



Product Profile



Product Name:	L-Alanyl-L-Glutamine 200mM In 0.85% NaCl
Product Catalog Number	03-022-1
Concentration:	200mM(100X)
Unit Size Availability:	(B)100ml;(C)20ml
Formulation:	Frozen Solution
Specified Storage Conditions:	-20°C
Stability: (Under Defined Handling & Storage)	Please Refer To The Product Label

Important Note! Please read the MSDS and Product Profile carefully in their entirety before using this material for possible safety precautions and potential hazards.

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 for use *in vitro* and a central and key participant in nitrogen metabolism. Although L-Glutamine supports the growth of cells with high energy demands and those that synthesize large quantities of nucleic acids and proteins, it is relatively unstable. L-Glutamine is simply a readily-available and viable alternative energy source for rapidly dividing cells as well as to 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 the amino acids come into play and once deaminated, L-Glutamine is utilized as an essential energy source, sequestered 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 required in many cell-culture media formulations and in virtually all mammalian cells in culture, it is unfortunately, as aforementioned, relatively unstable at physiological pH especially in a liquid medium scenario. Most importantly regarding L-Glutamine, is its stability in culture relative to most of the other amino acids. Over time from a perspective of linear degradation, higher temperatures definitely impact its activity levels in a negative manner (i.e. @35°C after three weeks) reducing it to 15% of its original activity. At physiological pH in liquid media or stock solutions, 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 deamination.

L-Glutamine may be associated with spontaneous degradation especially in the presence of exposure to warm temperatures and heat especially during the incubation process resulting in the formation of pyrrolidone carboxylic acid and potentially harmful NH₃ (ammonia) ion build-up. *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 cell utilization.

L-Alanyl-L-Glutamine is also suitable for molecular biology applications. Most commercially available media are formulated with L-Glutamine or its dipeptide substitute which is either included in the basal formula or added as a supplement to the liquid formulations at 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.

Predominant Characteristics of L-Alanyl-L-Glutamine include:

- § Non-Animal Source
- § Meets USP Testing Specifications
- § Cell-Culture & Endotoxin Tested
- § Suitable for Cell-Culture & Molecular Biology Applications
- § Relatively Long-Storage When Handled and Stored Properly Under Specified Conditions

Storage & Stability:

This product should be stored under specified conditions at -20°C. Thaw supplement overnight under refrigerated conditions from 2-8°C. Another advantage of *L-Alanyl-L-Glutamine* is that multiple freeze-thaw cycles will not inhibit or cause a loss of product activity. The expiration date is 24 months from date of production. Please do not use after the expiration date as specified on the label. Do not expose to light for prolonged periods as it is light-sensitive. When stored in the dark under ideal conditions, the product is stable until the expiry date.

Procedure:

- 1) Take a bottle out from proper storage conditions at -20°C and thaw to room temperature.
- 2) Make sure that the cap of the bottle is tight.
- 3) Gently swirl the solution in the bottle to ensure homogeneity.
- 4) Wipe the outside of the bottle with a disinfectant solution such as 70% ethanol.
- 5) Using aseptic/sterile technique under a laminar-flow culture hood, work according to established protocols.

Quality Control:

Test	Specification
Appearance	Clear Solution
Osmolality	450-480mOsm/kg
pH	4.7-.5.7
Sterility	Sterile

Auxiliary Products

Product Name	Catalog Number	Storage Temperature
Dulbecco's Phosphate Buffered Saline(DPBS) without Calcium and Magnesium	02-023-1	Room Temperature (15-30°)
L-Glutamine Solution	03-020-1	-20°C
Penicillin-Streptomycin Solution	03-031-1	-20°C
Penicillin-Streptomycin Nystatin Solution	03-032-1	-20°C
L-Glutamine Cell Culture-Tested Biochemicals	41-218-	Room Temperature (15-30°)
Note: For a list of Serum, Antibiotics, or other Biological Industries' Supplements or Reagents , please refer to our Product Catalog/Product Profiles/Guides and Internet Site.		

References:

- 1) 14th Edition Of Merck Index,p.772
- 2) Darling, D.C. and Morgan S.J. Animal Cells: Culture and Media, John Wiley & Sons, New York, 1994
- 3) Current Editions USP/E Ph
- 4) Biological Industries(BI)Specifications
- 5) Martindale, The Extra Pharmacopeia,28th Edition, Royal Pharmaceutical Society: London, England p.56.