smoke. Smoke point is related with the aromatic content of the liquid and it is inversely proportional to the aromatic content.

Smoke point is used to determination of smoking tendency. Smoking tendency is proportional to the aromatic content and is given by Eq.

Smoking tendency = 320 / smoke point in mm.

Aim

1- Determination of smoke point of light petroleum products.

Significance and Use

This test method provides an indication of the relative smoke producing properties of kerosene. The smoke point is related to the hydrocarbon type composition of such fuels. Generally, the more aromatic fuel the smokier the flame. A high smoke point indicates a fuel of low smoke producing tendency. The smoke point is quantitatively related to the potential radiant heat transfer from the combustion products of the fuel.

Experiment procedure

1- Soak a piece of extracted and dried wick (about 125 mm) long in the sample (Kerosene). Place it in the wick tube of candle.

2- Fill the sample container up to desired level (20 ml) and introduce a wick in the container.

3- Cut the wick horizontally (6 mm) from the end of the candle.

4- Place this assembly in the burning chamber of the device.

5- Open the glass door, light the flame and adjust the wick (The flame should be about 10mm height). Allow the lamp to burn for 5 min.

6- Raise the candle until smoke appears from from the chimney (Stock).

7- Slowly the candle until the smoke disaprear.

8- Take the reading from the reflection of the flame image on the scale. This reading represents smoke point of the sample.

9- It is quite recommended that to take more than one observation to get right reading.

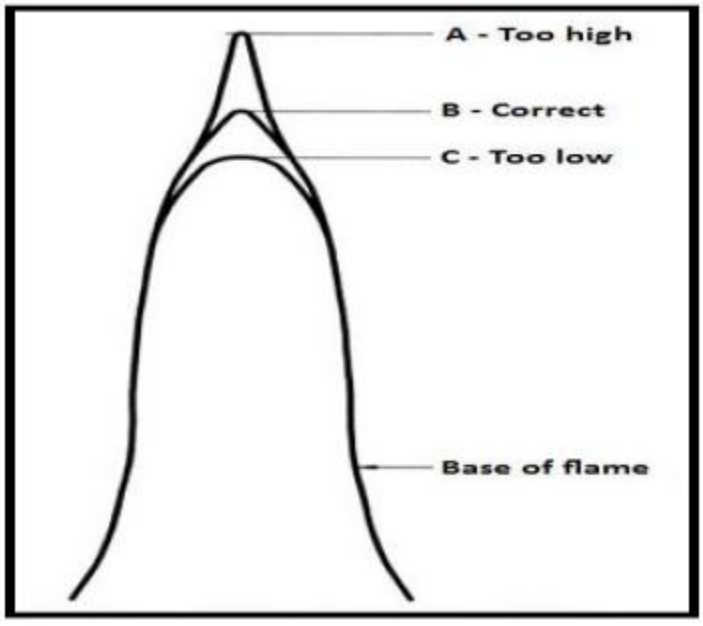

Figure 1: Typical flame appearance.

Figure 2: Important tools

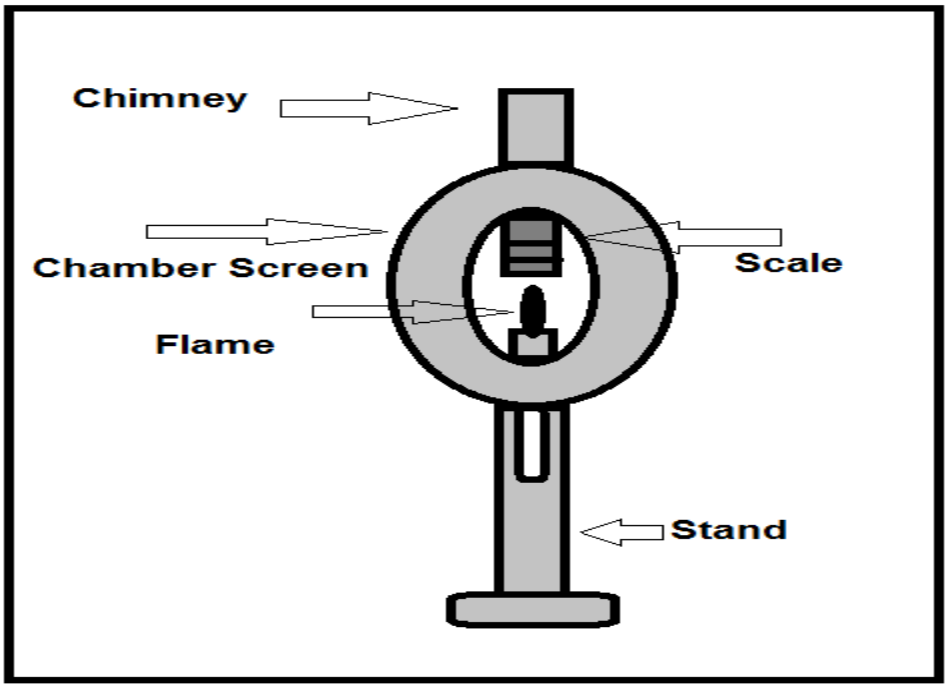

Figure 3: Smoke point device

Discussion Section:

1- What is the significance of smoke point test?

2- How many observations that you should do to get the right result?

3- Draw typical flame appearance.

4- Discuss your results and observations. You should also write a brief summary of your work and results.