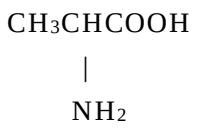
D. MONOGRAPHS

DL-Alanine



$C_3H_7NO_2$ Mol. Wt. 89.09

(*R*, *S*) -2-aminopropanoic acid 〔302-72-7〕

Content DL-Alanine, when calculated on the dried basis, contains 98.5—102.0% of DL-alanine ($C_3H_7NO_2$).

Description DL-Alanine occurs as a colorless to white crystalline powder having a sweet taste.

Identification (1) To 5 ml of DL-Alanine solution (1 → 1,000), add 1 ml of ninhydrin solution (1 → 1,000), and heat for 3 minutes. A purple color develops.

(2) Dissolve 0.2 g of DL-Alanine in 10 ml of diluted sulfuric acid (1 → 20), add 0.1 g of potassium permanganate, and boil. An odor of acetaldehyde is evolved.

Purity (1) Clarity and color of solution Colorless and clear (1.0 g, Water 10 ml).

(2) pH 5.5—7.0 (1.0 g, Water 20 ml).

(3) Chloride Not more than 0.021% as Cl (0.50 g, Control solution 0.01 mol/l hydrochloric acid 0.30 ml.)

(4) Heavy metals Not more than 20 μg/g as Pb (1.0 g, Method 4, Control solution Lead Standard Solution 2.0 ml).

(5) Arsenic Not more than 4.0 μg/g as As_2O_3 (0.50g, Method 1, Apparatus B).

Loss on Drying Not more than 0.30% (105℃, 3 hours).

Residue on Ignition Not more than 0.20%.

Assay Weigh accurately about 0.2 g of DL-Alanine, dissolve in 3 ml of formic acid, add 50 ml of acetic acid, and titrate with 0.1 mol/l perchloric acid. The end point is usually confirmed by using a potentiometer. When an indicator (1 ml of crystal violet—acetic acid TS) is used, titrate until the color of the solution changes from purple through blue to green. Perform a blank test in the same manner, make any necessary correction, and calculate on the dried basis.

1 ml of 0.1 mol/l perchloric acid = 8.909 mg of $C_3H_7NO_2$