Bioanalysis

MACHEREY-NAGEL

User manual

PCR clean-up

- NucleoSpin ® 8 PCR Clean-up
- NucleoSpin ® 8 PCR Clean-up Core Kit

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Contact MN

Germany and international

MACHEREY-NAGEL GmbH & Co. KG
Valencienner Str. 11 · 52355 Düren · Germany
Tel.: +49 24 21 969-0
Toll-free: 0800 26 16 000 (Germany only)
E-mail: info@mn-net.com

Technical Support Bioanalysis

Tel.: +49 24 21 969-333
E-mail: support@mn-net.com

USA

MACHEREY-NAGEL Inc.
924 Marcon Blvd. · Suite 102 · Allentown PA, 18109 · USA
Toll-free: 888 321 6224 (MACH)
E-mail: sales-us@mn-net.com

France

MACHEREY-NAGEL SAS
1, rue Gutenberg – BP135 · 67720 Hoerdt Cedex · France
Tel.: +33 388 68 22 68
E-mail: sales-fr@mn-net.com

MACHEREY-NAGEL SAS (Société par Actions Simplifiée) au capital de 186600 €
Siret 379 859 531 00020 · RCS Strasbourg B379859531 · N° intracommunautaire FR04 379 859 531

Switzerland

MACHEREY-NAGEL AG
Hirsackerstr. 7 · 4702 Oensingen · Switzerland
Tel.: +41 62 388 55 00
E-mail: sales-ch@mn-net.com

www.mn-net.com

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1 Components

1.1 Kit contents

	NucleoSpin® 8 PCR Clean-up	
REF	**12 × 8 preps 740668**	**60 × 8 preps 740668.5**
Binding Buffer NT	25 mL	2 × 75 mL
Wash Buffer NT3 (Concentrate)[1]	100 mL	2 × 100 mL
Elution Buffer NE[2]	30 mL	125 mL
NucleoSpin® PCR Clean-up Binding Strips (yellow rings)	12	60
MN Wash Plates[3]	1	5
Rack of Tube Strips[4]	1	5
Elution Plate U-bottom[5]	1	5
User manual	1	1

[1] For preparation of working solutions and storage conditions see section 3.

[2] Composition of Elution Buffer NE: 5 mM Tris/HCl, pH 8.5

[3] Including six paper sheets

[4] Set of 1 rack, 12 strips with 8 tubes each, and 12 cap strips

[5] Including one Self-adhering PE foil

	NucleoSpin® 8 PCR Clean-up Core Kit
REF	48 × 8 preps 740463.4
Binding Buffer NT	2 × 75 mL
Wash Buffer NT3 (Concentrate)[1]	2 × 100 mL
Elution Buffer NE[2]	125 mL
NucleoSpin® PCR Clean-up Binding Strips (yellow rings)	48
User manual	1

1.2 Reagents to be supplied by user

- 96 – 100 % ethanol

1.3 About this user Manual

It is recommended to read the instructions of this user manual carefully before use. All technical literature is also available on the internet at ***www.mn-net.com***.

Please contact Technical Service regarding information about changes of the current user manual compared to previous or updated revisions.

[1] For preparation of working solutions and storage conditions see section 3.

[2] Composition of Elution Buffer NE: 5 mM Tris/HCl, pH 8.5

2 Product description

2.1 The basic principle

The **NucleoSpin® 8 PCR Clean-up** kit is designed for vacuum based clean-up of DNA after amplification in PCR reactions or after enzymatic treatment. As described in the **NucleoSpin® 8 PCR Clean-up** procedure, the addition of chaotropic salt (Buffer NT) leads to a reversible adsorption of the DNA to the silica membrane in the **NucleoSpin® 8 PCR Clean-up Binding Strips**. Primers, salts, nucleotides, and proteins (polymerases, BSA) are removed in subsequent washing steps using Buffer NT3. Finally, highly pure DNA is eluted in Elution Buffer NE (5 mM Tris / HCl, pH 8.5) or water (pH 8.5), and can be used directly for further applications.

