Plasmid DNA purification

User manual
NucleoSpin® Plasmid
NucleoSpin® Plasmid (NoLid)
NucleoSpin® Plasmid QuickPure

November 2012 / Rev. 08
## Plasmid DNA purification

**Protocol-at-a-glance (Rev. 08)**

<table>
<thead>
<tr>
<th>Step</th>
<th>NucleoSpin® Plasmid</th>
<th>NucleoSpin® Plasmid (NoLid)</th>
<th>NucleoSpin® Plasmid QuickPure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cultivate and harvest bacterial cells</td>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td></td>
<td></td>
<td>11,000 x g, 30 s</td>
<td>11,000 x g, 30 s</td>
</tr>
<tr>
<td>2</td>
<td>Cell lysis</td>
<td><img src="image4.png" alt="Image" /></td>
<td><img src="image5.png" alt="Image" /></td>
</tr>
<tr>
<td></td>
<td>250 μL Buffer A1</td>
<td>250 μL Buffer A1</td>
<td>250 μL Buffer A1</td>
</tr>
<tr>
<td></td>
<td>250 μL Buffer A2</td>
<td>RT, up to 5 min</td>
<td>RT, up to 5 min</td>
</tr>
<tr>
<td></td>
<td>300 μL Buffer A3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Clarification of the lysate</td>
<td><img src="image7.png" alt="Image" /></td>
<td><img src="image8.png" alt="Image" /></td>
</tr>
<tr>
<td></td>
<td></td>
<td>11,000 x g, 5–10 min</td>
<td>11,000 x g, 5 min</td>
</tr>
<tr>
<td>4</td>
<td>Bind DNA</td>
<td><img src="image10.png" alt="Image" /></td>
<td><img src="image11.png" alt="Image" /></td>
</tr>
<tr>
<td></td>
<td>Load supernatant</td>
<td>Load supernatant</td>
<td>Load supernatant</td>
</tr>
<tr>
<td></td>
<td>11,000 x g, 1 min</td>
<td>11,000 x g, 1 min</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Wash silica membrane</td>
<td><img src="image13.png" alt="Image" /></td>
<td><img src="image14.png" alt="Image" /></td>
</tr>
<tr>
<td></td>
<td>(Optional: 500 μL Buffer AW: RT or 50 °C)</td>
<td>450 μL Buffer AQ</td>
<td>450 μL Buffer AQ</td>
</tr>
<tr>
<td></td>
<td>600 μL Buffer A4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11,000 x g, 1 min</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Dry silica membrane</td>
<td><img src="image16.png" alt="Image" /></td>
<td><img src="image17.png" alt="Image" /></td>
</tr>
<tr>
<td></td>
<td></td>
<td>11,000 x g, 2 min</td>
<td>11,000 x g, 2 min</td>
</tr>
<tr>
<td>7</td>
<td>Elute DNA</td>
<td><img src="image19.png" alt="Image" /></td>
<td><img src="image20.png" alt="Image" /></td>
</tr>
<tr>
<td></td>
<td>50 μL Buffer AE</td>
<td>50 μL Buffer AE</td>
<td>50 μL Buffer AE</td>
</tr>
<tr>
<td></td>
<td>RT, 1 min</td>
<td>RT, 1 min</td>
<td>RT, 1 min</td>
</tr>
<tr>
<td></td>
<td>11,000 x g, 1 min</td>
<td>11,000 x g, 1 min</td>
<td>11,000 x g, 1 min</td>
</tr>
</tbody>
</table>
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# Components

## 1.1 Kit contents

<table>
<thead>
<tr>
<th></th>
<th>NucleoSpin® Plasmid</th>
</tr>
</thead>
<tbody>
<tr>
<td>REF</td>
<td>10 preps</td>
</tr>
<tr>
<td></td>
<td>740588.10</td>
</tr>
<tr>
<td>Resuspension Buffer A1</td>
<td>5 mL</td>
</tr>
<tr>
<td>Lysis Buffer A2</td>
<td>5 mL</td>
</tr>
<tr>
<td>Neutralization Buffer A3</td>
<td>5 mL</td>
</tr>
<tr>
<td>Wash Buffer AW</td>
<td>6 mL</td>
</tr>
<tr>
<td>Wash Buffer A4 (Concentrate)*</td>
<td>6 mL</td>
</tr>
<tr>
<td>Elution Buffer AE**</td>
<td>5 mL</td>
</tr>
<tr>
<td>RNase A (lyophilized)*</td>
<td>2 mg</td>
</tr>
<tr>
<td>NucleoSpin® Plasmid Columns (white rings)</td>
<td>10</td>
</tr>
<tr>
<td>Collection Tubes (2 mL)</td>
<td>10</td>
</tr>
<tr>
<td>User manual</td>
<td>1</td>
</tr>
</tbody>
</table>

* For preparation of working solutions and storage conditions see section 3.
** Composition of Elution Buffer AE: 5 mM Tris/HCl, pH 8.5
## 1.1 Kit contents continued

<table>
<thead>
<tr>
<th>NucleoSpin® Plasmid (NoLid)</th>
<th>10 preps</th>
<th>50 preps</th>
<th>250 preps</th>
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</thead>
<tbody>
<tr>
<td>REF</td>
<td>740499.10</td>
<td>740499.50</td>
<td>740499.250</td>
</tr>
<tr>
<td>Resuspension Buffer A1</td>
<td>5 mL</td>
<td>15 mL</td>
<td>75 mL</td>
</tr>
<tr>
<td>Lysis Buffer A2</td>
<td>5 mL</td>
<td>15 mL</td>
<td>3 x 25 mL</td>
</tr>
<tr>
<td>Neutralization Buffer A3</td>
<td>5 mL</td>
<td>20 mL</td>
<td>100 mL</td>
</tr>
<tr>
<td>Wash Buffer AW</td>
<td>6 mL</td>
<td>30 mL</td>
<td>2 x 75 mL</td>
</tr>
<tr>
<td>Wash Buffer A4 (Concentrate)*</td>
<td>6 mL</td>
<td>2 x 6 mL</td>
<td>2 x 25 mL</td>
</tr>
<tr>
<td>Elution Buffer AE**</td>
<td>5 mL</td>
<td>15 mL</td>
<td>125 mL</td>
</tr>
<tr>
<td>RNase A (lyophilized)*</td>
<td>2 mg</td>
<td>6 mg</td>
<td>30 mg</td>
</tr>
<tr>
<td>NucleoSpin® Plasmid (NoLid) Columns (white rings)</td>
<td>10</td>
<td>50</td>
<td>250</td>
</tr>
<tr>
<td>Collection Tubes (2 mL)</td>
<td>10</td>
<td>50</td>
<td>250</td>
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<tr>
<td>User manual</td>
<td>1</td>
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</tbody>
</table>

* For preparation of working solutions and storage conditions see section 3.

