Genomic DNA from forensic samples

User manual

NucleoMag® Forensic

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MACHEREY-NAGEL
www.mn-net.com

Table of contents

1 Components

1.1 Kit contents

	NucleoMag® Forensic	
	1x 96 preps	**4 x 96 preps**
REF	**744650.1**	**744650.4**
NucleoMag® F-Beads	1.4 mL	4 x 1.4 mL
Lysis Buffer FEB	50 mL	4 x 50 mL
Binding Buffer FBB	90 mL	4 x 90 mL
Wash Buffer FWB1	70 mL	4 x 70 mL
Wash Buffer FWB2 (Concentrate)*	50 mL	4 x 50 mL
Elution Buffer FEL	30 mL	2 x 30 mL
Proteinase K (lyophilized)*	3 x 40 mg	6 x 75 mg
Proteinase Buffer PB	8 mL	35 mL
User manual	1	1

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

1.2 Material to be supplied by user

Product	REF	Pack of
• **Separation plate for magnetic beads separation,** e.g., Square-well Block (96-well block with 2.1 mL square-wells), ethylene oxide-treated	740481EO	4
• **Lysis tubes for incubation of samples and lysis,** e.g., Rack of Tubes Strips (1 set consists of 1 Rack, 12 Strips with 8 tubes (1.2 mL wells) each, and 12 Cap Strips)	740477 740477.24	4 sets 24 sets
• **Elution plate for collecting purified nucleic acids**, e.g., Elution Plate U-bottom (96-well 0.3 mL microtiterplate with 300 µL u-bottom wells) e.g., Elution Plate Flat-bottom (96-well 0.3 mL microtiterplate with 300 µL flat-bottom wells)	740486.24 740673	24 20
For use of kit on KingFisher® 96 instrument: e.g., KingFisher® 96 Accessory Kit A (Square-well Blocks, Deep-well tip combs, Elution Plates for 4 x 96 NucleoMag® Forensic preps using KingFisher® 96 platform)	744950	1 set

Reagents:

- 96–100 % ethanol
- 1 M DTT solution

2 Product description

2.1 The basic principle

The **NucleoMag® Forensic** kit is designed for the isolation of DNA from swabs, derived from forensic casework samples. This kit provides reagents and magnetic beads for isolation of 96 or 384 samples. The procedure is based on the reversible adsorption of nucleic acids to paramagnetic beads under appropriate buffer conditions. Sample lysis is achieved by incubation with a Lysis Buffer FEB containing chaotropic ions supported by Proteinase K digestion. For binding of nucleic acids to the paramagnetic beads, Binding Buffer FBB and the NucleoMag® F-Beads are added to the lysate. After magnetic separation, the paramagnetic beads are washed to remove contaminants and salts using Wash Buffers FWB1 and FWB2. Residual ethanol from previous wash steps is removed by airdrying. Finally, highly pure DNA is eluted with low-salt Elution Buffer FEL. Purified DNA can directly be used for downstream applications (e.g., STR analysis). The **NucleoMag® Forensic** kit can be used either manually or automated on standard liquid handling instruments or automated magnetic separators.

2.2 Kit specifications

NucleoMag® Forensic is designed for rapid manual and automated small-scale preparation of DNA from swabs. The kit is designed for use with NucleoMag® SEP magnetic separator (see ordering information) or other magnetic separation systems (see section 2.3). Manual time for the preparation of 96 samples is about 120 minutes. The purified DNA can be used directly as template for qPCR, or STR analysis.

NucleoMag® Forensic allows easy automation on common liquid handling instruments or automated magnetic separators. The actual processing time depends on the configuration of the instrument and the magnetic separation system used. Typically, 96 samples can be purified in less than 120 minutes using the NucleoMag® SEP on the automation platform.

2.3 Magnetic separation systems

For use of **NucleoMag® Forensic,** the use of the magnetic separator NucleoMag® SEP is recommended. Separation is carried out in a Square-well Block (see ordering information). The kit can also be used with other common separators.

Magnetic separator	Separation plate or tube
NucleoMag® SEP (MN REF 744900)	Square-well Block (MN REF 740481EO)
Tecan Te-MagS™	1.5 mL tubes without lid (Sarstedt)

Static magnetic pins

Separators with static magnetic pins, for example, NucleoMag® SEP (for manual use and for use on liquid handling workstations): This type of separator is recommended in combination with a suitable microplate shaker for optimal resuspension of the beads during the washing and elution steps. Alternatively, beads can be resuspended in the buffer by pipetting up and down several times. For fully-automated use on liquid handling workstations, a gripper tool is required, the plate is transferred to the magnetic separator for separation of the beads and transferred to the shaker module for resuspension of the beads.

Movable magnetic systems

Separators with moving magnetic pins: Magnetic pins/rods are moved from one side of the well to the other and vice versa. Beads follow this movement and are thus pulled through the buffer during the wash and elution steps. Separation takes place when the system stops.

Automated separators

Separators with moving magnets: Magnetic beads are transferred into suitable plates or tubes. Beads are resuspended from the rod-covered magnets. Following binding, washing or elution beads are collected again with the rod-covered magnets and transferred to the next plate or tube.

