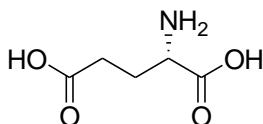


# Glutamic Acid

L-Glutamic Acid



$C_5H_9NO_4$

Mol. Wt. 147.1

Glutamic Acid is *S*-2-aminopentanedioic acid.

Glutamic Acid contains not less than 98.5 per cent and not more than 101.5 per cent of  $C_5H_9NO_4$ , calculated on the dried basis.

**Category.** Amino Acid.

**Description.** A white crystalline powder.

## Identification

Determine by infrared absorption spectrophotometry (2.4.6). Compare the spectrum with that obtained with *glutamic acid RS* or with the reference spectrum of glutamic acid.

## Tests

**Specific optical rotation** (2.4.22).  $+31.5^\circ$  to  $+32.5^\circ$ , determined on 10.0 per cent w/v solution in 2*M* hydrochloric acid at  $20^\circ$ .

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

*Mobile phase.* A mixture of 6 volumes of *butyl alcohol*, 2 volumes of *glacial acetic acid* and 2 volumes of *water*.

*Test solution.* Dissolve 0.1 g of the substances under examination in 10.0 ml of a mixture of equal volumes of 10 per cent w/v of *ammonia* and *water*.

*Reference solution (a).* A 0.005 per cent w/v solution of *glutamic acid RS* in *water*.

*Reference solution (b).* A solution containing 0.04 per cent w/v, each of, *aspartic acid RS* and *glutamic acid RS* in *water*.

Apply to the plate 5  $\mu$ l of each solution. After development, dry the plate in air, spray with a freshly prepared 0.2 per cent w/v solution of *ninhydrin* in a mixture of 95 volumes of *butyl alcohol* and 5 volumes of 2 *M* *acetic acid*, dry the plate at  $105^\circ$  for 15 minutes and examine the plate under day light. Any secondary spot in the chromatogram obtained with the test solution is not larger or more intense than the spot in the chromatogram obtained with reference solution (a). The test is not valid unless the chromatogram obtained with reference solution (b) shows two clearly separated spots.

**Iron** (2.3.14). 4 g complies with the limit test for iron (10 ppm).

**Chlorides** (2.3.12). 1.25 g complies with the limit test for chlorides (200 ppm).

**Sulphates** (2.3.17). 0.75 g complies with the limit test for sulphates (200 ppm).

**Heavy metals** (2.3.13). 1.0 g complies with the limit test for heavy metals, Method B (20 ppm).

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

**Loss on drying** (2.4.19). Not more than 0.1 per cent, determined by drying in an oven at  $105^\circ$  for 3 hours.

**Assay.** Dissolve 0.14 g in 6 ml of *formic acid* and 50 ml of *glacial acetic acid*. Titrate with 0.1 *M* *perchloric acid*, determine the end-point potentiometrically (2.4.25). Carry out a blank titration.

1 ml of 0.1 *M* *perchloric acid* is equivalent to 0.01471 g of glutamic acid.

**Storage.** Store protected from moisture, at a temperature not exceeding  $30^\circ$ .

**Solubility.** Freely soluble in *water*; practically insoluble in *ethanol* and in *ether*.