Plasmid Purification Guide

Plasmid purification products from MACHEREY-NAGEL

MN guide to plasmid purification

Find the optimal solution

NucleoBond®

NucleoSpin®

Superior yields

Outstanding purities

Time-saving procedures

… for reliable downstream applications

MACHEREY-NAGEL

www.mn-net.com

MN Since 1911

MN technologies for plasmid purification

NucleoBond®

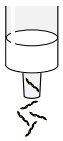
Anion-exchange technology

DNA
contaminants

DNA is bound to the anion-exchanger matrix under low-pH conditions

Interaction between positively charged anion-exchanger group and negatively charged DNA backbone

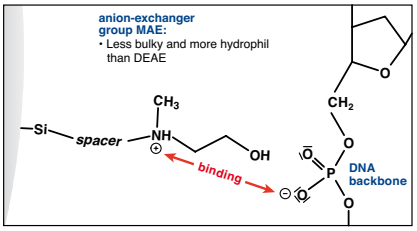
Stringent washing with increasing salt concentration to remove contaminants



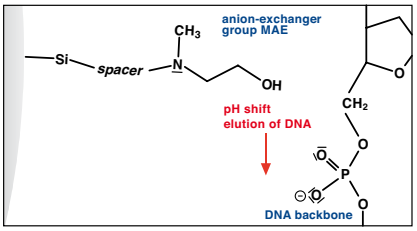
DNA is eluted with high-pH buffer

Desalting / Concentration:
Alcohol precipitation of eluted DNA

DNA is collected by centrifugation or by using the NucleoBond® Finalizer



Principle of binding: Ionic bond



Principle of elution: pH shift

Features / Results

- Ultra-pure, transfection-grade plasmid DNA
- The new generation of anion exchangers
- Xtra fast, Xtra high yield, Xtra convenient

NucleoSpin®

Silica-membrane technology

DNA
contaminants

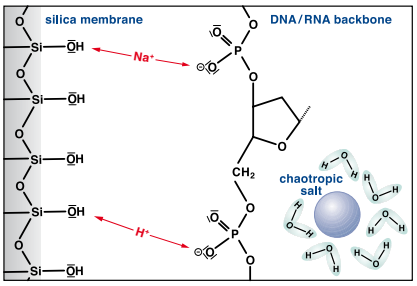
Sample lysis, release of DNA from cells, tissue, etc. in the presence of chaotropic salts

DNA is bound to the silica membrane under high-salt conditions

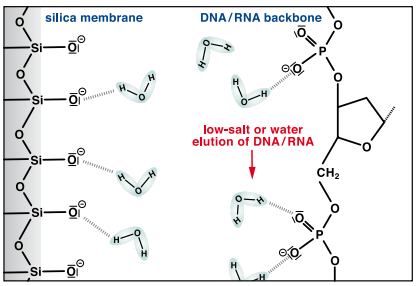
Interaction between DNA (hydrate shell is reversibly removed by chaotropic salt) and silica membrane

Contaminants are washed away under high-salt and / or ethanolic conditions to keep the DNA bound to the membrane

DNA is eluted in low-salt buffer or water, DNA is ready to use for downstream applications



Principle of binding: Removing of hydrate shell
Hydrogen bonds / Salt bridges



Principle of elution: Reconstitution of hydrate shell

Features / Results

- Sequencing and PCR-grade plasmid DNA
- No alcohol precipitation necessary
- Fast and easy procedure

NucleoBond® Xtra Midi • NucleoBond® Xtra Maxi

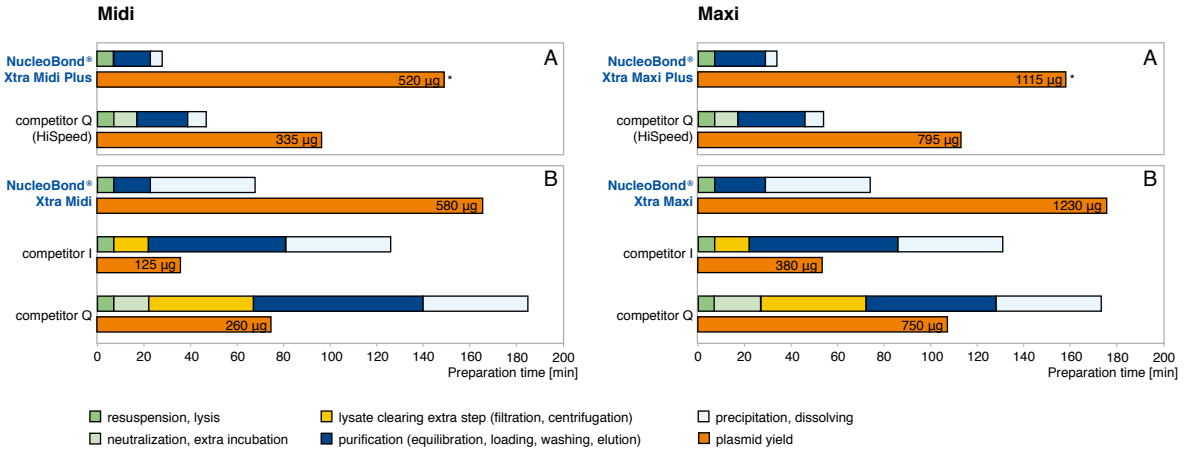
Superior plasmid Midi and Maxi kits – transfection-grade