We can provide personalized support, protocol information, or verified scripts for numerous platforms. For more information, please contact our technical support or visit ***www.mn-net.com/automation***.

2.2 Kit specifications

- **NucleoSpin® 8 PCR Clean-up** is designed for DNA clean-up, such as purification of PCR products, in the convenient 8-well strip format. The 8-well strip format allows the highest flexibility in sample throughput.
- The kit is designed for vacuum use with the NucleoVac 96 Vacuum Manifold and Starter Set A (see ordering information, section 6.2).
- This kit provides reagents and consumables for purification of up to 15 µg highly pure PCR products.
- DNA recovery of 75 – 90 % is obtained for DNA fragments of 65 – 10,000 bp. Primers, primer-dimers, nucleotides, salts, and polymerase are removed effectively.
- The final concentration of the eluted DNA is 50 – 150 ng/µL, depending on elution buffer volume used.
- Typically, the A_{260} / A_{260} ratio is > 1.8.
- Eluted PCR products are ready-to-use for several applications including automated fluorescent sequencing, cloning, or microarray technology.
- Using the **NucleoSpin® 8 PCR Clean-up** kit allows simultaneous processing of up to 48 samples typically within 30 minutes.

Kit specifications at a glance	
Parameter	**NucleoSpin® 8 PCR Clean-up**
Format	8-well strips
Processing	Manual and automated, vacuum
Sample material	< 100 µL PCR reaction mixture
Fragment size	65 bp–10 kbp
Typical recovery	75 – 95 %
A_{260}/A_{280}	1.70 – 1.80
Elution volume	75 – 150 µL
Preparation time	30 min/6 strips
Binding capacity	15 µg
Use	For research use only

2.3 Required hardware

This kit is intended for use under vacuum. A support protocol for elution under centrifugation is included (see section 5.2).

A support protocol for complete processing under centrifugation is available from our technical service (tech-bio@mn-net.com).

Vacuum processing

The **NucleoSpin® 8 PCR Clean-up** kits can be used **manually** with the NucleoVac 96 Vacuum Manifold (see ordering information).

For processing the 8-well strips under vacuum, the Starter Set A (see ordering information), containing Column Holders A and NucleoSpin® Dummy Strips is required.

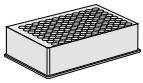
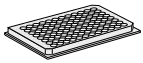
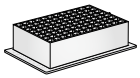
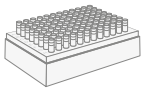
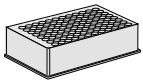
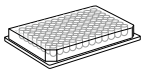
For automation on laboratory platforms with standard 96-well plate manifolds, Starter Set A is also required.

2.4 Recommended accessories for use of the NucleoSpin® 8 PCR Clean-up Core Kit

The **NucleoSpin® 8 PCR Clean-up Core Kit** provides all necessary buffers and NucleoSpin® Binding Strips. Accessory plates (e.g., mixing plates, waste collection plates, elution plates or tubes) are not provided with the Core Kit. This condensed kit composition, along with a large variety of separately available accessories, allows an optimal adjustment of the kit to individual user needs. The user can select additional consumables according to his / her requirements for highest flexibility.

For use of **NucleoSpin® 8 PCR Clean-up Core Kit** follow the protocols (see section 5.1 or 5.2).

Recommended accessories for use of the NucleoSpin® 8 PCR Clean-up **Core Kit** are available from MACHEREY-NAGEL. For ordering information please refer to section 6.2.

Protocol step	Suitable consumables, not supplied with the Core Kits		Remarks
Adjustment of binding conditions	8 x Round-well Block per 48 × 8 preps		Optional: If a premix of sample and Binding Buffer NT is favored.
Binding of DNA to the membrane and wash steps	8 x MN Wash Plate per 48 × 8 preps		MN Wash Plate minimizes the risk of cross contamination (vacuum processing only).
	2 x MN Square-well Block		For waste collection during centrifugation (reusable)
Elution	8 x Rack of Tubes Strips with Cap Strips per 48 × 8 preps or	 	
	8 x Round-well Block with Cap Strips per 48 × 8 preps or	 	
	8 x Elution Plate U-bottom		For vacuum processing only

2.5 Automated processing on robotic platforms

NucleoSpin® 8 PCR Clean-up can be used fully automated on many common laboratory workstations. For the availability of scripts and general considerations about adapting **NucleoSpin® 8 PCR Clean-up** on a certain workstation, please contact MN. Full processing under vacuum enables complete automation without the need for centrifugation steps, regarding drying of the binding membrane and elution step.