**Composition of Elution Buffer AE: 5 mM Tris/HCl, pH 8.5
### 1.1 Kit contents continued

<table>
<thead>
<tr>
<th>NucleoSpin® Plasmid QuickPure</th>
<th>10 preps</th>
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<th>250 preps</th>
</tr>
</thead>
<tbody>
<tr>
<td>REF</td>
<td>740615.10</td>
<td>740615.50</td>
<td>740615.250</td>
</tr>
<tr>
<td>Resuspension Buffer A1</td>
<td>5 mL</td>
<td>15 mL</td>
<td>75 mL</td>
</tr>
<tr>
<td>Lysis Buffer A2</td>
<td>5 mL</td>
<td>15 mL</td>
<td>3 x 25 mL</td>
</tr>
<tr>
<td>Neutralization Buffer A3</td>
<td>5 mL</td>
<td>20 mL</td>
<td>100 mL</td>
</tr>
<tr>
<td>Wash Buffer AQ (Concentrate)*</td>
<td>2 mL</td>
<td>6 mL</td>
<td>2 x 20 mL</td>
</tr>
<tr>
<td>Elution Buffer AE**</td>
<td>5 mL</td>
<td>15 mL</td>
<td>125 mL</td>
</tr>
<tr>
<td>RNase A (lyophilized)*</td>
<td>2 mg</td>
<td>6 mg</td>
<td>30 mg</td>
</tr>
<tr>
<td>NucleoSpin® Plasmid QuickPure Columns (dark yellow rings)</td>
<td>10</td>
<td>50</td>
<td>250</td>
</tr>
<tr>
<td>Collection Tubes (2 mL)</td>
<td>10</td>
<td>50</td>
<td>250</td>
</tr>
<tr>
<td>User manual</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

* For preparation of working solutions and storage conditions see section 3.

** Composition of Elution Buffer AE: 5 mM Tris/HCl, pH 8.5
1.2 Reagents, consumables, and equipment to be supplied by user

Reagents

- 96–100% ethanol

Consumables

- 1.5 mL microcentrifuge tubes for sample lysis and DNA elution
- Disposable pipette tips

Equipment

- Manual pipettors
- Centrifuge for microcentrifuge tubes
- Vortex mixer
- Heating-block (NucleoSpin® Plasmid/Plasmid (NoLid): for large constructs or optional Wash Buffer AW)
- Personal protection equipment (lab coat, gloves, goggles)

1.3 About this user manual

It is strongly recommended reading the detailed protocol sections of this user manual if the NucleoSpin® Plasmid/Plasmid (NoLid) or NucleoSpin® Plasmid QuickPure kit is used for the first time. Experienced users, however, may refer to the Protocol-at-a-glance instead. The Protocol-at-a-glance is designed to be used only as a supplemental tool for quick referencing while performing the purification procedure.

All technical literature is available on the internet at www.mn-net.com. Please visit the MACHEREY-NAGEL website to verify that you are using the latest revision of this user manual.

Please contact Technical Service regarding information about changes of the current user manual compared to previous revisions.
2 Product description

2.1 Basic principle

With the NucleoSpin® Plasmid method, the pelleted bacteria are resuspended (Buffer A1) and plasmid DNA is liberated from the E. coli host cells by SDS/alkaline lysis (Buffer A2). Buffer A3 neutralizes the resulting lysate and creates appropriate conditions for binding of plasmid DNA to the silica membrane of the NucleoSpin® Plasmid/Plasmid (NoLid) or NucleoSpin® Plasmid QuickPure Column. Precipitated protein, genomic DNA, and cell debris are then pelleted by a centrifugation step. The supernatant is loaded onto a NucleoSpin® Plasmid/Plasmid (NoLid) or NucleoSpin® Plasmid QuickPure Column.

With the NucleoSpin® Plasmid/Plasmid (NoLid) kit contaminations like salts, metabolites, and soluble macromolecular cellular components are removed by simple washing with ethanolic Buffer A4. Pure plasmid DNA is finally eluted under low ionic strength conditions with slightly alkaline Buffer AE (5 mM Tris/HCl, pH 8.5). If host strains with high levels of nucleases are used, an additional washing step with preheated Buffer AW is recommended. Additional washing with Buffer AW will also increase the reading length of automated fluorescent DNA sequencing reactions.

With the NucleoSpin® Plasmid QuickPure kit contaminations like salts, metabolites, nucleases, and soluble macromolecular cellular components are removed by only a single washing step with Buffer AQ. Pure plasmid DNA is finally eluted under low ionic strength conditions with slightly alkaline Buffer AE (5 mM Tris/HCl, pH 8.5).

2.2 Kit specifications

- The NucleoSpin® Plasmid/Plasmid (NoLid) and NucleoSpin® Plasmid QuickPure kits are designed for the rapid, small-scale preparation of highly pure plasmid DNA (mini preps).

- The NucleoSpin® Plasmid/Plasmid (NoLid) Columns offer a very high DNA binding capacity of up to 60 μg. This, however, requires thorough washing. Therefore, the kit includes an additional Wash Buffer AW which is strongly recommended for host strains with high levels of endonucleases like ABLE, HB101, or JM110.

- The NucleoSpin® Plasmid QuickPure Column features a new specially treated silica membrane which allows speeding up the procedure by a combined washing and drying step. No additional steps are necessary if nuclease rich host strains are used. The number of washing and drying steps is reduced from 3 to only 1! Therefore, the hands-on-time is less than 11 min. However, the DNA binding capacity is limited to 15 μg.
• The plasmid DNA prepared with both kits, NucleoSpin® Plasmid/Plasmid (NoLid) and NucleoSpin® Plasmid QuickPure, is suitable for applications like automated fluorescent DNA sequencing, PCR, or any kind of enzymatic manipulation.