- ***Highest speed – 30 min (Midi) / 35 min (Maxi)***
  Optimal column design and inserted filters – avoid inconvenient syringes
- ***Highest yield – typically 250 µg for Midi and 1000 µg for Maxi***
  Improved silica material – patented design!
- ***High purity – transfection-grade plasmid DNA***
  Established anion-exchange technology
- ***NucleoBond® Xtra Plus kits for super high-speed version***
  NucleoBond® Finalizer for omitting time-consuming centrifugation after DNA precipitation

Product at a glance

Sample material	**Midi** < 200 mL (high copy) < 400 mL (low copy)		**Maxi** < 600 mL (high copy) < 1200 mL (low copy)	
Vector size	< 300 kbp		< 300 kbp	
Typical yield	250 µg		1000 µg	
Precipitation	**Midi** Centrifugation	**Midi Plus** NucleoBond® Finalizer	**Maxi** Centrifugation	**Maxi Plus** NucleoBond® Finalizer
Preparation time	70 min / prep	30 min / prep	75 min / prep	35 min / prep
Applications	Transfection, cloning, plasmid banks, etc.		Transfection, cloning, plasmid banks, etc.	

Application data



* Yield of plasmid DNA is slightly lower due to residual DNA remaining on the desalting tool (compared to kits without desalting tool).

Highest yield in less time – comparison to anion-exchange competitor kits

Plasmid DNA was isolated following each manufacturer`s protocol using maximum culture volume. Plasmid DNA yield (■) was determined after precipitation. The comparison shows the results of the kits with NucleoBond® Finalizer as desalting tool (Fig. A) and without desalting tool (Fig. B).

Ordering information

Product	Preps	REF
NucleoBond® Xtra Midi	10 / 50 / 100	740410.10 / .50 / .100
NucleoBond® Xtra Midi Plus (incl. Finalizer)	10 / 50	740412.10 / .50
NucleoBond® Xtra Maxi	10 / 50 / 100	740414.10 / .50 / .100
NucleoBond® Xtra Maxi Plus (incl. Finalizer)	10 / 50	740416.10 / .50
NucleoBond® Xtra Combi Rack	-	740415

NucleoBond® Xtra Midi EF • NucleoBond® Xtra Maxi EF

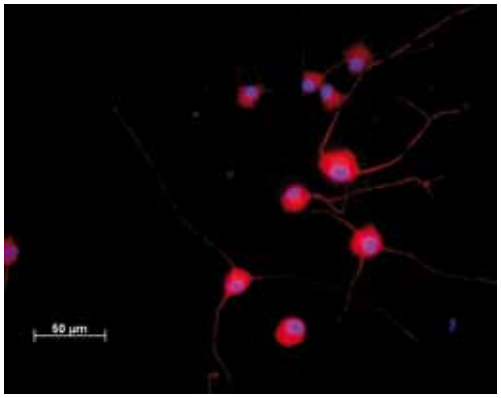
Superior plasmid kit for transfection of sensitive cell lines – endotoxin-free

- ***Highest purity – endotoxin-free transfection of sensitive cell lines***
  Patented endotoxin removal
- ***Highest speed – 45 min (Midi) / 50 min (Maxi)***
  No extra incubation for endotoxin removal
  Optimal column design and inserted filters – avoid inconvenient syringes
- ***Highest yield – typically 250 µg for Midi and 1000 µg for Maxi***
  Improved silica material – patented design!
- ***NucleoBond® Xtra Plus EF kits for super high speed version***
  NucleoBond® Finalizer for omitting time-consuming centrifugation after DNA precipitation

Product at a glance

Sample material	**Midi EF** < 200 mL (high copy) < 400 mL (low copy)		**Maxi EF** < 600 mL (high copy) < 1200 mL (low copy)	
Vector size	< 300 kbp		< 300 kbp	
Typical yield	250 µg		1000 µg	
Precipitation	**Midi EF** Centrifugation	**Midi Plus EF** NucleoBond® Finalizer	**Maxi EF** Centrifugation	**Maxi Plus EF** NucleoBond® Finalizer
Preparation time	85 min / prep	45 min / prep	90 min / prep	50 min / prep
Applications	Transfection, cloning, plasmid banks, etc.		Transfection, cloning, plasmid banks, etc.	