2.4 Adjusting the shaker settings

When using a plate shaker for the washing and elution steps, the speed settings have to be adjusted carefully for each specific separation plate and shaker to prevent cross-contamination from well to well. Proceed as follows:

Adjusting shaker speed for binding and wash steps:

- Load 600 µL dyed water to the wells of the separation plate. Place the plate on the shaker and start shaking with a moderate speed setting for 30 seconds. Turn off the shaker and check the plate surface for small droplets of dyed water.
- Increase speed setting, shake for an additional 30 seconds, and check the plate surface for droplets again.
- Continue increasing the speed setting until you observe droplets on top of the separation plate. Reduce speed setting, check again, and use this setting for the washing step.

Adjusting shaker speed for the elution step:

- Load 100 µL dyed water to the wells of the collection plate and proceed as described above.

2.5 Handling of beads

Distribution of beads

A homogeneous distribution of the magnetic beads to the individual wells of the separation plate is essential for a high well-to-well consistency. Therefore, before distributing the beads, make sure that the beads are completely resuspended. Shake the storage bottle well or place it on a vortexer shortly. During automation, a premix step before aspirating the beads suspension from the reservoir is recommended to keep the beads resuspended.

Magnetic separation time

Attraction of the magnetic beads to the magnetic pins depends on the magnetic strength of the magnetic pins, the selected separation plate, distance of the separation plate from the magnetic pins, and the volume to be processed. The individual times for complete attraction of the beads to the magnetic pins should be checked and adjusted on each system. It is recommended using the separation plates or tubes specified by the supplier of the magnetic separator.

Washing the beads

Washing the beads can be achieved by shaking or mixing. In contrast to mixing by pipetting up and down, mixing by shaker or magnetic mixing allows simultaneous mixing of all samples. This reduces the time and number of tips needed for the preparation. Resuspension by pipetting up and down, however, is more efficient than mixing by a shaker or magnetic mix.

Method	Resuspension efficiency	Speed	Number of tips needed
Magnetic mix	+	++	Low
Shaker	++	++	Low
Pipetting	+++	+*	High

2.6 Handling of Proteinase K

For dispensing the Proteinase K solution to each sample, it is recommended to predispense the needed amount to a separate reaction tube. Using a liquid handling device, we recommend to dispense the needed Proteinase K solution (45 µL per prep) with 10 % extra volume in a suitable tube for the correspondent robot. Unused Proteinase K solution should be stored at -20 °C for further extractions.

* 8-channel pipetting device

2.7 Elution procedures

Purified DNA can be eluted directly with the supplied Elution Buffer FEL. Elution can be carried out in a volume of ≥ 25 µL. It is essential to cover the NucleoMag® Beads completely with elution buffer during the elution step. The volume of dispensed elution buffer depends on the magnetic separation system (e.g., the position of the pellet inside the separation plate). For efficient elution, the magnetic bead pellet should be resuspended completely in the elution buffer. For some separators, high elution volumes might be necessary to cover the whole pellet.

3 Storage conditions and preparation of working solutions

Attention:

Buffers FEB, FBB, and FWB1 contain chaotropic salt! Wear gloves and goggles!

- All components of the **NucleoMag® Forensic** kit should be stored at room temperature (18–25 °C) and are stable for at least one year.
- All buffers are delivered ready-to-use.

Before starting any **NucleoMag® Forensic** protocol, prepare the following:

- **Proteinase K:** Before first use of the kit, add indicated volume of Proteinase Buffer PB to each vial of the **lyophilized Proteinase K**. Dissolved Proteinase K solution should be stored at -20 °C and is stable for at least 6 months.

	NucleoMag® Forensic	
	1 x 96 preps	**4 x 96 preps**
REF	**744650.1**	**744650.4**
Proteinase K (lyophilized)	3 vials (40 mg/vial) Add 1.8 mL Proteinase Buffer to each vial	6 vials (75 mg/vial) Add 3.35 mL Proteinase Buffer to each vial
Wash Buffer FWB2 (Concentrate)	50 mL Add 200 mL ethanol	4 x 50 mL Add 200 mL ethanol to each bottle

4 Safety instructions

The following components of the **NucleoMag® Forensic** kits contain hazardous contents.

Wear gloves and goggles and follow the safety instructions given in this section.

4.1 Risk and safety phrases

Component *Inhalt*	Hazard contents *Gefahrstoff*	Hazard symbol *Gefahrstoff-symbol*	Risk phrases *R-Sätze*	Safety phrases *S-Sätze*
FBB	Sodium perchlorate 20–40 % + ethanol 35–55 % *Natriumperchlorat 20–40 % + Ethanol 35–55 %*	Xn*	R 10-22	S 13-16
FWB1	Sodium perchlorate 5–20 % + ethanol 20–35 % *Natriumperchlorat 5–20 % + Ethanol 20–35 %*	*	R 10	S 16
Proteinase K	Proteinase K, lyophilized *Proteinase K, lyophilisiert*	Xn	R 36/37/38-42	S 22-24-26-36/37