• Furthermore, support protocols allow purification of low-copy plasmids from larger culture volumes, purification of plasmids from Gram-positive bacteria, and clean-up of plasmids from reaction mixtures.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>NucleoSpin® Plasmid / Plasmid (NoLid)</th>
<th>NucleoSpin® Plasmid QuickPure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culture volume</td>
<td>1–5 mL high copy 5–10 mL low copy</td>
<td>1–3 mL high copy</td>
</tr>
<tr>
<td>Typical yield</td>
<td>&lt;25 μg (1–5 mL culture) &lt;40 μg (5–10 mL culture)</td>
<td>&lt;15 μg (1–3 mL culture)</td>
</tr>
<tr>
<td>Elution volume</td>
<td>50 μL</td>
<td>50 μL</td>
</tr>
<tr>
<td>Binding capacity</td>
<td>60 μg</td>
<td>15 μg</td>
</tr>
<tr>
<td>Vectors</td>
<td>&lt;15 kbp</td>
<td>&lt;15 kbp</td>
</tr>
<tr>
<td>Preparation time*</td>
<td>25 min/18 preps</td>
<td>11 min/18 preps</td>
</tr>
<tr>
<td>Format</td>
<td>Mini spin column</td>
<td>Mini spin column</td>
</tr>
</tbody>
</table>

2.3 Growth of bacterial cultures

Yield and quality of plasmid DNA highly depend on the type of culture media and antibiotics, the bacterial host strain, the plasmid type, size, or copy number.

For cultivation of bacterial cells harbouring standard high-copy plasmids, we recommend **LB (Luria Bertani) medium**. The cell culture should be incubated at 37 °C with constant shaking (200–250 rpm) preferably 12–16 h over night. Usually an OD of 3–6 can be achieved. Alternatively, rich media like 2x YT (Yeast/Tryptone), TB (Terrific Broth), or CircleGrow can be used. In this case bacteria grow faster, reach the stationary phase much earlier than in LB medium (≤12 h), and higher cell masses can be reached. However, this does not necessarily yield more plasmid DNA. Overgrowing a culture might lead to a higher percentage of dead or starving cells and the resulting plasmid DNA might be partially degraded or contaminated with chromosomal DNA. To find the optimal culture conditions, the culture medium and incubation times have to be optimized for each host strain/plasmid construct combination individually.

* Hands-on-time
Cell cultures should be grown under **antibiotic selection** at all times to ensure plasmid propagation. Without this selective pressure, cells tend to lose a plasmid during cell division. Since bacteria grow much faster without the burden of a high-copy plasmid, they take over the culture rapidly and the plasmid yield goes down regardless of the cell mass. Table 2 gives information on concentrations of commonly used antibiotics.

### Table 2: Information about antibiotics according to Maniatis*

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Stock solution (concentration)</th>
<th>Storage</th>
<th>Working concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ampicillin</td>
<td>50 mg/mL in H₂O</td>
<td>-20 °C</td>
<td>20–50 μg/mL</td>
</tr>
<tr>
<td>Carbenicillin</td>
<td>50 mg/mL in H₂O</td>
<td>-20 °C</td>
<td>20–60 μg/mL</td>
</tr>
<tr>
<td>Chloramphenicol</td>
<td>34 mg/mL in EtOH</td>
<td>-20 °C</td>
<td>25–170 μg/mL</td>
</tr>
<tr>
<td>Kanamycin</td>
<td>10 mg/mL in H₂O</td>
<td>-20 °C</td>
<td>10–50 μg/mL</td>
</tr>
<tr>
<td>Streptomycin</td>
<td>10 mg/mL in H₂O</td>
<td>-20 °C</td>
<td>10–50 μg/mL</td>
</tr>
<tr>
<td>Tetracycline</td>
<td>5 mg/mL in EtOH</td>
<td>-20 °C</td>
<td>10–50 μg/mL</td>
</tr>
</tbody>
</table>

As rule of thumb use **5 mL** of a well grown culture for **NucleoSpin® Plasmid/Plasmid (NoLid)** and **3 mL** for **NucleoSpin® Plasmid QuickPure** as given in the kit specifications.

However, the culture volume can be increased if the cell culture grows very poorly or has to be decreased if e.g. very rich culture media were used. Refer to Table 3 and 4 to choose the best culture volume according to the optical density at 600 nm (OD₆₀₀).

### Table 3: Recommended culture volumes for NucleoSpin® Plasmid/Plasmid (NoLid)

<table>
<thead>
<tr>
<th>OD₆₀₀</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culture volume (high copy)</td>
<td>15 mL</td>
<td>8 mL</td>
<td><strong>5 mL</strong></td>
<td>4 mL</td>
<td>3 mL</td>
<td>2 mL</td>
</tr>
<tr>
<td>Culture volume (low copy)**</td>
<td>–</td>
<td>–</td>
<td><strong>10 mL</strong></td>
<td>8 mL</td>
<td>6 mL</td>
<td>4 mL</td>
</tr>
</tbody>
</table>


** Please follow the procedure for low-copy plasmids, see section 5.2.
Table 4: Recommended culture volumes for NucleoSpin® Plasmid QuickPure

<table>
<thead>
<tr>
<th>OD₆₀₀</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culture volume</td>
<td>8 mL</td>
<td>4 mL</td>
<td>3 mL</td>
<td>2 mL</td>
<td>1 mL</td>
<td>1 mL</td>
</tr>
</tbody>
</table>

Note, if too much bacterial material is used, the lysis and precipitation steps become inefficient causing decreased yield and plasmid quality! If more than the recommended amount of cells shall be processed refer to the support protocol for low-copy plasmid purification (section 5.2).

2.4 Elution procedures

The elution buffer volume and method can be adapted to the subsequent downstream application to achieve higher yield and/or concentration than the standard method (recovery about 70–90%):

- **Higher yield in general, especially for larger constructs:** Heat elution buffer to 70 °C, add 50–100 μL to the NucleoSpin® Plasmid/Plasmid (NoLid) Column and incubate at 70 °C for 2 min.

- **High yield:** Perform two elution steps with the volume indicated in the individual protocol. About 90–100% of bound nucleic acids can be eluted.

- **High concentration:** Perform one elution step with 60% of the volume indicated in the individual protocol. Concentration of DNA will be higher than with standard elution (approx. 130%). Maximal yield of bound nucleic acids is about 80%.

- **High yield and high concentration:** Apply half of the volume of elution buffer as indicated in the individual protocol, incubate for 3 min and centrifuge. Apply a second aliquot of elution buffer, incubate, and centrifuge again. Thus, about 85–100% of bound nucleic acids are eluted with the standard elution volume at a high concentration.

