

Aim - Estimation of Free Fatty Acid Value (FFA)

A small quantity of free fatty acids is usually present in oils along with the triglycerides. The free fatty acid content is known as acid number/acid value. It increases during storage. The amount of free fatty acids present or acid value of fat is a useful parameter which gives an indication about the age and quality of the fat.

Principle: The free fatty acid in oil can be determined volumetrically by titrating the sample with potassium hydroxide in the presence of phenolphthalein indicator. The acid number is defined as the mg KOH requires to neutralize the free fatty acids present in 1g of sample. However, the free fatty acid content is expressed as oleic acid equivalents.

Materials:

- 1% phenolphthalein in 95% ethanol.
- Neutral alcohol – to be neutralized with KOH to a faint but permanent pink colour just before using.
- 0.1N KOH solution: 5.6g of potassium hydroxide 1L of distilled water. The solution is standardized by titrating it with 0.1N oxalic acid using phenolphthalein as an indicator till permanent pink colour appears.

Method:

- Take 1-10g of oil or melted fat in a clean and dry conical flask.
- Add 25 ml of hot neutral alcohol followed by few drops of phenolphthalein indicator.
- Titrate the content with 0.1N KOH with vigorous shaking to the first permanent pink color which persists for fifteen seconds is obtained.

Calculation:

$$\text{Acid value} = \text{FFA (\%)} \times 1.99$$