

INDUSTRIAL BIOTECHNOLOGY • AMINO-ACID FERMENTATION SKILL DEVELOPMENT



NTHRYS
OPC PVT LTD



Amino Acids Industrial Manufacturing Training Programs

A complete industrial catalogue of hands-on amino-acid fermentation training modules — from glutamate & lysine to pharma-grade specialty amino acids.

56

PROGRAMS

10

CATEGORIES

2026

EDITION

Program Categories at a Glance

This catalogue lists every fermentation-derived amino acid our training programs are equipped to manufacture and teach, organised into 10 technology streams. Each program carries a unique product code for easy reference, enrolment and certification.

STREAM	CATEGORY FOCUS	DESCRIPTION	COUNT
NAA-GL	Glutamate-Family Amino Acids	Glutamate/MSG, glutamine & arginine production	6
NAA-AS	Lysine & Aspartate-Family Amino Acids	Lysine, threonine & aspartate-derived production	6
NAA-BC	Branched-Chain Amino Acids (BCAA)	Leucine, isoleucine & valine production	5
NAA-AR	Aromatic Amino Acids	Phenylalanine, tyrosine & tryptophan production	5
NAA-SF	Sulphur & Serine-Family Amino Acids	Methionine, cysteine, serine & glycine production	6
NAA-OT	Other & Specialty Amino Acids	Histidine, alanine, GABA & taurine production	5
NAA-PR	Production Strains & Fermentation Technology	Corynebacterium, E. coli & strain engineering	6
NAA-DS	Downstream Recovery & Purification	Ion-exchange, crystallisation & membrane recovery	6
NAA-DV	Derivatives, Salts & Chelates	Salt, chelate & peptide-derivative manufacture	5
NAA-FT	Grades, Formulation & Application	Feed, food, pharma & cosmetic grade finishing	6
Total training programs			56

HOW TO READ A CODE

NAA – GL – 01

NAA Nthrys Amino-Acid Program GL Category stream 01 Program number

01

CATEGORY • NAA-GL

Glutamate-Family Amino Acids

Glutamate/MSG, glutamine & arginine production

6

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NAA-GL-01	L-Glutamic Acid / MSG	Flavour-enhancer glutamate.
NAA-GL-02	L-Glutamine	Nutrition & pharma glutamine.
NAA-GL-03	L-Arginine	Nutrition & pharma arginine.
NAA-GL-04	L-Proline	Specialty proline.
NAA-GL-05	L-Ornithine	Supplement ornithine.
NAA-GL-06	L-Citrulline	Nutraceutical citrulline.

02

CATEGORY • NAA-AS

Lysine & Aspartate-Family Amino Acids

Lysine, threonine & aspartate-derived production

6

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NAA-AS-01	L-Lysine HCl	Feed-grade lysine.
NAA-AS-02	L-Lysine Sulphate	Granular / liquid lysine.
NAA-AS-03	L-Threonine	Feed & food threonine.
NAA-AS-04	L-Aspartic Acid	Aspartame-precursor acid.
NAA-AS-05	L-Asparagine	Specialty asparagine.
NAA-AS-06	L-Homoserine / Precursor	Platform aspartate precursor.

03

CATEGORY • NAA-BC

Branched-Chain Amino Acids (BCAA)

Leucine, isoleucine & valine production

5

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NAA-BC-01	L-Leucine	BCAA leucine.
NAA-BC-02	L-Isoleucine	BCAA isoleucine.
NAA-BC-03	L-Valine	BCAA valine.
NAA-BC-04	BCAA Blend (2:1:1)	Sports-nutrition BCAA blend.
NAA-BC-05	Branched-Chain Keto-Acids	Keto-analogue renal-nutrition product.

04

CATEGORY • NAA-AR

Aromatic Amino Acids

Phenylalanine, tyrosine & tryptophan production

5

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NAA-AR-01	L-Phenylalanine	Aspartame-precursor phenylalanine.
NAA-AR-02	L-Tyrosine	Nutrition & pharma tyrosine.
NAA-AR-03	L-Tryptophan	Feed & nutrition tryptophan.
NAA-AR-04	L-DOPA	Levodopa pharma precursor.
NAA-AR-05	5-HTP / Precursor	Serotonin-precursor nutraceutical.