Elution Buffer AE (5 mM Tris/HCl, pH 8.5) can be replaced by TE buffer or water as well. However, we recommend using a weakly buffered, slightly alkaline buffer containing no EDTA, especially if the plasmid DNA is intended for sequencing reactions. If water is used, the pH should be checked and adjusted to pH 8.0–8.5 since deionized water usually exhibits a pH below 7. Furthermore absorption of CO₂ leads to a decrease in pH of unbuffered solutions.
3 Storage conditions and preparation of working solutions

**Attention:** Buffer A3 and Buffer AW contain guanidine hydrochloride! Wear gloves and goggles!

**CAUTION:** Buffers A3 and AW contain guanidine hydrochloride which can form highly reactive compounds when combined with bleach (sodium hypochlorite). DO NOT add bleach or acidic solutions directly to the sample-preparation waste.

- All kit components can be stored at room temperature (18–25 °C) and are stable for at least one year.
- Always keep buffer bottles tightly closed, especially if buffers are preheated during the preparation.
- Sodium dodecyl sulfate (SDS) in Buffer A2 may precipitate if stored at temperatures below 20 °C. If a precipitate is observed in Buffer A2, incubate the bottle at 30–40 °C for several minutes and mix well.

Before starting any **NucleoSpin® Plasmid/Plasmid (NoLid)** or **NucleoSpin® Plasmid QuickPure** protocol prepare the following:

- Add 1 mL of Buffer A1 to the RNase A vial and vortex. Transfer the solution back into the Buffer A1 bottle and mix thoroughly. Indicate date of RNase A addition. Store Buffer A1 containing RNase A at 4 °C. The solution will be stable at this temperature for at least six months.

- Add the indicated volume of 96–100 % ethanol to Buffer A4 and Buffer AQ.

| **NucleoSpin® Plasmid/Plasmid (NoLid)** |
|---|---|---|
| REF | 10 preps | 50 preps | 250 preps |
| 740588.10/ | 740588.50/ | 740588.250/ |
| 740499.10 | 740499.50 | 740499.250 |
| Wash Buffer A4 (Concentrate) | 6 mL | 2 x 6 mL | 2 x 25 mL |
| Add 24 mL ethanol | Add 24 mL ethanol to each bottle | Add 100 mL ethanol to each bottle |

| **NucleoSpin® Plasmid QuickPure** |
|---|---|---|
| REF | 10 preps | 50 preps | 250 preps |
| 740615.10 | 740615.50 | 740615.250 |
| Wash Buffer AQ (Concentrate) | 2 mL | 6 mL | 2 x 20 mL |
| Add 8 mL ethanol | Add 24 mL ethanol | Add 80 mL ethanol to each bottle |
4 Safety instructions

The following components of the NucleoSpin® Plasmid/Plasmid (NoLid) and NucleoSpin® Plasmid QuickPure kits contain hazardous contents.

4.1 Risk and safety phrases

<table>
<thead>
<tr>
<th>Component</th>
<th>Hazard contents</th>
<th>Hazard symbol</th>
<th>Risk phrases</th>
<th>Safety phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>A2</td>
<td>Sodium hydroxide 0.2–2% Natriumhydroxid 0.5–2%</td>
<td>X* R 36/38</td>
<td>S 26-37/39-45</td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td>Guanidine hydrochloride 36–50% Guanidinhydrochlorid 36–50%</td>
<td>Xn** R 22-36</td>
<td>S 26-39</td>
<td></td>
</tr>
<tr>
<td>AW</td>
<td>Guanidine hydrochloride 36–50% + isopropanol 20–50% Guanidinhydrochlorid 36–50% + Isopropanol 20–50%</td>
<td>Xn** R 10-22-36-67</td>
<td>S 16-26-39</td>
<td></td>
</tr>
<tr>
<td>RNase A</td>
<td>RNase A, lyophilized RNase A, lyophilisiert</td>
<td>Xn</td>
<td>R 42/43 S 22-24</td>
<td></td>
</tr>
</tbody>
</table>

Risk phrases

R 10 Flammable. Entzündlich.
R 36 Irritating to eyes. Reizt die Augen.
R 42/43 May cause sensitization by inhalation and skin contact. Sensibilisierung durch Einatmen und Hautkontakt möglich.
R 22 Harmful if swallowed. Gesundheitsschädlich beim Verschlucken.
R 36/38 Irritating to eyes and skin. Reizt die Augen und die Haut.
R 67 Vapours may cause drowsiness and dizziness. Dämpfe können Schläfrigkeit und Benommenheit verursachen.

Safety phrases

S 16 Keep away from sources of ignition – No Smoking! Von Zündquellen fernhalten – Nicht rauchen!
S 22 Do not breathe dust. Staub nicht einatmen.
S 24 Avoid contact with the skin. Berührung mit der Haut vermeiden.
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Bei Berührung mit den Augen gründlich mit Wasser abspülen und Arzt konsultieren.

* Hazard labeling not necessary if quantity per bottle below 25 g or mL (certificate of exemption according to 67/548/EEC Art. 25, 1999/45/EC Art. 12 and German GefStoffV § 20 (3) and TRGS 200 7.1). For further information see Material Safety Data Sheet.

**Hazard labeling not necessary if quantity per bottle below 125 g or mL (certificate of exemption according to 67/548/EEC Art. 25, 1999/45/EC Art. 12 and German GefStoffV § 20 (3) and TRGS 200 7.1). For further information see Material Safety Data Sheet.
Safety phrases

S 37/39 Wear suitable gloves and eye / face protection.
Bei der Arbeit geeignete Schutzhandschuhe und Schutzbrille / Gesichtsschutz tragen.

S 39 Wear suitable eye / face protection.
Schutzbrille / Gesichtsschutz tragen.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
Bei Unfall oder Unwohlsein sofort Arzt hinzuziehen (wenn möglich, dieses Etikett vorzeigen).

4.2 GHS classification

Only harmful features do not need to be labeled with H and P phrases until 125 mL or 125 g.
Mindergefährliche Eigenschaften müssen bis 125 mL oder 125 g nicht mit H- und P-Sätzen gekennzeichnet werden.

<table>
<thead>
<tr>
<th>Component</th>
<th>Hazard contents</th>
<th>GHS symbol</th>
<th>Hazard phrases</th>
<th>Precaution phrases</th>
</tr>
</thead>
</table>
| A2        | Sodium hydroxide 0.2–2 %  
Natriumhydroxid 0.5–2 % | Warning  
Achtung | 290, 315, 319 | 234, 280, 302+352, 305+351+338, 332+313, 337+313, 390, 406 |
| A3        | Guanidine hydrochloride  
Guanidinhydrochlorid | Warning  
Achtung | 302, 319 | 280, 301+312, 305+351+338, 330, 337+313 |
| AW        | Guanidine hydrochloride  
Guanidinhydrochlorid | Warning  
Achtung | 226, 302, 319, 336 | 210, 233, 280, 301+312, 305+351+338, 330, 337+313, 403+235 |
| RNase A   | RNase A, lyophilized  
RNase A, lyophilisiert | Danger  
Gefahr | 317, 334 | 261, 302+352, 304+341, 333+313, 342+311, 363 |

Hazard phrases / H-Sätze

H 226 Flammable liquid and vapour.  
Flüssigkeit und Dampf entzündbar.