The risk of cross-contamination is reduced by optimized vacuum settings during the elution step and by the improved shape of the outlets of the NucleoSpin® PCR Clean-up Binding Strips.

Drying the NucleoSpin® PCR Clean-up Binding Strips under vacuum is sufficient because the bottom of the strips is protected from buffer residues during the washing steps by the MN Wash Plate. As a result, we recommend trying to integrate the MN Wash Plate into the automated procedure. The MN Frame (see ordering information) can be used to position the disposable MN Wash Plate inside the vacuum chamber. This also reduces the risk of cross-contamination, as common metal adaptors tend to get contaminated by DNA. Thorough cleaning of the vacuum chamber is recommended after each run to prevent DNA-containing aerosols from forming.

Visit MN online at ***www.mn-net.com*** or contact your local MACHEREY-NAGEL distributor for technical support regarding hardware, software, setup instructions, and selection of the protocol.

2.6 Elution procedures

Elution of purified PCR products: The efficiency of the DNA elution depends on the pH of the elution buffer. Elution is most effective at pH 8.0 – 8.5. When using nuclease-free water for elution, the pH value should be checked and, if necessary, adjusted to 8.0 – 8.5. Lower pH of the selected elution buffer may lead to lower recoveries. Yield of larger DNA fragments (> 5 – 10 kbp) can be increased by using pre-warmed (70 °C) elution buffer (also see table below). An elution volume of 75 – 125 µL Buffer NE, as well as a 3 – 5 min incubation at room temperature (18 – 25 °C) of the elution buffer on the silica membrane are recommended.

See the following table for correlation between the dispensed elution buffer volume and typical recoveries following the standard protocol.

The recommended dispense volume of elution buffer is 125 µL.

Correlation between dispensed elution buffer volume and typical recovery					
Dispensed elution buffer	75 µL	100 µL	125 µL	150 µL	175 µL
Recovered elution buffer containing PCR-products	30 ± 5 µL	55 ± 5 µL	80 ± 5 µL	105 ± 5 µL	130 ± 5 µL

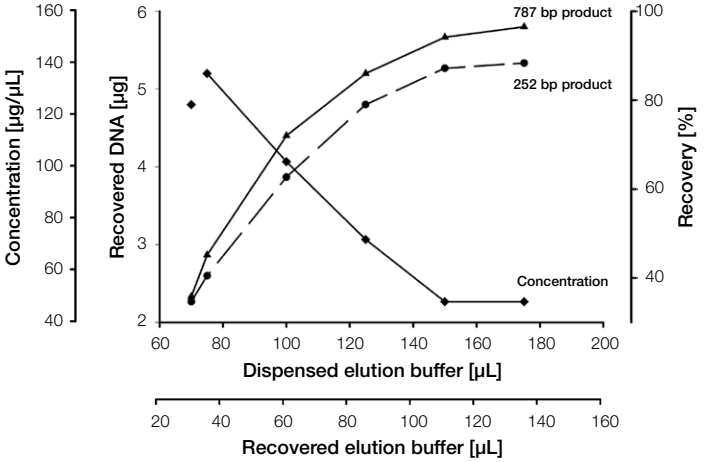


Figure 1 Recovery rate and concentration depend on elution volume.
Two different PCR products (252 bp and 787 bp) have been purified with the NucleoSpin® 8 PCR Clean-up kit.

