

INDUSTRIAL BIOTECHNOLOGY • BIOPOLYMER & BIOPLASTIC SKILL DEVELOPMENT



NTHRYS
OPC PVT LTD



Biopolymers & Bioplastics Industrial Manufacturing Training Programs

A complete industrial catalogue of hands-on biopolymer fermentation training modules — from PHA bioplastics to xanthan gum & bacterial cellulose.

56

PROGRAMS

10

CATEGORIES

2026

EDITION

Program Categories at a Glance

This catalogue lists every microbial biopolymer and bioplastic 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
NBM-PH	Polyhydroxyalkanoates (PHA / PHB)	PHB, PHBV & waste-fed PHA bioplastic production	6
NBM-PL	PLA & Lactic-Polymer Bioplastics	Lactide, PLA resin & blend processing	5
NBM-GM	Microbial Polysaccharide Gums	Xanthan, gellan & specialty gum production	6
NBM-BC	Bacterial Cellulose & Specialty Polysaccharides	Nanocellulose, pullulan, dextran & curdlan production	6
NBM-HA	Hyaluronic Acid & Glycosaminoglycans	Fermentative HA & GAG precursor production	5
NBM-PA	Polyamides & Other Biopolymers	Gamma-PGA, polylysine & cyanophycin production	5
NBM-SB	Starch & Blend Bioplastics	Thermoplastic starch & biocomposite production	5
NBM-PR	Production Strains & Fermentation Technology	PHA, gum & engineered-strain fermentation	6
NBM-DS	Downstream Recovery & Purification	Cell disruption, extraction & MW control	6
NBM-FT	Polymer Processing, Compounding & Applications	Compounding, extrusion & application-grade finishing	6
Total training programs			56

HOW TO READ A CODE

NBM – PH – 01

NBM Nthrys Biopolymer Program PH Category stream 01 Program number

01

CATEGORY • NBM-PH

Polyhydroxyalkanoates (PHA / PHB)

PHB, PHBV & waste-fed PHA bioplastic production

6

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NBM-PH-01	PHB (Polyhydroxybutyrate)	Homopolymer PHA bioplastic.
NBM-PH-02	PHBV Copolymer	Flexible PHB-valerate copolymer.
NBM-PH-03	mcl-PHA	Medium-chain-length elastomeric PHA.
NBM-PH-04	PHA from Waste Feedstock	Low-cost waste-stream PHA.
NBM-PH-05	PHA from Methanotrophs / Gas	C1-gas-fed PHA.
NBM-PH-06	PHA Latex / Blend Grade	Coating & blend-grade PHA.

02

CATEGORY • NBM-PL

PLA & Lactic-Polymer Bioplastics

Lactide, PLA resin & blend processing

5

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NBM-PL-01	Lactide Monomer	PLA-precursor lactide.
NBM-PL-02	PLA Polymerisation	Ring-opening PLA process.
NBM-PL-03	PLA Resin / Pellets	Moulding-grade PLA resin.
NBM-PL-04	PLA Blends & Composites	Toughened PLA blends.
NBM-PL-05	PLA Fibre / Film Grade	Fibre & film PLA grades.

03

CATEGORY • NBM - GM

Microbial Polysaccharide Gums

Xanthan, gellan & specialty gum production

6

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NBM-GM-01	Xanthan Gum	Xanthomonas thickener gum.
NBM-GM-02	Gellan Gum	Sphingomonas gelling gum.
NBM-GM-03	Welan / Diutan Gum	Oilfield specialty gums.
NBM-GM-04	Succinoglycan	Viscosifier polysaccharide.
NBM-GM-05	Bacterial Alginate	Azotobacter alginate.
NBM-GM-06	Levan (Fructan)	Fructose-polymer biopolymer.

CODE	TRAINING PROGRAM	DESCRIPTION
NBM-BC-01	Bacterial Cellulose	Komagataeibacter nanocellulose.
NBM-BC-02	Pullulan	Aureobasidium film-forming polymer.
NBM-BC-03	Dextran	Leuconostoc branched glucan.
NBM-BC-04	Curdlan	Gelling beta-glucan.
NBM-BC-05	Scleroglucan / Schizophyllan	Fungal beta-glucan.
NBM-BC-06	Beta-Glucan (Microbial)	Functional microbial glucan.