H 290 May be corrosive to metals.  
Kann gegenüber Metallen korrosiv sein.

H 302 Harmful if swallowed.  
Gesundheitsschädlich bei Verschlucken.

H 315 Causes skin irritation.  
Verursacht Hautreizungen.

H 317 May cause an allergic skin reaction.  
Kann allergische Hautreaktionen verursachen.

H 319 Causes serious eye irritation.  
Verursacht schwere Augenreizung.
H 334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
*Kann bei Einatmen Allergie, asthamaartige Symptome oder Atembeschwerden verursachen.*

H 336 May cause drowsiness or dizziness.
*Kann Schlafigkeit und Benommenheit verursachen.*

**Precaution phrases / P-Sätze**

P 210 Keep away from heat/sparks/open flames/hot surfaces – No smoking.
*Von Hitze/Funken/offener Flamme/heißen Oberflächen fernhalten.*

P 233 Keep container tightly closed
*Behälter dicht verschlossen halten.*

P 234 Keep only in original container.
*Nur im Originalbehälter aufbewahren.*

P 261 Avoid breathing dust.
*Einatmen von Staub vermeiden.*

P 280 Wear protective gloves/eye protection.
*Schutzhandschuhe/Augenschutz tragen.*

P 301+312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
*BEI VERSCHLUCKEN: Bei Unwohlsein GIFTINFORMATIONSZENTRUM oder Arzt anrufen.*

P 302+352 IF ON SKIN: Wash with plenty of soap and water.
*BEI KONTAKT MIT DER HAUT: Mit viel Wasser und Seife waschen.*

P 304+341 IF INHALED: If breathing is difficult, remove victim to fresh air and lie at rest in a position comfortable for breathing.
*BEI EINATMEN: Bei Atembeschwerden an die frische Luft bringen und in einer Position ruhigstellen, die das Atmen erleichtert.*

P 305+351+338 IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.

P 330 Rinse mouth.
*Mund ausspülen.*

P 332+313 If skin irritation occurs: Get medical advice/attention.
*Bei Hautreizung: Ärztlichen Rat einholen / ärztliche Hilfe hinzuziehen.*

P 333+313 If skin irritation or a rash occurs: Get medical advice/attention.
*Bei Hautreizung oder -ausschlag: Ärztlichen Rat einholen / ärztliche Hilfe hinzuziehen.*

P 337+313 Get medical advice/attention.
*Bei anhaltender Hautreizung: Ärztlichen Rat einholen / ärztliche Hilfe hinzuziehen.*

P 342+311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
*Bei Symptomen der Atemwege: GIFTINFORMATIONSZENTRUM oder Arzt anrufen.*

P 363 Wash contaminated clothing before reuse.
*Kontaminierte Kleidung vor erneutem Tragen waschen.*

P 390 Absorb spillage to prevent material damage.
*Verschüttete Menge aufnehmen, um Materialschäden zu vermeiden.*

P 403+235 Store in a well ventilated place. Keep cool.
*Kühl an einem gut belüfteten Ort augewahren.*

P 406 Store in a corrosive resistant container with a resistant inner liner.
*In korrosionsbeständigem Behälter mit korrosionsbeständiger Auskleidung aufbewahren.*

For further information please see Material Safety Data Sheets (*www.mn-net.com*).
*Weiterführende Informationen finden Sie in den Sicherheitsdatenblättern (*www.mn-net.com*).*
5 NucleoSpin® Plasmid/Plasmid (NoLid) protocols

5.1 Isolation of high-copy plasmid DNA from *E. coli*

Before starting the preparation:

- Check if Wash Buffer A4 was prepared according to section 3.

1 Cultivate and harvest bacterial cells

Use 1–5 mL of a saturated *E. coli* LB culture, pellet cells in a standard benchtop microcentrifuge for 30 s at 11,000 x g. Discard the supernatant and remove as much of the liquid as possible.

*Note:* For isolation of low-copy plasmids refer to section 5.2.

2 Cell lysis

Add 250 μL Buffer A1. Resuspend the cell pellet completely by vortexing or pipetting up and down. Make sure no cell clumps remain before addition of Buffer A2!

*Attention:* Check Buffer A2 for precipitated SDS prior to use. If a white precipitate is visible, warm the buffer for several minutes at 30–40 °C until precipitate is dissolved completely. Cool buffer down to room temperature (18–25 °C).

Add 250 μL Buffer A2. Mix gently by inverting the tube 6–8 times. Do not vortex to avoid shearing of genomic DNA. Incubate at room temperature for up to 5 min or until lysate appears clear.

Add 300 μL Buffer A3. Mix thoroughly by inverting the tube 6–8 times. Do not vortex to avoid shearing of genomic DNA!

3 Clarification of lysate

Centrifuge for 5 min at 11,000 x g at room temperature.

Repeat this step in case the supernatant is not clear!
4 Bind DNA

Place a NucleoSpin® Plasmid/Plasmid (NoLid) Column in a Collection Tube (2 mL) and decant the supernatant from step 3 or pipette a maximum of 750 μL of the supernatant onto the column. Centrifuge for 1 min at 11,000 x g. Discard flow-through and place the NucleoSpin® Plasmid/Plasmid (NoLid) Column back into the collection tube.

Repeat this step to load the remaining lysate.

5 Wash silica membrane

Recommended: If plasmid DNA is prepared from host strains containing high levels of nucleases (e.g., HB101 or strains of the JM series), it is strongly recommended performing an additional washing step with 500 μL Buffer AW, optionally preheated to 50 °C, and centrifuge for 1 min at 11,000 x g before proceeding with Buffer A4. Additional washing with Buffer AW will also increase the reading length of DNA sequencing reactions and improve the performance of critical enzymatic reactions.

Add 600 μL Buffer A4 (supplemented with ethanol, see section 3). Centrifuge for 1 min at 11,000 x g. Discard flow-through and place the NucleoSpin® Plasmid/Plasmid (NoLid) Column back into the empty collection tube.

Optional:

+ 500 μL AW

11,000 x g, 1 min

+ 600 μL A4

11,000 x g, 1 min

6 Dry silica membrane

Centrifuge for 2 min at 11,000 x g and discard the collection tube.