Average DNA recovery rate depends on the size of PCR product

Size of PCR product	Average DNA recovery rate
64 bp	60 – 80 %
164 bp	70 – 85 %
200 bp	70 – 85 %
490 bp	85 – 95 %
982 bp	85 – 95 %
1500 bp	80 %
2000 bp	75 %
4000 bp	50 – 60 %

3 Storage conditions and preparation of working solutions

Attention:

Storage conditions:

- **NucleoSpin® 8 PCR Clean-up / 8 PCR Clean-up Core Kits** should be stored at room temperature (18 – 25 °C) and are stable for up to one year.

Before starting any **NucleoSpin® 8 PCR Clean-up / 8 PCR Clean-up Core Kit** purification prepare the following:

- **Wash Buffer NT3**: Add the indicated volume of ethanol (96 – 100 %) to **Buffer NT3 Concentrate**. Mark the label of the bottle to indicate that ethanol was added. Wash Buffer NT3 is stable at room temperature (18 – 25 °C) for up to one year.

	NucleoSpin® 8 PCR Clean-up	
REF	**12 × 8 preps** **740668**	**60 × 8 preps** **740668.5**
Wash Buffer NT3 (Concentrate)	100 mL Add 400 mL ethanol	2 × 100 mL Add 400 mL ethanol to each bottle

	NucleoSpin® 8 PCR Clean-up Core Kit
REF	**48 × 8 preps** **740463.4**
Wash Buffer NT3 (Concentrate)	2 × 100 mL Add 400 mL ethanol to each bottle

4 Safety instructions

Safety instructions

When working with the **NucleoSpin® 8 PCR Clean-up** kit wear suitable protective clothing (e.g., lab coat, disposable gloves, and protective goggles). For more information consult the appropriate Material Safety Data Sheets (MSDS available online at ***http://www.mn-net.com/msds***).

Caution: Guanidinium thiocyanate in buffer NT can form highly reactive compounds when combined with bleach! Thus, do not add bleach or acidic solutions directly to the sample preparation waste.

The waste generated with the **NucleoSpin® 8 PCR Clean-up** kit has not been tested for residual infectious material. A contamination of the liquid waste with residual infectious material is highly unlikely due to strong denaturing lysis buffer and Proteinase K treatment but it cannot be excluded completely. Therefore, liquid waste must be considered infectious and should be handled and discarded according local safety regulations.

4.1 Disposal

Dispose hazardous, infectious or biologically contaminated materials in a safe and acceptable manner and in accordance with all local and regulatory requirements.

5 Protocols

5.1 NucleoSpin® 8 PCR Clean-up – manual vacuum processing

- For hardware requirements refer to section 2.3.
- For detailed information regarding the vacuum manifold set-up see page 14.
- For detailed information on each step see page 15.
- For use of the NucleoSpin® 8 PCR Clean-up Core Kit (REF 740463.4), refer to section 2.4 regarding recommended accessories.

Before starting the preparation:

- Check if Buffer NT3 was prepared according to section 3.
- Set up the vacuum manifold according to the sheme.

Protocol-at-a-glance

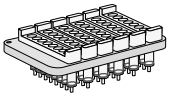
1	**Adjust** the volume of the reaction mixture to 100 µL using Tris buffer (pH 7.0 – 7.5), nuclease-free water (pH 7.0 – 7.5), or use Buffer NE	**For PCR samples < 100 µL**
2	**Dispense** binding buffer to NucleoSpin® PCR Clean-up Binding Strips	**200 µL NT**
3	**Transfer** PCR samples to NucleoSpin® PCR Clean-up Binding Strips and mix	**100 µL diluted PCR sample**
4	**Bind** DNA to silica membrane of the NucleoSpin® PCR Clean-up Binding Strips by applying vacuum	**-0.2 bar to -0.4 bar* (1 min)**
5	**Wash** silica membrane	**2 × 900 µL NT3 – 0.2 bar to -0.4 bar* (1 min)**
6	**Remove** MN Wash Plate	

