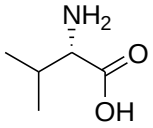
Valine

L-Valine



$C_5H_{11}NO_2$ Mol. Wt. 117.2

Valine contains not less than 98.5 per cent and not more than 101.5 per cent of $C_5H_{11}NO_2$ calculated on the dried basis.

Category. Amino acid

Description. A white crystals.

Identification

Determine by infrared absorption spectrophotometry (2.4.6). Compare the spectrum with that obtained with *L-valine IPRS* or with the reference spectrum of valine.

Tests

pH (2.4.24). 5.5 to 7.0, determined in 5.0 per cent w/v solution.

Specific optical rotation (2.4.22). +26.6° to +28.8°, determined in 8.0 per cent w/v solution in *6 M hydrochloric acid.*

Related substances. Determine by thin-layer chromatography (2.4.17), coating the plate with *silica gel G.*

Mobile phase. A mixture of 30 volumes of *butyl alcohol*, 10 volumes of *water* and 10 volumes of *glacial acetic acid.*

Test solution. Dissolve 100 mg of the substance under examination in *2 M hydrochloric acid* and dilute to 10.0 ml of *2 M hydrochloric acid*.

Reference solution (a). A 0.005 per cent w/v solution of *L -valine IPRS* in *0.1M hydrochloric acid.*

Reference solution (b). A solution containing 0.04 per cent w/v, each of, *L-valine IPRS* and *L-phenylalanine IPRS* in *0.1 M hydrochloric acid.*

Apply the plate 5µl of each solution. Dry the plate in air and spray with 0.2 per cent w/v solution of *ninhydrin* in a mixture of 95 volumes of *butyl alcohol* and 5 volumes *2 M acetic acid* and heat at 100° to 105° for about 15 minutes. Examine the plate under day light. Any spot in the chromatogram obtained with the test solution is not large or more intense than the spot in the chromatogram obtained with reference solution (a). The chromatogram obtained with reference solution (b) shows two clearly separated spots.

Iron (2.3.14). 1.33 g complies with the limit test for iron (30 ppm).

Chlorides (2.3.12). 0.5 g complies with the limit test for chlorides (500 ppm).

Sulphates (2.3.17). 0.5 g complies with the limit test for sulphates (300 ppm).

Sulphated ash (2.3.18). Not more than 0.1 per cent.

Loss on drying (2.4.19). Not more than 0.3 per cent, determined on 1.0 g by drying in an oven at 105° for 3 hours.

Assay. Dissolve 110 mg of substance under examination in a mixture of 3 ml of *formic acid* and 50 ml of *glacial acetic acid.* Titrate with *0.1M perchloric acid*, determining the end-point potentiometrically (2.4.25). Carry out a blank titration.

1 ml of *0.1 M perchloric acid* is equivalent to 0.01172 g of $C_5H_{11}NO_2$.

Storage. Store protected from moisture.

Solubility. Soluble in *water*, practically insoluble in *ether*, in *ethanol*, and in *acetone*.