

# NM90Agarose Series

## Multimodal Chromatography Resins

Multimodal chromatography resin is the most commonly used method for separation and purification of macromolecules by their differences in surface charge (type, quantity and distribution of charge). NanoMicro NM90Agarose series Multimodal chromatography resins have selectivity profiles different from those of conventional IEC resin because the multimodal chromatography resins are highly cross-linked agarose microspheres bonded with ionic groups of diverse functions.

The technical parameters of NM90Agarose series are as shown in Table 1.

**Table 1.** Technical parameters of NM90Agarose

Product	NM90Agarose HCM	NM90Agarose HAM
Separation principle	Multimodal weak cation exchange	Multimodal strong anion exchange
Matrix	Agarose	Agarose
Particle size	90 $\mu\text{m}$	90 $\mu\text{m}$
Ligand	Phenyl group/carboxyl group	Phenyl group/quaternary ammonium salt
Dynamic binding capacity	$\sim 50 \text{ mg} \cdot \text{mL}^{-1}$ (Lys)	$\sim 30 \text{ mg} \cdot \text{mL}^{-1}$ (BSA)
Maximum pressure resistance	0.3 MPa	0.3 MPa
Clean-in-place (CIP)	1 M NaOH	1 M NaOH
Recommended flow rate	150-250 cm/h	150-250 cm/h
pH stability	2~12	2~12
Chemical stability	All commonly used buffers, 1 M acetic acid, 1 M sodium hydroxide, 1 M hydrochloric acid, 70% ethanol, 30% isopropanol, 30% acetonitrile, 1% SDS, 6M guanidine hydrochloride, 8M urea and other commonly used organic solvents; contact with strong oxidizers should be avoided.	All commonly used buffers, 1 M acetic acid, 1 M sodium hydroxide, 1 M hydrochloric acid, 70% ethanol, 30% isopropanol, 30% acetonitrile, 1% SDS, 6M guanidine hydrochloride, 8M urea and other commonly used organic solvents; contact with strong oxidizers should be avoided.
Temperature	4-30 $^{\circ}\text{C}$	4-30 $^{\circ}\text{C}$

# NW Rose Plus HAM

## Multimodal chromatography resin

NW Rose Plus HAM is a multimodal resin that go by a multimodal of ion exchange, hydrophobic interaction. It is designed for purification of monoclonal antibodies with unique selectivity. This resin is fully compatible with recommended procedures for process hygiene and maintenance, and meet the need for reliable, economic, and safe production of biological material in large-scale operation. NW Rose Plus HAM is based on highly cross-linked agarose matrix, which give good physical stability and chromatographic qualities, and enables processing of large volumes, making this media suitable for use at process scale. It is easy to work with, and tolerate working conditions of temperature, pH, and chemical agents typically used in biopharmaceutical production processes. Its packed columns can be sanitized and cleaned-in-place to minimize production losses through column maintenance.

NW Rose Plus HAM resin has the following characteristics:

- High dynamic binding capacity at high flow rate
- High physical and chemical stability
- Easy to scale-up from lab to large-scale manufacture
- Wide operational window of conductivity and pH

**Table 1. The characteristics of NW Rose Plus HAM**

Product name	NW Rose Plus HAM
Chromatography technique	Multimodal
Matrix	Highly cross-linked, rigid agarose beads
Particle Size	~75 $\mu$ m
Ionic Capacity	0.9-0.12 mmol Cl <sup>-</sup> /ml medium
Maximum Pressure	0.3 MPa
Clean in Place	0.5 M NaOH
Recommended Flow Velocity	60-300 cm/h (XK50/30 Column, bed height 10 cm)
Maximum flow velocity	600 cm/h (0.1 MPa XK26/30 Column, bed height 15 cm, 25 °C)
pH stability	2-12 (operational) 2-14 (CIP)
Chemical stability	Stable in commonly used aqueous buffers, 1 M NaOH, 6 M guanidine hydrochloride, 30% isopropyl alcohol, 70% ethanol, etc.
Operational temperature	4-40 °C
Storage	20% ethanol, 4-30 °C

# NW Rose Plus HCM HP

## Multimodal chromatography resin

NW Rose Plus HCM HP is a multimodal chromatography resin designed for polishing biomolecules with unique selectivity in downstream bioprocess. It is based on a highly cross-linked agarose matrix modified with multimodal ligands which integrates weak cation, hydrophobic and hydrophilic function. Compared with traditional IEX or HIC resin, NW Rose Plus HCM HP shows a high binding selectivity in broad pH and salt operational window for removal of aggregates and host cell proteins in mAb purification.

The NW Rose Plus HCM HP resin has the following features:

- High dynamic binding capacity at high flow rate
- A broad pH and salt operational window
- Simple in-place cleaning and sanitization

**Table 1. The characteristics of NW Rose Plus HCM HP**

Chromatography technique	Multimodal chromatography
Matrix	Highly cross-linked, rigid agarose beads
Particle Size	50 $\mu$ m
Dynamic binding Capacity	>58 mg/ml human IgG
Maximum Pressure	0.3 MPa
Clean in Place	0.5 MPa
Recommend Flow Rate	60–300 cm/h (50/30 Column, bed height 10 cm)
Maximum Flow Rate	600 cm/h (16/20 Column, bed height 10 cm)
pH Stability	3–12 (operational) 2–14 (CIP)
Chemical stability	Stable in commonly used aqueous buffers, 0.1 M NaOH, 30% isopropyl alcohol, 6 M guanidine hydrochloride, 8 M urea, 70% ethanol, etc.
Operational temperature	4–40 °C
Storage	20% ethanol, 4–30 °C