* Reduction of atmospheric pressure

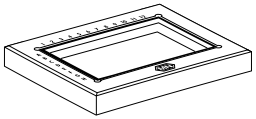
7	**Dry** NucleoSpin® PCR Clean-up Binding Strips by applying vacuum *Optional: Dry the outlets of the NucleoSpin® PCR Clean-up Binding Strips by placing it on a sheet of filter paper before applying vacuum*	**-0.3 to -0.4 bar*** **10 – 15 min** **(run pump continuously)**
8	Insert Rack of Tube Strips	
9	**Elute** DNA *Optional: Incubate 1 – 3 min*	**75 – 150 µL NE** **- 0.4 to - 0.6 bar*** **(1 min)**

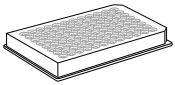
Setup of vacuum manifold:

Binding / Washing / Elution steps

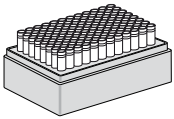


Column Holder A with NucleoSpin® Binding Strips inserted. Ununsed rows have to be filled with Nucleo-Spin® Dummy Strips

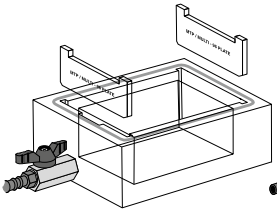




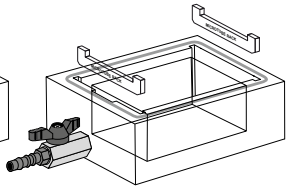
MN Wash Plate



Rack of Tube Strips



Manifold base with spacers ‘MTP/Multi-96 Plate’ inserted



Manifold base with spacers for ‘Microtube Rack’ inserted

Detailed protocol

For processing of NucleoSpin® 8 PCR Clean-up under vacuum the NucleoVac 96 Vacuum Manifold is required.

Before starting the preparation:

- Check if Buffer NT3 was prepared according to section 3.

1 Adjust the volume of reaction mixture

For PCR reaction volumes below 100 µL: Before starting the purification procedure, add Tris buffer (10 mM, pH 7.0), **nuclease-free water** (pH 7.0 – 7.5), or **Elution Buffer NE** to adjust the reaction mixture to a final volume of 100 µL.

Note: If less than 100 µL of PCR reaction mixture is used the volume of Binding Buffer NT has to be adjusted. It is mandatory that the ratio of Buffer NT : PCR reaction mixture is 2 : 1.

Prepare the NucleoVac 96 Vacuum Manifold

Insert an appropriate number of NucleoSpin® PCR Clean-up Binding Strips (yellow rings) into a Column Holder A. Close any unused openings of the Column Holder A with NucleoSpin® Dummy Strips.

Note: Make sure that the NucleoSpin® PCR Clean-up Binding Strips are inserted tightly into the column holder. Uneven or not properly inserted strips may prevent sealing when vacuum is applied to the manifold.

Insert spacers 'MTP/Multi-96 Plate', notched side up, into the grooves located on the short sides of the manifold. Insert deep waste reservoir into the center of the manifold. Place the MN Wash Plate on top of the spacers. Insert Column Holder A with inserted NucleoSpin® PCR Clean-up Binding Strips into the manifold lid and place lid on the manifold base. Check and adjust the vacuum (pressure difference -0.2 bar). Release the vacuum.

2 Dispense binding buffer to the NucleoSpin® PCR Clean-up Binding Strips

Add **200 µL Buffer NT** to each well of the NucleoSpin® PCR Clean-up Binding Strips.

3 Transfer PCR samples to the NucleoSpin® PCR Clean-up Binding Strips and mix (column wise processing is recommended)

Mix by pipetting up and down 5 times.

Optional: Pre-mix PCR reaction and Buffer NT in a Square-well Block etc. (not supplied).

4 Bind DNA to silica membrane

Apply vacuum by opening the valve and press down the Column Holder A slightly until flow-through starts. Allow the samples to pass the columns and release vacuum by closing the valve (-0.2 to -0.4 bar*, 1 min).

5 Wash silica membrane

1st wash

Add **900 µL Buffer NT3** (with ethanol added) to each well of the NucleoSpin® PCR Clean-up Binding Strips.

