

NTA Superflow Cartridge

For immobilized metal affinity chromatography (IMAC)

NTA Superflow comprises nitrilotriacetic acid (NTA) covalently bound by a linker to Superflow chromatography matrix. The NTA ligand can be used to immobilize metal ions for IMAC purification of His-tagged or metal binding proteins. The resin can be charged with a number of different metal ions (e.g., Ni^{2+} , Co^{2+} , Cu^{2+} , Zn^{2+} , Fe^{3+}), enabling fine-tuning of purification strategies. Because NTA is a tetradentate ligand and binds metal ions more tightly than tridentate ligands such as IDA, metal leaching rates are lower and purer protein preparations are obtained.

Charging the NTA Superflow Cartridge with metal ions

1. Wash the NTA Superflow Cartridge with 10 ml of distilled water at a flow rate of 1 ml/min.
2. Prepare 2 ml of a 100 mM solution of the ion of choice (see table) in distilled water.

Metal, ion	Suitable salts	Appearance of charged matrix
Nickel, Ni^{2+}	$\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$; $\text{NiSO}_4 \cdot 7\text{H}_2\text{O}$	Turquoise/blue
Copper, Cu^{2+}	$\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$; $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$	Deep blue
Zinc, Zn^{2+}	ZnCl_2 ; $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$	Colorless
Cobalt, Co^{2+}	$\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$; $\text{CoSO}_4 \cdot 7\text{H}_2\text{O}$	Pink
Iron, Fe^{3+}	FeCl_3 ; $\text{Fe}_2(\text{SO}_4)_3 \cdot \text{H}_2\text{O}$	Yellow/orange

3. Load the metal ion solution onto the cartridge at a flow rate of 1 ml/min.
4. Wash the cartridge with 10 ml distilled water to remove any unbound metal.
5. Equilibrate the metal-charged cartridge by passing at least 5 ml column loading buffer over the cartridge. For storage, pass at least 5 ml 30% ethanol over the column and store at 2–8°C.

Purifying proteins using charged NTA Superflow Cartridges

Purification protocols and a Troubleshooting Guide can be found in the *Ni-NTA Superflow Cartridge Handbook* supplied with NTA Superflow Cartridges.



NTA Cartridge Specifications

Support	Superflow (highly cross-linked 6% agarose)
Bead diameter	60–160 μm
Column dimensions (mm i.d.)	6.7 mm x 28.0 mm
Maximum pressure*	5 bar, 0.5 MPa
Typical back pressure (Buffer NPI-10, 10% glycerol)	1.0 bar, 0.1 MPa (1 ml/min)
Recommended flow rate	1 ml/min (155 cm/h)
Maximum flow rate†	10 ml/min (1560 cm/h)
pH stability	short term ($\leq 2\text{h}$) 2–14; long term ($> 2\text{h}$) 3–12
Binding capacity‡	At least 20 mg (up to 1 μmol @ 20 kDa)
System compatibility	Automated chromatography systems (e.g., ÄKTA™, FPLC™, BioLogic™, BioCAD™, Vision™ workstation)
Cartridge body material	Polypropylene
Connectors	1/16" (inlet); M6 (outlet)

* Maximum pressure usable with the Superflow matrix is 10 bar. However, stability of the Cartridges is only guaranteed up to 5 bar.

† High flow rates may lead to reduced recovery of protein.

‡ Determined for a monomeric 30 kDa globular 6xHis-tagged protein. Binding capacity may vary from protein to protein.

Ordering Information

Product	Contents	Cat. no.
NTA Superflow Cartridges (5 x 1 ml)	5 cartridges pre-filled with 1 ml NTA Superflow: for IMAC purification of proteins using liquid chromatography systems	30821

Trademarks: QIAGEN® (QIAGEN Group); ÄKTA™, FPLC™ (Amersham plc); BioLogic™ (Bio-Rad Laboratories Inc.); BioCad (Perceptive Biosystems)
1049293 10/2007 © 2007 QIAGEN, all rights reserved.

www.qiagen.com

Australia ■ 1-800-243-800
Austria ■ 0800/281010
Belgium ■ 0800-79612
Canada ■ 800-572-9613
China ■ 021-51345678
Denmark ■ 80-885945
Finland ■ 0800-914416
France ■ 01-60-920-930
Germany ■ 02103-29-12000
Hong Kong ■ 800 933 965
Ireland ■ 1800 555 049
Italy ■ 800 787980
Japan ■ 03-5547-0811
Luxembourg ■ 8002 2076
The Netherlands ■ 0800 0229592
Norway ■ 800-18859

Singapore ■ 65-67775366
South Korea ■ 1544 7145
Sweden ■ 020-790282
Switzerland ■ 055-254-22-11
UK ■ 01293-422-911
USA ■ 800-426-8157



Sample & Assay Technologies