

L-Alanine (USP Grade)

Non-essential amino acid for cell culture, biochemical & research applications.

OVERVIEW

L-Alanine is a non-essential α -amino acid involved in central metabolic pathways, including the glucose–alanine cycle, where it participates in nitrogen transport and energy metabolism. It is naturally present in proteins and widely used in cell culture, biochemical research, and formulation development.

Supplied as USP grade crystalline powder, Benario L-Alanine offers high purity, consistent quality, and reliable performance for laboratory and research applications. Manufactured and packed under quality-controlled conditions and supplied by AuSaMicS Pty Ltd under the Benario Premium Ingredients brand, with batch-specific Certificates of Analysis available for each lot.

KEY IDENTIFIERS

Catalogue Number	BA-1002
Chemical Name	L-Alanine
CAS Number	56-41-7
EC Number	200-273-8
Synonyms	Alanine; L-2-Aminopropionic acid; L- α -Aminopropionic acid
Molecular Formula	$C_3H_7NO_2$
Molecular Weight	89.09 g/mol
Grade	USP

TYPICAL SPECIFICATIONS

Parameter	Specification
Assay (dry basis)	Conforms to USP specification (typically 98.5–101.0%)
Appearance	White crystalline powder
Solubility	Freely soluble in water (~166–167 g/L at 25°C)
pH (10% aqueous solution)	5.5 – 6.5
Specific Rotation $[\alpha]_D^{20}$	+14.0° to +15.2° (c = 10, 6M HCl)
Loss on Drying	≤ 0.20% (typical)
Heavy Metals (as Pb)	≤ 10 ppm (typical)

Exact analytical values are provided in the batch-specific Certificate of Analysis (COA-BA-1002) issued with each shipment.

PHYSICAL & CHEMICAL PROPERTIES

Property	Value
Physical State	Solid, crystalline

Colour	White
Odour	Odourless
Taste	Slightly sweet
Melting Point	~314°C (literature value; may sublime on rapid heating)
Density	~1.42–1.43 g/cm³
pKa (α-carboxyl)	2.34 at 25°C
Storage Temperature	Cool, dry place; keep container tightly closed

CHEMICAL & FUNCTIONAL PRINCIPLE

L-Alanine functions as a key intermediary in amino acid and carbohydrate metabolism. In biological systems, it participates in transamination reactions and contributes to the regulation of energy balance through its role in the glucose–alanine cycle, where it enables the transport of amino groups and carbon skeletons between muscle and liver. Its simple structure and predictable behaviour make it a widely used amino acid in biochemical research and defined cell culture media.

APPLICATIONS

Category	Application
Cell Culture & Life Science Research	Component of cell culture media formulations; amino acid supplementation in defined media systems; metabolic and physiological studies
Biochemical & Protein Research	Protein synthesis and metabolism research; enzymatic and biochemical assays; reference amino acid for analytical studies
Laboratory & Technical Use	General laboratory reagent; formulation development and validation studies

Not intended for therapeutic, diagnostic, food, or feed use without appropriate regulatory approval.

STORAGE & STABILITY

Storage Conditions	Store in a cool, dry place. Keep container tightly closed. Protect from moisture and contamination.
Stability	Stable under recommended storage conditions.

PACK SIZES

Pack Size	Recommended For
25 g	Method development, small-scale reference use
100 g	Routine laboratory and research use
500 g	Ongoing research programmes
1 kg	High-throughput or production-scale use

CUSTOMS & TRADE INFORMATION

HS / AHECC Code	2922.49.00 — Amino acids and their derivatives
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LITERATURE REFERENCES

- Wikipedia contributors. Alanine. Wikipedia, The Free Encyclopedia (physicochemical data cross-reference).
- United States Pharmacopeia. USP Monograph: L-Alanine.

3. National Center for Biotechnology Information. PubChem Compound Summary for CID 5950, L-Alanine. PubChem, National Library of Medicine.

References are provided for general chemical and technical context. Verify current data against primary sources before use in regulatory or safety-critical documentation.

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