Apply vacuum by opening the valve. Press down the Column Holder A slightly until flow-through starts. Allow the buffer to pass the columns. Release the vacuum (**-0.2 to -0.4 bar*, 1 min**).

2nd wash

Repeat this washing step once.

6 Remove MN Wash Plate

After the final washing step, close the valve, release the vacuum, and remove the Column Holder A with the inserted NucleoSpin® PCR Clean-up Binding Strips. Remove manifold lid, MN Wash Plate, and waste container from the vacuum manifold.

7 Dry NucleoSpin® PCR Clean-up Binding Strips

Remove any residual washing buffer from the NucleoSpin® PCR Clean-up Binding Strips. If necessary, tap the outlets of the NucleoSpin® PCR Clean-up Binding Strips onto a clean paper sheet (supplied with the MN Wash Plate) or soft tissue until the droplets stop. Insert the Column Holder A, with the NucleoSpin® PCR Clean-up Binding Strips, into the lid and close the manifold. Apply vacuum of **-0.3 to -0.4 bar*** for **at least 10 min** to dry the membrane completely. This step is necessary to eliminate traces of ethanol.

Note: The ethanol in Buffer NT3 inhibits enzymatic reactions and has to be completely removed before eluting the DNA.

Finally, release the vacuum.

8 Insert Rack of Tube Strips

Insert spacers 'Microtube rack', notched side up, into the grooves located at the short sides of the vacuum manifold. Place the Rack of Tube Strips on the spacers inside the manifold base and insert the appropriate number of Tube Strips. Insert the column holder with the NucleoSpin® PCR Clean-up Binding Strips in the manifold lid and place it on the manifold base.

Alternatively, elution can be performed into a 96-well microtiter plate (supplied with the kit). Insert spacers 'MTP/Multi-96 Plate', notched side up, into the grooves located at the short sides of the vacuum manifold. Place the Elution Plate U-bottom on the spacers inside the manifold base. Insert the column holder with the NucleoSpin® PCR Clean-up Binding Strips in the manifold lid and place it on the manifold base.

9 Elute DNA

Add **75 – 150 µL Elution Buffer NE** (5 mM Tris-HCl, pH 8.5) **or water** (pH 8.5) to each well of the NucleoSpin® PCR Clean-up Binding Strips.

The buffer should be dispensed onto the center of the silica membrane. Incubate for **1 – 3 min** at **room temperature** (optionally), apply vacuum, and collect the eluted DNA. After the elution buffer has passed the columns, release the vacuum (**-0.4 to -0.6 bar***, **1 – 2 min**).

Remove the Rack of Tube Strips or Elution Plate U-bottom containing eluted DNA and seal them with the supplied Cap Strips (for the tube strips) or adhesive cover foil (for the elution plate) for further storage.

* Reduction of atmospheric pressure

5.2 NucleoSpin® 8 PCR Clean-up – elution of DNA using a centrifuge

Eluting the purified DNA in a centrifuge may be necessary when higher concentrations of the final DNA are required for downstream applications. Using a centrifuge allows the dispensed volume to be reduced down to 50 – 75 µL, *giving a DNA concentration of about 70 – 200 ng/*µL *(depending on elution buffer volume and fragment length).*

Required hardware:

- For centrifugation, a microtiterplate centrifuge that can accommodate the NucleoSpin® PCR Clean-up Binding Strips (inserted into a Column Holder C) stacked on a rack of Tube Strips is required. It is also necessary that the centrifuge reaches accelerations of 5,600 – 6,000 x *g* (bucket height: 85 mm).
- For processing the 8-well strips the Starter Set C (see ordering information), containing Column Holders C, MN Square-well Blocks, and Rack of Tube Strips is required.

1 Stop the method after the final washing step with Buffer NT3. Remove the NucleoSpin® PCR Clean-up Binding Strips from the manifold's top and tap on a sheet of filter paper to remove residual wash buffer from the outlets.