05

CATEGORY • NAA-SF

Sulphur & Serine-Family Amino Acids

Methionine, cysteine, serine & glycine production

6

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NAA-SF-01	L-Methionine	Sulphur amino acid (fermentative).
NAA-SF-02	DL-Methionine	Chemical / feed methionine.
NAA-SF-03	L-Cysteine	Food & pharma cysteine.
NAA-SF-04	L-Serine	Specialty serine.
NAA-SF-05	Glycine	Simplest amino acid.
NAA-SF-06	N-Acetylcysteine (NAC)	Cysteine-derivative product.

06

CATEGORY • NAA-OT

Other & Specialty Amino Acids

Histidine, alanine, GABA & taurine production

5

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NAA-OT-01	L-Histidine	Essential histidine.
NAA-OT-02	L-Alanine	Specialty alanine.
NAA-OT-03	Beta-Alanine	Sports-nutrition beta-alanine.
NAA-OT-04	GABA	Functional gamma-aminobutyric acid.
NAA-OT-05	Taurine	Functional taurine.

CODE	TRAINING PROGRAM	DESCRIPTION
NAA-PR-01	Corynebacterium glutamicum Process	Classic AA fermentation host.
NAA-PR-02	Brevibacterium Process	Glutamate-producer process.
NAA-PR-03	E. coli Production Process	Engineered AA expression.
NAA-PR-04	Metabolic-Engineering Strain Dev	High-yield strain design.
NAA-PR-05	Fed-Batch Fermentation Process	Industrial fed-batch process.
NAA-PR-06	Biotin / Surfactant Control	Glutamate-excretion control.

CODE	TRAINING PROGRAM	DESCRIPTION
NAA-DS-01	Ion-Exchange Recovery	Resin-based AA recovery.
NAA-DS-02	Crystallisation	Isoelectric / evaporative crystallisation.
NAA-DS-03	Membrane Separation	UF / NF & electrodialysis.
NAA-DS-04	Decolourisation & Carbon Treatment	Colour & impurity removal.
NAA-DS-05	Drying & Granulation	Spray / fluid-bed finishing.
NAA-DS-06	Cell Separation & Clarification	Biomass removal.

09

CATEGORY • NAA-DV

Derivatives, Salts & Chelates

Salt, chelate & peptide-derivative manufacture

5

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NAA-DV-01	Amino-Acid HCl Salts	Hydrochloride-salt products.
NAA-DV-02	Amino-Acid Mineral Chelates	Metal-AA chelate supplements.
NAA-DV-03	N-Acetyl Derivatives	N-acetyl AA products.
NAA-DV-04	Peptide / Dipeptide Products	Short-peptide derivatives.
NAA-DV-05	Esters & Specialty Derivatives	AA ester products.

CODE	TRAINING PROGRAM	DESCRIPTION
NAA-FT-01	Feed-Grade Amino Acid	Animal-nutrition grade.
NAA-FT-02	Food-Grade Amino Acid	Food & flavour grade.
NAA-FT-03	Pharma-Grade Amino Acid	Injectable / USP grade.
NAA-FT-04	Cosmetic-Grade Amino Acid	Personal-care grade.
NAA-FT-05	Sports-Nutrition Blend	Supplement AA blends.
NAA-FT-06	Infusion / Parenteral Blend	Clinical AA mixtures.

ENROL • FERMENT • PURIFY

Build a Career in Amino-Acid Fermentation

Every program in this catalogue is delivered as hands-on training on working fermentation and recovery equipment — covering producer-strain handling & metabolic engineering, fed-batch fermentation, recovery & purification, crystallisation, salt & chelate derivatisation, grade finishing, assay & QC and quality compliance. Mix and match programs to design a track that fits your goals.

56 training programs

10 technology streams

Unique **product code** for every module

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