05

CATEGORY • NBM-HA

Hyaluronic Acid & Glycosaminoglycans

Fermentative HA & GAG precursor production

5

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NBM-HA-01	Hyaluronic Acid (Fermentation)	Streptococcus HA.
NBM-HA-02	Cross-Linked HA	Dermal-filler-grade HA.
NBM-HA-03	Low-Molecular-Weight HA	Cosmetic / oligo-HA.
NBM-HA-04	Heparosan / GAG Precursor	Heparin-precursor polymer.
NBM-HA-05	Chondroitin (Fermentation)	Bio-fermentation chondroitin.

06

CATEGORY • NBM-PA

Polyamides & Other Biopolymers

Gamma-PGA, polylysine & cyanophycin production

5

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NBM-PA-01	Gamma-Polyglutamic Acid	Bacillus natto polyamide.
NBM-PA-02	Epsilon-Polylysine	Antimicrobial biopolymer.
NBM-PA-03	Cyanophycin	Aspartate-arginine polymer.
NBM-PA-04	Polymalic Acid	Polyester biopolymer.
NBM-PA-05	Bio-Based Polyamide Precursor	Nylon-precursor monomer.

07

CATEGORY • NBM-SB

Starch & Blend Bioplastics

Thermoplastic starch & biocomposite production

5

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NBM-SB-01	Thermoplastic Starch (TPS)	Plasticised-starch bioplastic.
NBM-SB-02	Starch-PLA Blend	Compostable starch blend.
NBM-SB-03	Cellulose-Based Bioplastic	Cellulose-derivative plastic.
NBM-SB-04	Protein-Based Bioplastic	Zein / soy-protein plastic.
NBM-SB-05	Bio-Composite / Filler Blend	Fibre-reinforced biocomposite.

CODE	TRAINING PROGRAM	DESCRIPTION
NBM-PR-01	PHA-Producer Strain Process	Cupriavidus / Bacillus process.
NBM-PR-02	Gum-Producer Strain Process	Xanthomonas / Sphingomonas process.
NBM-PR-03	Engineered-Strain Production	Recombinant biopolymer hosts.
NBM-PR-04	Strain Development & Screening	Mutagenesis & selection.
NBM-PR-05	High-Viscosity Fermentation	Viscous-broth bioreactor process.
NBM-PR-06	Feedstock & Media Optimisation	Low-cost substrate feeding.

09

CATEGORY • NBM-DS

Downstream Recovery & Purification

Cell disruption, extraction & MW control

6

PROGRAMS

CODE	TRAINING PROGRAM	DESCRIPTION
NBM-DS-01	Cell Disruption & Lysis	PHA-granule release.
NBM-DS-02	Solvent / Non-Solvent Extraction	Polymer extraction.
NBM-DS-03	Precipitation & Recovery	Alcohol precipitation.
NBM-DS-04	Washing & Bleaching	Colour & endotoxin removal.
NBM-DS-05	Drying & Milling	Polymer drying & powdering.
NBM-DS-06	Molecular-Weight Control	Viscosity & MW standardisation.

CODE	TRAINING PROGRAM	DESCRIPTION
NBM-FT-01	Compounding & Pelletising	Resin compounding.
NBM-FT-02	Film & Sheet Extrusion	Bioplastic film processing.
NBM-FT-03	Injection / Blow Moulding	Moulded-product processing.
NBM-FT-04	Fibre & Nonwoven Processing	Bio-fibre spinning.
NBM-FT-05	Coating & Packaging Grade	Barrier-coating formulation.
NBM-FT-06	Biomedical / Pharma Grade	Implant & drug-delivery grade.

ENROL • FERMENT • MOULD

Build a Career in Biopolymer Manufacturing

Every program in this catalogue is delivered as hands-on training on working fermentation and polymer-processing equipment — covering producer-strain handling, high-viscosity fermentation, polymer recovery & purification, molecular-weight control, compounding & processing, 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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