

INDUSTRIAL BIOTECHNOLOGY • ORGANIC-ACID FERMENTATION SKILL DEVELOPMENT



NTHRYS
OPC PVT LTD



Organic Acids Industrial Manufacturing Training Programs

A complete industrial catalogue of hands-on organic-acid fermentation training modules — from citric & lactic acid to platform dicarboxylic acids.

56

PROGRAMS

10

CATEGORIES

2026

EDITION

Program Categories at a Glance

This catalogue lists every fermentation-derived organic 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
NOA-CA	Citric Acid	Surface, submerged & solid-state citric production	6
NOA-LA	Lactic Acid	L / D & polymer-grade lactic acid production	6
NOA-AV	Acetic Acid & Vinegar	Acetobacter oxidative & vinegar production	6
NOA-GA	Gluconic Acid & Derivatives	Gluconic acid, GDL & gluconate-salt production	5
NOA-DC	Dicarboxylic & Platform Acids	Itaconic, succinic, fumaric & malic acid production	6
NOA-SC	Short-Chain & Volatile Acids	Propionic, butyric & VFA-salt production	5
NOA-SP	Specialty & Fine Acids	Kojic, pyruvic, 3-HP & levulinic acid production	5
NOA-PR	Fermentation Production Technology	Submerged, surface & solid-state acid production	6
NOA-DS	Downstream Recovery & Purification	Precipitation, extraction & crystallisation recovery	6
NOA-FT	Salts, Esters & Application Formulations	Salt, ester & graded application-product manufacture	5
Total training programs			56

HOW TO READ A CODE

NOA – CA – 01

NOA Nthrys Organic-Acid Program CA Category stream 01 Program number

01

CATEGORY • NOA-CA

Citric Acid

Surface, submerged & solid-state citric production

6

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NOA-CA-01	Citric Acid (Surface Fermentation)	Tray / surface Aspergillus process.
NOA-CA-02	Citric Acid (Submerged Fermentation)	Stirred-tank Aspergillus process.
NOA-CA-03	Citric Acid (Solid-State)	Koji / SSF citric process.
NOA-CA-04	Anhydrous Citric Acid	Crystallised anhydrous grade.
NOA-CA-05	Citric Acid Monohydrate	Hydrated crystalline grade.
NOA-CA-06	Sodium / Potassium Citrate	Citrate-salt product.

02

CATEGORY • NOA-LA

Lactic Acid

L / D & polymer-grade lactic acid production

6

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NOA-LA-01	L(+)-Lactic Acid	Food & pharma L-lactic acid.
NOA-LA-02	D(-)-Lactic Acid	Specialty D-lactic acid.
NOA-LA-03	Polymer-Grade Lactic Acid	PLA-feedstock high-purity acid.
NOA-LA-04	Rhizopus Lactic Acid	Fungal lactic-acid process.
NOA-LA-05	Calcium / Sodium Lactate	Lactate-salt product.
NOA-LA-06	Buffered Food-Grade Lactic Acid	Stabilised food-grade acid.

03

CATEGORY • NOA-AV

Acetic Acid & Vinegar

Acetobacter oxidative & vinegar production

6

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NOA-AV-01	Acetic Acid (Acetobacter)	Oxidative acetic-acid fermentation.
NOA-AV-02	Vinegar (Submerged)	Submerged-process vinegar.
NOA-AV-03	Vinegar (Orleans / Slow)	Traditional surface vinegar.
NOA-AV-04	Fruit / Cider Vinegar	Apple & fruit vinegar.
NOA-AV-05	Spirit / White Vinegar	Distilled white vinegar.
NOA-AV-06	Vinegar Mother & Starter	Acetobacter starter culture.

04

CATEGORY • NOA-GA

Gluconic Acid & Derivatives

Gluconic acid, GDL & gluconate-salt production

5

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NOA-GA-01	Gluconic Acid (Aspergillus)	Fungal gluconic-acid process.
NOA-GA-02	Gluconic Acid (Gluconobacter)	Bacterial gluconic-acid process.
NOA-GA-03	Glucono-delta-Lactone (GDL)	Slow-acidifier food ingredient.
NOA-GA-04	Sodium Gluconate	Chelating-salt gluconate.
NOA-GA-05	Calcium / Zinc Gluconate	Mineral-gluconate supplement.

