Stable Glutamine product information

PI-C3547 V1.1

Product Name

Name: Stable Glutamine (L-Alanyl-L-Glutamine)

Cat. No.: C3547-0100, C3547-0500

Size: 100 mL, 500 mL

Product Description

L-Alanyl-L-Glutamine is a much more heat-stable dipeptide substitute for L-Glutamine. L-Glutamine, a precursor of glutamate, is one of the most readily available sources of energy for many rapidly dividing cell-types *in vitro* and a central and key participant in nitrogen metabolism. Although L-Glutamine supports the growth of cells with high energy demands and cells that synthesize large quantities of nucleic acids and proteins, it is relatively unstable and short lifetime. L-Glutamine is simply a readily available and viable alternative energy source for rapidly dividing cells as well as for cells that utilize glucose but in an inefficient manner. The resultant glucose-deficiency must offset this imbalance in order to meet the high energy demands of the cells. This is where glutamine comes into play. Once deaminated, L-Glutamine is utilized as an essential energy source, segued into protein and participates in nucleic acid metabolism.

L-Glutamine is a clear, colorless solution at 37°C. It is not only a key component and essential amino acid that is found in many cell-culture media formulations and in virtually all mammalian cells in culture, it is unfortunately, as aforementioned, relatively unstable at physiological pH and especially in a liquid medium format. Most importantly, it is the stability of L-Glutamine in culture relative to most other amino acids as the amide group is deamidated to form glutamate. Over time, higher temperature definitely impacts its activity levels in a negative manner (i.e., at 35°C after three weeks) by reducing its original activity to15%. At physiological pH in liquid media or stock solution, L-Glutamine is labile (relatively unstable) and degrades rapidly once the product has been opened and refrigerated. The maximum shelf-life is then reduced approximately to two weeks. Aside from high temperatures, pH and the presence of various anions such as bicarbonate and phosphate also accelerate the deamidation reaction. L-Glutamine may be associated with spontaneous degradation especially when exposed to higher temperature during the incubation process resulting in the formation of pyrrolidone carboxylic acid and potentially harmful NH_3 (ammonia) gas build-up.

However, L-Alanyl-L-Glutamine is much more stable than L-Glutamine. L-Alanyl-L-Glutamine may even withstand autoclaving with minimal loss while L-Glutamine may be completely inactivated under the same circumstances. Another advantage of L-Alanyl-L-Glutamine is that it incorporates L-Alanine and protects the unstable α-amino acid group. As the aminopeptidases within the cells cleave the dipeptide, both amino acids (i.e., L-Glutamine and L-Alanine) are, therefore, gradually released and available for the utilization by the cells.

Most commercially available media are formulated with either L-Glutamine or its dipeptide substitute, and they are either included in the basal formula or added as a supplement to the liquid formulations at the time of use.

Optimal cell performance in culture almost always requires supplementation with L-Glutamine or L-Alanyl-L-Glutamine prior to use. Always use aseptic technique when handling or supplementing media after filtration/sterilization.

Predominant Characteristics

- Non-animal source
- Meets USP Testing Specifications
- Cell culture & endotoxin tested
- Suitable for cell-culture & molecular biology applications
- Relatively long-term storage when handled and stored properly under specified conditions
- Concentration: 200 mM

Storage & Stability

The product should be kept at **-20°C**.
The product is **light-sensitive** and therefore should not be left in the light.
Shelf life: 24 months from date of manufacture.

Procedure

1. Take a bottle from the freezer at -20°C and read the label.
2. Ensure that the cap of the bottle is tight.
3. Allow to thaw to room temperature prior to use.
4. Gently swirl the solution in the bottle intermittently until all the content is thawed.
5. Wipe the outside of the bottle with a disinfectant solution such as 70% ethanol.
6. Pipette appropriate volume using an aseptic/sterile technique under a laminar-flow culture hood.
7. Aliquot the remaining solution and put them back to freezer to avoid repeated freezing and thawing.

Quality Control

Stable Glutamine (L-Alanyl-L-Glutamine) is tested for sterility, pH, osmolality.

Manufacturer

Shanghai Dr. Cell Co., Ltd.

Issue Date

April 2026

Precaution and Disclaimer

For research use only, not for clinical diagnosis, and treatment.