Note: Residual ethanolic wash buffer might inhibit enzymatic reactions.

11,000 x g, 2 min

7 Elute DNA

Place the NucleoSpin® Plasmid/Plasmid (NoLid) Column in a 1.5 mL microcentrifuge tube (not provided) and add 50 μL Buffer AE. Incubate for 1 min at room temperature. Centrifuge for 1 min at 11,000 x g.

Note: For more efficient elution procedures and alternative elution buffer (e.g., TE buffer or water) see section 2.4.

+ 50 μL AE

RT, 1 min

11,000 x g, 1 min
5.2 Isolation of low-copy plasmids, P1 constructs, or cosmids

Processing of larger culture volumes requires increased lysis buffer volumes. The buffer volumes provided with the kit are calculated for high-copy plasmid purification only. Thus, if this support protocol is to be used frequently, an additional NucleoSpin® Buffer Set can be ordered separately (see ordering information).

Before starting the preparation:
- Check if Wash Buffer A4 was prepared according to section 3.

1 Cultivate and harvest bacterial cells

Use 5–10 mL of a saturated *E. coli* LB culture, pellet cells in a standard benchtop microcentrifuge for 30 s at 11,000 x g. Discard the supernatant and remove as much of the liquid as possible.

2 Cell lysis

Add 500 μL Buffer A1. Resuspend the cell pellet completely by vortexing or pipetting up and down. Make sure no cell clumps remain before addition of Buffer A2!

*Attention:* Check Buffer A2 for precipitated SDS prior to use. If a white precipitate is visible, warm the buffer for several minutes at 30–40 °C until precipitate is dissolved completely. Cool buffer down to room temperature (18–25 °C).

Add 500 μL Buffer A2. Mix gently by inverting the tube 6–8 times. Do not vortex to avoid shearing of genomic DNA. Incubate at room temperature for up to 5 min or until lysate appears clear.

Add 600 μL Buffer A3. Mix thoroughly by inverting the tube 6–8 times. Do not vortex to avoid shearing of genomic DNA!

3 Clarification of lysate

Centrifuge for 10 min at 11,000 x g at room temperature.
4 **Bind DNA**

Place a NucleoSpin® Plasmid/Plasmid (NoLid) Column in a Collection Tube (2 mL) and decant the supernatant from step 3 or pipette a maximum of 750 μL of the supernatant onto the column. Centrifuge for 1 min at 11,000 x g. Discard flow-through and place the NucleoSpin® Plasmid Column back into the collection tube.

Repeat this step to load the remaining lysate.

5 **Wash silica membrane**

*Recommended:* Add 500 μL Buffer AW, optionally preheated to 50 °C, and centrifuge for 1 min at 11,000 x g. Discard flow-through and place the NucleoSpin® Plasmid/Plasmid (NoLid) Column back into the collection tube.

Add 600 μL Buffer A4 (supplemented with ethanol, see section 3). Centrifuge for 1 min at 11,000 x g. Discard flow-through and place the NucleoSpin® Plasmid/Plasmid (NoLid) Column back into the empty collection tube.

6 **Dry silica membrane**

Centrifuge for 2 min at 11,000 x g and discard the collection tube.

*Note:* Residual ethanolic wash buffer might inhibit enzymatic reactions.

7 **Elute DNA**

Place the NucleoSpin® Plasmid/Plasmid (NoLid) Column in a 1.5 mL microcentrifuge tube (not provided) and add 50 μL Buffer AE preheated to 70 °C. Incubate for 2 min at 70 °C. Centrifuge for 1 min at 11,000 x g.

*Note:* For more efficient elution procedures and alternative elution buffer (e.g., TE buffer or water) see section 2.4.
6 NucleoSpin® Plasmid QuickPure protocol – isolation of high-copy plasmid DNA from *E. coli*

Before starting the preparation:
- Check if Wash Buffer AQ was prepared according to section 3.

1 Cultivate and harvest bacterial cells

Use 1–3 mL of a saturated *E. coli* LB culture, pellet cells in a standard benchtop microcentrifuge for 30 s at 11,000 x g. Discard the supernatant and remove as much of the liquid as possible.

2 Cell lysis

Add 250 μL Buffer A1. Resuspend the cell pellet completely by vortexing or pipetting up and down. Make sure no cell clumps remain before addition of Buffer A2!

*Attention:* Check Buffer A2 for precipitated SDS prior to use. If a white precipitate is visible, warm the buffer for several minutes at 30–40 °C until precipitate is dissolved completely. Cool buffer down to room temperature (18–25 °C).

Add 250 μL Buffer A2. Mix gently by inverting the tube 6–8 times. Do not vortex to avoid shearing of genomic DNA. Incubate at room temperature for up to 5 min or until lysate appears clear.

Add 300 μL Buffer A3. Mix thoroughly by inverting the tube 6–8 times. Do not vortex to avoid shearing of genomic DNA!

3 Clarification of lysate

Centrifuge for 5 min at 11,000 x g at room temperature.
4 Bind DNA

Place a NucleoSpin® Plasmid QuickPure Column in a Collection Tube (2 mL) and decant the supernatant from step 3 or pipette a maximum of 750 µL of the supernatant onto the column. Centrifuge for 1 min at 11,000 x g. Discard flow-through and place the NucleoSpin® Plasmid QuickPure Column back into the collection tube.

Repeat this step to load the remaining lysate.

5 Wash silica membrane

Add 450 µL Buffer AQ (supplemented with ethanol, see section 3). Centrifuge for 3 min at 11,000 x g.

Very carefully discard the collection tube and the flow-through and make sure the spin cup outlet does not touch the wash buffer surface. Otherwise repeat the centrifugation step.

6 Dry silica membrane

The drying of the NucleoSpin® Plasmid QuickPure Column is performed by the 3 min centrifugation in step 5.

7 Elute DNA

Place the NucleoSpin® Plasmid QuickPure Column in a 1.5 mL microcentrifuge tube (not provided) and add 50 µL Buffer AE. Incubate for 1 min at room temperature. Centrifuge for 1 min at 11,000 x g.

Note: For more efficient elution procedures and alternative elution buffer (e.g., TE buffer or water) see section 2.4.
7 NucleoSpin® Plasmid / Plasmid (NoLid), and NucleoSpin® Plasmid QuickPure protocols

7.1 Isolation of plasmids from Gram-positive bacteria

For plasmid purification from bacteria with a more resistant cell wall (e.g., Bacillus, Staphylococcus), it is necessary to start the lysis procedure with an enzymatic treatment (e.g., Lysozyme, Lysostaphin, Mutanolysin) to break up the peptidoglycan layers.