2 Place the Column Holder C, with the NucleoSpin® PCR Clean-up Binding Strips, on top of a MN Square-well Block (not supplied with the kit, see ordering information) and centrifuge for **10 min** at **maximum speed** (> 4,000 x *g*, optimal 5,800 x *g*).

Note: Do not use a microtiter plate as a support for the NucleoSpin® PCR Clean-up Binding Strips. Microtiter plates may crack under centrifugation at > 1,500 x g.

3 Place the Column Holder C, with the NucleoSpin® PCR Clean-up Binding Strips, on top of a Rack of Tube Strips. Dispense **Elution Buffer NE** (50 – 150 µL) directly onto the silica membrane and incubate for **1 – 3 min** at **room temperature**.

4 Centrifuge for **2 min** at **maximum speed** (> 4,000 x *g*, optimal 5,800 x *g*) to collect the DNA.

Remove the Rack of Tube Strips containing eluted DNA and close them with Cap Strips for further storage.

6 Appendix

6.1 Troubleshooting

Problem	Possible cause and suggestions
Poor DNA yield	*No ethanol added to Buffer NT3 Concentrate, ethanol evaporated* • Add indicated volume of ethanol to Buffer NT3 Concentrate and mix. Keep bottle tightly closed to prevent evaporation of ethanol. *Elution conditions are not optimal* • If possible, use a slightly alkaline elution buffer like Buffer NE (5 mM Tris-HCl, pH 8.5). When using nuclease-free water for elution, make sure the pH value is 8.5. Elution efficiencies drop dramatically at pH < 7. *Elution buffer volume is insufficient* • Optimal elution is achieved for an elution buffer volume of 100 – 150 µL. Do not use less than 75 µL elution buffer.
Suboptimal performance of PCR product in sequencing reactions, problems with downstream applications	*Carryover of ethanol* • Be sure to remove all of ethanolic Buffer NT3 after the final washing step. Dry the NucleoSpin® PCR Clean-up Binding Strips for at least 10 min with maximum vacuum. *Elution of PCR products with TE buffer* • EDTA may inhibit enzymatic reactions like DNA sequencing. Repurify the PCR products and elute with NE buffer or nuclease-free water. Alternatively, the DNA may be precipitated with ethanol and redissolved in buffer NE buffer or nuclease-free water. *Not enough DNA used in sequencing reactions* • Quantitate DNA by agarose gel electrophoresis before setting up sequencing reactions.
	Contamination of PCR product preparation with ethanol • Insufficient drying after final washing step with Buffer NT3. Remaining ethanol may cause problems with downstream applications like DNA sequencing or loading of samples onto agarose gel. *Eluted DNA contains residual primers/primer dimers* • Minimize amount of primers in PCR reaction mixture. Make sure that the ratio of binding buffer NT:PCR reaction mixture is 2:1.

6.2 Ordering information

Product	REF	Pack of
NucleoSpin® 8 PCR Clean-up	740668 740668.5	12 × 8 preps 60 × 8 preps
NucleoSpin® 8 PCR Clean-up Core Kit	740463.4	48 × 8 preps
NucleoSpin® 96 PCR Clean-up	740658.1 740658.2 740658.4 740658.24	1 × 96 preps 2 × 96 preps 4 × 96 preps 24 × 96 preps
NucleoSpin® 96 PCR Clean-up Core Kit	740464.4	4 × 96 preps
MN Wash Plate	740479 740479.24	4 24
Round-well Block with Cap Strips (set consists of 1 Round-well Block and 12 Cap Strips)	740475 740475.24	4 sets 24 sets
Rack of Tube Strips (1 set consists of 1 rack, 12 strips with 8 tubes each, and 12 Cap Strips)	740477 740477.24	4 sets 24 sets
Cap Strips	740478 740478.24	48 288
MN Square-well Block	740476 740476.24	4 24
Round-well Block Low (set consists of Round-well Block Low and Self-adhering Foil)	740487 740487.24	4 sets 24 sets
Elution Plate U-bottom (with Self-adhering Foil)	740486.24	24 sets
Cap Strips	740638	30
Self-adhering PE Foil	740676	50
MN Frame	740680	1
NucleoVac 96 Vacuum Manifold	740681	1
NucleoVac Vacuum Regulator	740641	1
Starter Set A (for processing NucleoSpin® 8-well strips on NucleoVac 96 Vacuum Manifold)	740682	1

Product	REF	Pack of
Starter Set C (for processing NucleoSpin® 8-well strips under centrifugation)	740684	1

Visit ***www.mn-net.com*** for more detailed product information.