Application data



Transfection of PC12 cells with plasmid DNA purified using NucleoBond® Xtra EF

Plasmid purification: 9.2 kbp plasmid, bacterial strain: *E. coli* DH5α, purification with NucleoBond® Xtra Midi EF

Transfection experiment: highly sensitive PC12 cells, *in vitro* cultivation, transfection with 0.5 µg plasmid DNA, transfection method: Lipofectamine™ LTX Reagent (1 µL) + 100 µL DMEM, cells were imaged by fluorescence microscopy 24 h post-transfection

Results: Cells show transient expression of Phogrin (PTP NP, Protein Tyrosine Phosphatase), localized by red fluorescent antibody, nuclei are localized by DAPI staining (violet)

Data kindly provided by AG Knauer, Duisburg-Essen University, Institute for Molecular Biology II, Essen, Germany

Ordering information

Product	Preps	REF
NucleoBond® Xtra Midi EF	10 / 50	740420.10 / .50
NucleoBond® Xtra Midi Plus EF (incl. Finalizer)	10 / 50	740422.10 / .50
NucleoBond® Xtra Maxi EF	10 / 50	740424.10 / .50
NucleoBond® Xtra Maxi Plus EF (incl. Finalizer)	10 / 50	740426.10 / .50
NucleoBond® Xtra Combi Rack	-	740415

NucleoBond® Xtra BAC

Kit for large construct DNA

High yield – up to 150 µg BAC DNA
Optimal silica material for large constructs

High speed – 75 minutes per prep
Optimal column design and inserted filters for high flow rates and parallel lysate clearing and loading

High purity – transfection-grade BAC DNA
Established anion-exchange technology

Product at a glance

Sample material	250–750 mL *E. coli* culture
Vector size	< 300 kbp
Typical yield	10–150 µg
Preparation time	75 min/prep
Applications	Transfection, cloning, restriction analyses, sequencing

Application data

Superior yield in less time – comparison to competitor kits

BAC DNA (300 kbp) was isolated in triplicate from 500 mL *E. coli* DH5α using NucleoBond® Xtra BAC and competitor products (Q and I). After precipitation, BAC DNA was reconstituted in 1000 µL TE buffer and 5 µL of each sample was used for analysis on a 1 % TAE-agarose gel.
Obtained yields: MN: 150 µg, Q: 44 µg, I: 75 µg

Suitable for restriction digestion

Restriction digestion of BAC DNA isolated with NucleoBond® Xtra BAC. BAC DNA samples were purified from overnight cultures of *E. coli* DH5α transformed with a pBAC10 clone. Approximately 3 µg of DNA from each sample was digested with 3 units of *Msp*I, *Hin*dIII, or *Eco*RI at 37 °C for 2 hours. Digestions were analysed on a 1 % TAE agarose gel. Lane 1: undigested BAC DNA, lane 2: *Msp*I digested, lane 3: *Hin*dIII digested, lane 4: *Eco*RI digested, lane M: marker.

Ordering information

Product	Preps	REF
NucleoBond® Xtra BAC	10 / 25	740436.10 / .25
NucleoBond® Xtra Combi Rack	-	740415

NucleoSpin® Plasmid · NucleoSpin® Plasmid (NoLid)

High-yield plasmid Mini prep – molecular biology-/sequencing-grade

Highest yield
Up to 40 µg plasmid DNA

Highest quality
Phred score of 20 (up to 1000 bp)

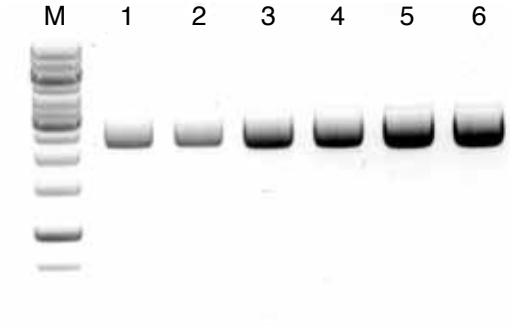
Fast procedure
18 Mini preps in 25 min

Choose between columns with or without a lid

Product at a glance

Sample material	1–5 mL *E. coli* cultures (standard protocol) 5–10 mL *E. coli* cultures*
Vector size	< 15 kbp
Typical yield	< 25 µg (from 1–5 mL) < 40 µg (from 5–10 mL)*
Elution volume	50 µL
Binding capacity	60 µg
Applications	Sequencing, cloning, PCR, restriction analysis, transformation, enzymatic modifications

Application data



High-yield plasmid Mini prep

Plasmid DNA isolation (pUC18) from *E. coli* DH5α using NucleoSpin® Plasmid. For the isolation 2 mL (lane 1–2), 5 mL (lane 3–4) and 8 mL (lane 5–6) LB cultures were used and analyzed on an agarose gel (2 µL of each eluate). Lane M: marker.