For some Gram-positive bacteria (e.g., Bifidobacteria, Corynebacteria) even a preincubation with lysozyme might be insufficient and mechanical cell disruption methods have to be used (e.g., RiboLyser).

Before starting the preparation:

- Check if Wash Buffer A4 or Buffer AQ were prepared according to section 3.

1 Cultivate and harvest bacterial cells

Use up to 5 mL (NucleoSpin® Plasmid/Plasmid (NoLid)) or 3 mL (NucleoSpin® Plasmid QuickPure) of a saturated E. coli LB culture, pellet cells in a standard benchtop microcentrifuge for 30 s at 11,000 x g. Discard the supernatant and remove as much liquid as possible.

2 Cell lysis

Add 250 μL Buffer A1 containing 10 mg/mL Lysozyme (not provided with the kit). Resuspend the cell pellet completely by vortexing or pipetting up and down. Make sure no cell clumps remain in the suspension!

Incubate at 37 °C for 10–30 minutes.

Proceed with addition of Buffer A2 in step 2 of the protocol for isolation of high-copy plasmids from E. coli with NucleoSpin® Plasmid/Plasmid (NoLid) (section 5.1) or NucleoSpin® Plasmid QuickPure (section 6).
7.2 Plasmid DNA clean-up

Plasmid or DNA fragment preparations from other origins than bacterial cells, for example, enzymatic reactions, can be purified using NucleoSpin® Plasmid / Plasmid (NoLid) or Plasmid QuickPure by omitting the cell lysis step.

Before starting the preparation:

- Check if Wash Buffer A4 or Buffer AQ were prepared according to section 3.

1 Adjust binding condition

Add 2 volumes of Buffer A3 to 1 volume of DNA solution and mix well by vortexing.

(For example, add 200 μL Buffer A3 to 100 μL enzymatic reaction mix.)

2 Bind DNA

Place a NucleoSpin® Plasmid / Plasmid (NoLid) or NucleoSpin® Plasmid QuickPure Column in a Collection Tube (2 mL) and load the mixture onto the column. Centrifuge for 1 min at 11,000 x g. Discard flow-through and place the NucleoSpin® Plasmid / Plasmid (NoLid) Column or Plasmid QuickPure Column back into the collection tube.

*Note: Maximum loading capacity of the NucleoSpin® Plasmid / Plasmid (NoLid) Column or Plasmid QuickPure Column is 750 μL. Repeat the procedure if larger volumes are to be processed.*

Proceed with the washing step 5 of the protocol for isolation of high-copy plasmids from *E. coli* with NucleoSpin® Plasmid / Plasmid (NoLid) (section 5.1) or NucleoSpin® Plasmid QuickPure (section 6).
## 8 Appendix

### 8.1 Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause and suggestions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cell pellet not properly resuspended</strong></td>
<td>• It is essential that the cell pellet is completely resuspended prior to lysis. No cell clumps should be visible before addition of Buffer A2.</td>
</tr>
<tr>
<td><strong>Incomplete lysis of bacterial cells</strong></td>
<td>• SDS in Buffer A2 precipitated</td>
</tr>
<tr>
<td></td>
<td>• SDS in Buffer A2 may precipitate upon storage. If a precipitate is formed, incubate Buffer A2 at 30–40 °C for 5 min and mix well.</td>
</tr>
<tr>
<td><strong>Too many bacterial cells used</strong></td>
<td>• We recommend LB as optimal growth medium. When using very rich media like TB (terrific broth), the cell density of the cultures may become too high.</td>
</tr>
<tr>
<td><strong>Poor plasmid yield</strong></td>
<td>• See “Possible cause and suggestions“ above.</td>
</tr>
<tr>
<td></td>
<td>• Suboptimal precipitation of SDS and cell debris</td>
</tr>
<tr>
<td></td>
<td>• Precipitation of SDS and cell debris will be slightly more effective when centrifuging at 4 °C instead of room temperature.</td>
</tr>
<tr>
<td></td>
<td>• No or insufficient amounts of antibiotic used during cultivation</td>
</tr>
<tr>
<td></td>
<td>• Cells carrying the plasmid of interest may become overgrown by non-transformed cells, when inadequate levels of the appropriate antibiotics are used. Add appropriate amounts of freshly prepared stock solutions to all media; both solid and liquid.</td>
</tr>
<tr>
<td></td>
<td>• Bacterial culture too old</td>
</tr>
<tr>
<td></td>
<td>• Do not incubate cultures for more than 16 h at 37°C under shaking. We recommend LB as the optimal growth medium; however, when using very rich media like TB (terrific broth), cultivation time should be reduced to &lt;12 h.</td>
</tr>
</tbody>
</table>
Suboptimal elution conditions

- If possible, use a slightly alkaline elution buffer like Buffer AE (5 M Tris/HCl, pH 8.5). If nuclease-free water is used, check the pH of the water. Elution efficiencies drop drastically with buffers <pH 7.

No high copy-number plasmid was used

- For NucleoSpin® Plasmid/Plasmid (NoLid): If using low copy-number plasmids (e.g., plasmids bearing the P15A ori, cosmids, or P1 constructs), the culture volumes should be increased to at least 5 mL.

Reagents not applied properly

- Add indicated volume of 96–100 % ethanol to Buffer A4 and Buffer AQ Concentrate and mix thoroughly (see section 3).

Nuclease-rich host strains used

- Especially when working with nuclease-rich strains, keep plasmid preparations on ice or frozen in order to avoid DNA degradation.

  - For NucleoSpin® Plasmid/Plasmid (NoLid): If using nuclease-rich strains like E.coli HB101 or strains of the JM series, be sure to perform the optional AW washing step (step 5; section 5.1). Optimal endonuclease removal can be achieved by incubating the membrane with preheated Buffer AW (50 °C) for 2 min before centrifugation.

Inappropriate storage of plasmid DNA

- Quantitate DNA directly after preparation, for example, by agarose gel electrophoresis. Store plasmid DNA dissolved in water at <-18 °C or at <+5 °C when dissolved in Buffer AE or TE buffer.

Nicked plasmid DNA

- Cell suspension was incubated with alkaline Lysis Buffer A2 for more than 5 min.

Genomic DNA contamination

- Cell lysate was vortexed or mixed too vigorously after addition of Buffer A2. Genomic DNA was sheared and thus liberated.
Plasmid DNA purification

Poor plasmid quality (continued)

Smeared plasmid bands on agarose gel

- Especially when working with nuclease-rich strains, keep plasmid preparations on ice or frozen in order to avoid DNA degradation.