6.3 Reference

Vogelstein, B. & Gillespie, D. (1979) Proc. Natl. Acad. Sci. USA 76, 615 – 619.

6.4 Product use restriction / warranty

All MACHEREY-NAGEL products are designed for their intended use only. They are not intended to be used for any other purpose. The description of the intended use of the products can be found in the original MACHEREY-NAGEL product leaflets. Before using our products, please observe the instructions for use and the safety instructions from the respective Material Safety Data Sheet of the product.

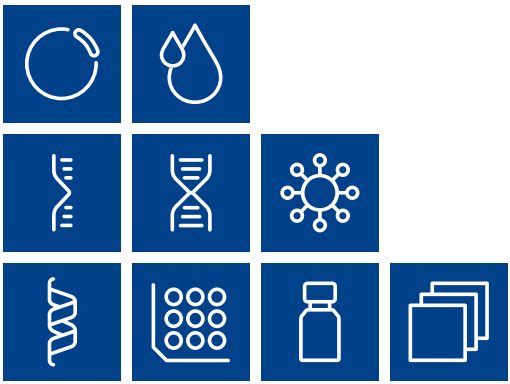
This MACHEREY-NAGEL product is carrying documentation stating specifications and other technical information. MACHEREY-NAGEL warrants to meet the stated specifications. The provided warranty is limited to the data specifications and descriptions as given in the original MACHEREY-NAGEL literature. No other statements or representations, written or oral, by MACHEREY-NAGEL's employees, agents or representatives, except written statements signed by a duly authorized officer of MACHEREY-NAGEL are authorized. They should not be relied upon by the costumer and are not a part of a contract of sale or of this warranty.

Liability for all possible damages that occur in any connection with our products is limited to the utmost minimum as stated in the general business terms and conditions of MACHEREY-NAGEL in their latest edition which can be taken from the company's website. MACHEREY-NAGEL does not assume any further warranty.

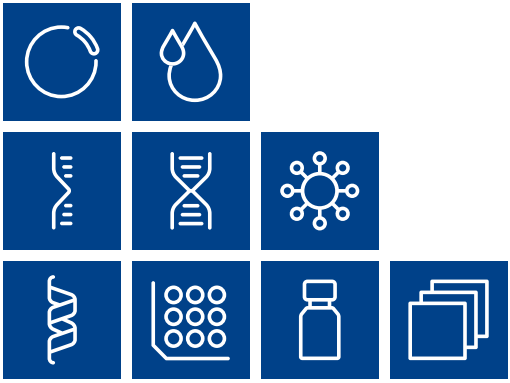
Products and their application are subject to change. Therefore, please contact our Technical Service Team for the latest information on MACHEREY-NAGEL products. You may also contact your local distributor for general scientific information. Descriptions in MACHEREY-NAGEL literature are provided for informational purposes only.

Last updated: 08/2022, Rev. 04

Please contact:
MACHEREY-NAGEL GmbH & Co. KG
Tel.: +49 24 21 969-333
support@mn-net.com



Plasmid DNA
Clean up
RNA
DNA
Viral RNA and DNA
Protein
High throughput
Accessories
Auxiliary tools



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www.mn-net.com

MACHEREY-NAGEL

MACHEREY-NAGEL GmbH & Co. KG · Valencienner Str. 11 · 52355 Düren · Germany
DE +49 24 21 969-0 info@mn-net.com
FR +33 388 68 22 68 sales-fr@mn-net.com
CH +41 62 388 55 00 sales-ch@mn-net.com
US +1 888 321 62 24 sales-us@mn-net.com