Ordering information

Product	Preps	REF
NucleoSpin® Plasmid	10 / 50 / 250	740588.10 / .50 / .250
NucleoSpin® Plasmid (NoLid)	50 / 250	740499.50 / .250
NucleoSpin® Plasmid Buffer Set*	300	740953

* If larger culture volumes are frequently used, increased buffer volumes are required. Please see „ordering information“

NucleoSpin® Plasmid QuickPure

High-speed plasmid Mini prep – molecular biology-/sequencing-grade

Highest speed
18 Mini preps in 11 min

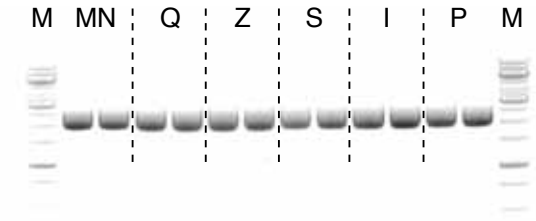
Highest quality
Phred score of 20 (up to 1000 bp)

Reliable yield
Up to 15 µg plasmid DNA

Product at a glance

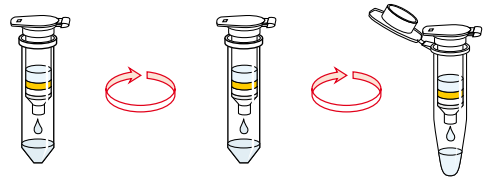
Sample material	1–3 mL *E. coli* cultures
Vector size	< 15 kbp
Typical yield	< 15 µg
Elution volume	50 µL
Binding capacity	15 µg
Applications	Sequencing, cloning, PCR, restriction analysis, transformation, enzymatic modifications

Application data



Comparison of plasmid yield

Plasmid DNA isolation (pUC18) from a 3 mL LB *E. coli* DH5α culture. Two isolations were each performed according to the manufacturer's protocol. For the comparison 4 µL of each 50 µL eluate were loaded on a 1 % TAE agarose gel. The yield of NucleoSpin® Plasmid QuickPure is higher or equal to competitors Q, Z, S, I, P. Lane M: marker.



Just three steps = Less than 10 min per prep

Ordering information

Product	Preps	REF
NucleoSpin® Plasmid QuickPure	10 / 50 / 250	740615.10 / .50 / .250

NucleoSpin® 8 / 96 Plasmid · NucleoSpin® 8 / 96 Plasmid Core Kit

High-throughput plasmid Mini prep – molecular biology- / sequencing-grade

Suitable for up to 5 mL bacterial culture

Convenient filtration of bacterial lysates

NucleoSpin® 8 Filter Strips / 96 Filter Plate
Optimized filter material minimizes the risk of filter clogging

Minimizes risk of cross-contamination

MN Wash Plate technology

Core Kit versions available

Cost savings – kits with basic contents*

Product at a glance

Format	8-well strips / 96-well plates
Processing	Manual and automated, vacuum or centrifugation**
Lysate clarification	8-well filter strips / 96-well filter plates
Sample material	1–5 mL *E. coli* culture
Vector size	<15 kbp
Typical yield	4–6 µg/mL *E. coli* culture
Elution volume	75–150 µL
Preparation time	45 min / 6 strips or 1 plate
Binding capacity	20 µg
Applications	Sequencing, cloning, PCR, restriction analysis, transformation, enzymatic modifications

Ordering information

Product	Preps	REF
NucleoSpin® 8 Plasmid	12 x 8 / 60 x 8	740621 / .5
NucleoSpin® 8 Plasmid Core Kit*	48 x 8	740461.4
NucleoSpin® 96 Plasmid	1 x 96 / 4 x 96 / 24 x 96	740625.1 / .4 / .24
NucleoSpin® 96 Plasmid Core Kit*	4 x 96	740616.4

* Core kit contents are focused on automation platforms. Additional accessories can be combined as needed. Please check ***www.mn-net.com*** or contact our Technical Support.

** Support protocol available at Technical Support (tech-bio@mn-net.com)

Your local distributor

Trademarks

MACHEREY-NAGEL: NucleoSpin®, NucleoBond®
Other companies: Lipofectamin™ [Invitrogen]

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