- **For NucleoSpin® Plasmid/Plasmid (NoLid):** If using nuclease-rich strains like *E. coli* HB101 or strains of the JM series, be sure to perform the optional AW washing step (step 5; section 5.1). Optimal endonuclease removal can be achieved by incubating the membrane with preheated Buffer AW (50°C) for 2 min before centrifugation.

**Carry-over of ethanol**

- **For NucleoSpin® Plasmid/Plasmid (NoLid):** Make sure to centrifuge ≥1 min at 11,000 x g in step 6 in order to achieve complete removal of ethanolic Buffer A4.

- **For NucleoSpin® Plasmid QuickPure:** Make sure to centrifuge ≥3 min at 11,000 x g in step 5 in order to achieve complete removal of ethanolic Buffer AQ.

Elution of plasmid DNA with TE buffer

- EDTA may inhibit sequencing reactions. Repurify plasmid DNA and elute with Buffer AE or water. Alternatively, the eluted plasmid DNA can be precipitated with ethanol and redissolved in Buffer AE or water.

No additional washing with Buffer AW performed

- **For NucleoSpin® Plasmid/Plasmid (NoLid):** Additional washing with 500 μL Buffer AW before washing with ethanolic Buffer A4 will increase the reading length of sequencing reactions.

Not enough DNA used for sequencing reaction

- Quantitate DNA by agarose gel electrophoresis before setting up sequencing reactions.

Plasmid DNA prepared from too much bacterial cell material

- Do not use more than 3 mL of a saturated *E. coli* culture if preparing plasmid DNA for automated fluorescent DNA sequencing.
8.2 Ordering information

<table>
<thead>
<tr>
<th>Product</th>
<th>REF</th>
<th>Pack of</th>
</tr>
</thead>
<tbody>
<tr>
<td>NucleoSpin® Plasmid</td>
<td>740588.10/.50/.250</td>
<td>10/50/250 preps</td>
</tr>
<tr>
<td>NucleoSpin® Plasmid (NoLid)</td>
<td>740499.10/.50/.250</td>
<td>10/50/250 preps</td>
</tr>
<tr>
<td>NucleoSpin® Plasmid QuickPure</td>
<td>740615.10/.50/.250</td>
<td>10/50/250 preps</td>
</tr>
<tr>
<td>NucleoSpin® Buffer Set</td>
<td>740953</td>
<td>1</td>
</tr>
<tr>
<td>(for the isolation of low-copy plasmids)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buffer A1 (without RNase A)</td>
<td>740911.1</td>
<td>1 L</td>
</tr>
<tr>
<td>Buffer A2</td>
<td>740912.1</td>
<td>1 L</td>
</tr>
<tr>
<td>Buffer A3</td>
<td>740913.1</td>
<td>1 L</td>
</tr>
<tr>
<td>Buffer A4 Concentrate (for 125 mL Buffer A4)</td>
<td>740914</td>
<td>25 mL</td>
</tr>
<tr>
<td>Buffer A4 Concentrate (for 1 L Buffer A4)</td>
<td>740914.1</td>
<td>200 mL</td>
</tr>
<tr>
<td>Buffer AW</td>
<td>740916.1</td>
<td>1 L</td>
</tr>
<tr>
<td>Buffer AE</td>
<td>740917.1</td>
<td>1 L</td>
</tr>
<tr>
<td>RNase A</td>
<td>740505</td>
<td>100 mg</td>
</tr>
<tr>
<td>RNase A</td>
<td>740505.50</td>
<td>50 mg</td>
</tr>
<tr>
<td>Collection Tubes (2 mL)</td>
<td>740600</td>
<td>1000</td>
</tr>
</tbody>
</table>

8.3 References


8.4 Product use restriction/warranty

NucleoSpin® Plasmid/Plasmid (NoLid) and NucleoSpin® Plasmid QuickPure kit components are intended, developed, designed, and sold FOR RESEARCH PURPOSES ONLY, except, however, any other function of the product being expressly described in original MACHEREY-NAGEL product leaflets.

MACHEREY-NAGEL products are intended for GENERAL LABORATORY USE ONLY! MACHEREY-NAGEL products are suited for QUALIFIED PERSONNEL ONLY! MACHEREY-NAGEL products shall in any event only be used wearing adequate PROTECTIVE CLOTHING. For detailed information please refer to the respective Material Safety Data Sheet of the product! MACHEREY-NAGEL products shall exclusively be used in an ADEQUATE TEST ENVIRONMENT. MACHEREY-NAGEL does not assume any responsibility for damages due to improper application of our products in other fields of application. Application on the human body is STRICTLY FORBIDDEN. The respective user is liable for any and all damages resulting from such application.

DNA/RNA/PROTEIN purification products of MACHEREY-NAGEL are suitable for IN VITRO-USES ONLY!

ONLY MACHEREY-NAGEL products specially labeled as IVD are also suitable for IN VITRO-diagnostic use. Please pay attention to the package of the product. IN VITRO-diagnostic products are expressly marked as IVD on the packaging.

IF THERE IS NO IVD SIGN, THE PRODUCT SHALL NOT BE SUITABLE FOR IN VITRO-DIAGNOSTIC USE!

ALL OTHER PRODUCTS NOT LABELED AS IVD ARE NOT SUITED FOR ANY CLINICAL USE (INCLUDING, BUT NOT LIMITED TO DIAGNOSTIC, THERAPEUTIC AND/OR PROGNOSTIC USE).

No claim or representations is intended for its use to identify any specific organism or for clinical use (included, but not limited to diagnostic, prognostic, therapeutic, or blood banking). It is rather in the responsibility of the user or - in any case of resale of the products - in the responsibility of the reseller to inspect and assure the use of the DNA/RNA/protein purification products of MACHEREY-NAGEL for a well-defined and specific application.

MACHEREY-NAGEL shall only be responsible for the product specifications and the performance range of MN products according to the specifications of in-house quality control, product documentation and marketing material.

This MACHEREY-NAGEL product is shipped with documentation stating specifications and other technical information. MACHEREY-NAGEL warrants to meet the stated specifications. MACHEREY-NAGEL´s sole obligation and the customer´s sole remedy is limited to replacement of products free of charge in the event products fail to perform as warranted. Supplementary reference is made to the general business terms and conditions of MACHEREY-NAGEL, which are printed on the price list. Please contact us if you wish to get an extra copy.

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Please contact:
MACHEREY-NAGEL GmbH & Co. KG
Tel.: +49 24 21 969-270
tech-bio@mn-net.com