05

CATEGORY • NOA-DC

Dicarboxylic & Platform Acids

Itaconic, succinic, fumaric & malic acid production

6

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NOA-DC-01	Itaconic Acid	Aspergillus terreus polymer acid.
NOA-DC-02	Succinic Acid	Bio-succinic platform acid.
NOA-DC-03	Fumaric Acid	Rhizopus fumaric acid.
NOA-DC-04	Malic Acid	Fermentative malic acid.
NOA-DC-05	Adipic Acid (Bio)	Bio-based adipic platform acid.
NOA-DC-06	Muconic Acid	Aromatic-derived platform acid.

06

CATEGORY • NOA-SC

Short-Chain & Volatile Acids

Propionic, butyric & VFA-salt production

5

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NOA-SC-01	Propionic Acid	Propionibacterium preservative acid.
NOA-SC-02	Butyric Acid	Clostridium butyric acid.
NOA-SC-03	Calcium Propionate	Mold-inhibiting propionate salt.
NOA-SC-04	Sodium Butyrate	Gut-health butyrate salt.
NOA-SC-05	Mixed VFA Product	Volatile-fatty-acid mixture.

07

CATEGORY • NOA-SP

Specialty & Fine Acids

Kojic, pyruvic, 3-HP & levulinic acid production

5

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NOA-SP-01	Kojic Acid	Aspergillus skin-lightening acid.
NOA-SP-02	Pyruvic Acid	Fermentative pyruvic acid.
NOA-SP-03	3-Hydroxypropionic Acid (3-HP)	Acrylic platform acid.
NOA-SP-04	Levulinic Acid	Biomass-derived platform acid.
NOA-SP-05	Tartaric Acid	Fermentative / by-product tartaric acid.

CODE	TRAINING PROGRAM	DESCRIPTION
NOA-PR-01	Submerged Fermentation Process	Stirred-tank acid production.
NOA-PR-02	Surface / Tray Fermentation	Surface-culture process.
NOA-PR-03	Solid-State Fermentation	SSF acid production.
NOA-PR-04	Strain Selection & Improvement	High-yield strain development.
NOA-PR-05	Substrate & Feedstock Optimisation	Molasses & low-cost substrates.
NOA-PR-06	Process Control & Scale-Up	pH, aeration & bioreactor scale-up.

09

CATEGORY • NOA-DS

Downstream Recovery & Purification

Precipitation, extraction & crystallisation recovery

6

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NOA-DS-01	Precipitation Recovery	Calcium-salt precipitation.
NOA-DS-02	Solvent Extraction	Reactive solvent extraction.
NOA-DS-03	Ion-Exchange Purification	Resin-based purification.
NOA-DS-04	Membrane / Electrodialysis	Membrane separation recovery.
NOA-DS-05	Crystallisation & Drying	Crystallisation & finishing.
NOA-DS-06	Decolourisation & Polishing	Carbon-treatment & polishing.

10

CATEGORY • NOA-FT

Salts, Esters & Application Formulations

Salt, ester & graded application-product manufacture

5

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NOA-FT-01	Acid Salt Manufacture	Sodium / potassium / calcium salts.
NOA-FT-02	Ester Derivatives	Citrate / lactate ester products.
NOA-FT-03	Food-Grade Formulation	Food & beverage acid blends.
NOA-FT-04	Pharma / Cosmetic Grade	High-purity grade finishing.
NOA-FT-05	Liquid / Powder Application Blend	Industrial application formats.

ENROL • FERMENT • REFINE

Build a Career in Organic-Acid Fermentation

Every program in this catalogue is delivered as hands-on training on working fermentation and recovery equipment — covering strain development, submerged & solid-state fermentation, recovery & purification, salt & ester derivatisation, crystallisation, assay & QC, packaging 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

NTHRYS OPC PVT LTD

+91-8977624748

smo@nthrys.com

www.nthrys.com