

10.17 Determination of sulphur

Apparatus

- Magnetic stirrer
- Spectrophotometer
- Measuring spoon (0.2 to 0.3 ml)
- 250 ml flasks and stirring bars

Reagents

1. Conditioning solution: Mix 50 ml glycerol with a solution containing 30 ml concentrated HCl, 300 ml distilled water, 100 ml 95 per cent ethyl alcohol and 75 g sodium chloride.
2. Barium chloride, A.R. grade crystals.
3. Standard sulphur solution: Dissolve 5.438 g reagent grade potassium sulphate in 1 litre water to make standard stock solution. Dilute 10 ml of the stock solution to 100 ml. This solution contains 0.01 mg sulphur / ml.

Procedure

Take 5 to 10 ml aliquot of HCl extract in a 250 ml flask and add water to bring the volume to 95 ml. Add 5 ml of conditioning solution. Place the flask on the magnetic stirrer and add a magnetic stirrer bar. The stirring speed should be constant for each run. While stirring, add a spoonful of barium chloride crystals and stir for exactly 1 minute. Just after stirring measure the absorbance at 350 nm. A blank in which no barium chloride is added is run parallel. Prepare a suitable standard curve extends from 0 to 1.2 mg of sulphur per 100 ml solution.

Calculation

$$\text{Sulphur, per cent by mass} = \frac{T \times V \times 100}{A \times W \times 1000}$$

Where,

T = mg of sulphur in test sample

V = volume of extract made

A = Aliquot taken; W = Wt. of sample in g

Reference: IS: 1664 – 2002. Specification of mineral mixtures for supplementing cattle feeds (Fourth revision).