

**Practical Experiment Instruction Sheet**

EXPERIMENT TITLE :

Determination of Acid value of lubricating oil.

EXPERIMENT NO. : 5 MIT(T)/BSH/Engg. Chemistry Lab/ Engg. Chemistry /Manual No

Class: F.Y. BTech.

DEPARTMENT: Basic Sciences & Humanity

LABORATORY : Engg. Chemistry

Location:- 214

PART:

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Aim:- Determination of acid value of an oil.**Apparatus:-** Beaker, glass rod, burette, water bath, etc.**Chemicals:-** Lubricating oil sample (Castor oil-density 961 kg/m^3), Ethanol, Phenolphthalein indicator etc.**Theory:-**

1. Free acid or alkali content in oil is determined in terms of neutralization no.
2. Petroleum oils, vegetable oils may contain acid, as impurities due to improper refining.
3. Acidic constituents in oil are expressed as acid value.
4. Determination of acidic constituents is more common & referred to as 'acid number' or 'acid value'.
5. Acid value defined as "number milligrams of KOH required to neutralize free acid in 1 gm oil."
6. A good lubricating oil should have acid value less than 0.1
7. Basic impurities are rarely present in oil, they are expressed as base value. It is defined as the no. of mg of HCL requires to neutralize free base in 1 gm of oil. It is determined in similar manner by titration against a standard acid.

Observation:-

Observation table:-

Sr. no.	Wt. of oil taken (gm)	Volume of 0.1 KOH (ml)	Mean
1.	2 gm	_____ ml	
2.	2 gm	_____ ml	_____ ml
3.	2 gm	_____ ml	

Formula:- Acid value =
$$\frac{\text{No. of milligrams of KOH} \times 5.6}{\text{wt. of oil taken in (gm)}}$$

= _____ mg of KOH

where, 5.6 represents amount KOH in mg present per each ml of $\frac{N}{10}$ (0.1N) KOH solution.

Procedure:-

1. 1 gm of the lubricating oil under test is taken into beaker and 5ml of ethanol is added.
2. Then the beaker is placed into water bath and heated for 30 min.
3. Then the beaker is taken out of water bath and cooled to room temperature.
4. Then 1 to 2 drops of phenolphthalein indicator is added to the solution in beaker.
5. And solution is titrated then with standard 0.1 N KOH.

Result:- Acid value of the given lubricating oil (castor oil) is found to be _____ mg of KOH.