

D. MONOGRAPHS

Active Carbon

Description Active Carbon occurs as black powder, granules, or fibrous substances.

It is odorless and tasteless.

Identification (1) If the Active Carbon is a powder, use as it is. If it is in a granular or fibrous state, completely crush into powder. Weigh about 0.1 g of powdered Active Carbon, add 10 ml of diluted methylene blue TS and 2 drops of diluted hydrochloric acid (1 : 4), shake well, and filter through a dry filter paper for quantitative analysis (5C). The solution is colorless.

(2) If the Active Carbon is a powder, use as it is. If it is in a granular or fibrous state, completely crush into powder. Weigh about 0.5 g of powdered Active Carbon, and transfer into a test tube. When heated over a direct flame while supplying air to the test tube mouth, it burns without flames. Then, when the gas evolved is passed through calcium hydroxide TS, white turbidity appears.

Purity If the Active Carbon is a powder, use as it is. If it is in a granular or fibrous state, completely crush into powder. Dry at 110 - 120 °C for 3 hours, weigh 4.0 g of dried Active Carbon, add 180 ml of water containing 0.1 ml of diluted nitric acid (1 : 100), and heat for about 10 minutes, keeping boiling slowly. Cool, add water to make 200 ml, and filter through a dry filter paper for quantitative analysis (5C). Discard about 30 ml of the initial filtrate, and perform tests (1), (2), (3), (4), and (5) below, using the subsequent filtrate as solution A.

(1) **Chloride** Not more than 0.53% as Cl.

Test Solution 1.0 ml of solution A.

Control Solution 0.30 ml of 0.01 mol/l hydrochloric acid.

(2) **Sulfate** Not more than 0.48% as SO₄.

Test Solution 2.5 ml of solution A.

Control Solution 0.50 ml of 0.005 mol/l sulfuric acid.

(3) **Zinc** Not more than 0.10% as Zn.

Measure 2 ml of the solution A and add water containing 0.1 ml of nitric acid (1 : 100) to make 200 ml. Use this solution as the sample solution. Separately, measure 4 ml of Zinc Standard Solution and add water containing 0.1 ml of nitric acid (1 : 100) to make 200 ml. Use this solution as the control solution. Proceed as directed under Atomic Absorption Spectrophotometry on the test solution and control solution under the conditions below. The absorbance of the sample solution does not exceed that of the control solution:

Operating Conditions

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Light source: Zinc hollow cathode lamp.

Wavelength: 213.9 nm.

Supporting gas: Air.

Combustible gas: Acetylene or hydrogen.

(4) Lead Not more than 10 $\mu\text{g/g}$ as Pb.

Test Solution Measure 50 ml of the solution A, evaporate to dryness on a water bath, dissolve the residue with 10 ml of diluted nitric acid (1 : 150).

Control Solution To 1.0 ml of Lead Standard Solution, add 2 ml of diluted nitric acid (1 : 150) to make 10 ml.

Determine the absorbances of the test solution and the control solution as directed under Method 1 in the Lead Limit Test. The absorbance of the test solution does not exceed that of the control solution

(5) Arsenic Not more than 4.0 $\mu\text{g/g}$ as As_2O_3 (25ml of the solution A, Method 2, Apparatus B).