Risk phrases

R 10	Flammable. *Entzündlich.*
R 22	Harmful by inhalation. *Gesundheitsschädlich beim Verschlucken.*
R 36/37/38	Irritating to eyes, respiratory system, and skin. *Reizt die Augen, Atmungsorgane und die Haut.*
R 42	May cause sensitization by inhalation. *Sensibilisierung durch Einatmen möglich.*

Safety phrases

S 13	Keep away from food, drink, and animal feedstuffs. *Von Nahrungsmitteln, Getränken und Futtermitteln fernhalten.*
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 the eyes, rinse with plenty of water and seek medical advice. *Bei Berührung mit den Augen gründlich mit Wasser abspülen und Arzt konsultieren.*
S 36/37	Wear suitable protective clothing and gloves. *Bei der Arbeit geeignete Schutzhandschuhe und Schutzkleidung tragen.*

* 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.

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.

Component *Inhalt*	Hazard contents *Gefahrstoff*	GHS symbol *GHS Symbol*	Hazard phrases *H-Sätze*	Precaution phrases *P-Sätze*
FBB	Sodium perchlorate 20–40 % + ethanol 35–55 % *Natriumperchlorat 20–40 % + Ethanol 35–55 %*	 Danger *Gefahr*	226, 302	210, 233, 301+312, 330, 403+235
FWB1	Sodium perchlorate 5–20 % + ethanol 20–35 % *Natriumperchlorat 5–20 % + Ethanol 20–35 %*	 Warning *Achtung*	226	210, 233, 403+235
Proteinase K	Proteinase K, lyophilized *Proteinase K, lyophilisiert*	 Danger *Gefahr*	315, 317, 319, 334, 335	261, 271, 280, 302+352, 304+340, 305+351+338, 312, 333+313, 337+313, 342+311, 362, 403+233, 405

Hazard phrases

H 226	Flammable liquid and vapour. *Flüssigkeit und Dampf entzündbar.*
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, asthmaartige Symptome oder Atembeschwerden verursachen.*
H 335	May cause respiratory irritation. *Kann die Atemwege reizen.*

Precaution phrases

P 210	Keep away from heat/sparks/open flames/hot surfaces – No smoking. *Von Hitze / Funken / offener Flamme / heißen Oberflächen fernhalten. Nicht rauchen*
P 233	Keep container tightly closed. *Behälter dicht verschlossen halten.*
P 261	Avoid breathing dust. *Einatmen von Staub vermeiden.*

Precaution phrases

P 271	Use only outdoors or in a well-ventilated area. *Nur im Freien oder in gut belüfteten Räumen verwenden.*
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+340	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for beathing. *Bei Einatmen: Die betroffene Person an die frische Luft bringen und für ungehinderte Atmung sorgen.*
P 305+351+388	IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing *BEI KONTAKT MIT DEN AUGEN: Einige Minuten lang behutsam mit Wasser spülen. Vorhandene Kontaktlinsen nach Möglichkeit entfernen. Weiter ausspülen.*
P 312	Call a POSION CENTER or doctor / physician if you feel unwell. *Bei Unwohlsein GIFTINFORMATIONSZENTRUM / Arzt anrufen.*
P 330	Rinse mouth. *Mund ausspülen.*
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 342+311	If experiencing respiratory symptoms: Call a POISON CENTER or doctor / physician. *Bei Symptomen der Atemwege: Giftinformationszentrum oder Arzt anrufen.*
P 337+313	Get medical advice / attention. *Bei anhaltender Augenreizung: Ärztliche Rat einholen / ärztliche Hilfe hinzuziehen.*
P 362	Take off contaminated clothing. *Kontaminierte Kleidung ausziehen.*
P 403+233	Store in a well ventilated place. *Behälter dicht verschlossen an einem gut belüfteten Ort aufbewahren.*
P 403+235	Store in a well ventilated place. Keep cool. *Kühl an einem gut belüfteten Ort aufbewahren.*
P 405	Store locked up. *Unter Verschluss 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)****.*

⚠ The symbol shown on labels refers to the precaution phrases of this section.
Das auf Etiketten dargestellte Symbol weist auf die P-Sätzen dieses Kapitels hin.

5 Protocol

5.1 Sample material

The **NucleoMag® Forensic** kit can be used to isolate DNA from most forensic sample types, including body fluids, stains and swabs of body fluids. Additionally, forensic samples such as cigarette butts or chewing gum can be used as starting material. Examples of appropriate sample types and inputs are listed in the table below. However each lab should perform studies to independently validate input amounts. It is important that the sample is covered with lysis buffer during lysis procedure, sample amounts might have to be adapted.

Sample type	Example sample input
Saliva on swabs	Up to 50 µL/swab (one swab)
Blood / Blood on swabs	Up to 5 µL (undiluted)
Blood FTA paper or fabric	Up to 8 mm (diameter)
Body fluids on fabric	Up to 8 mm (diameter)
Body fluids on swabs	Up to one swab
Chewing gum	Up to one chewing gum
Cigarette butt	Up to one butt

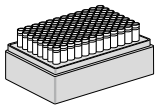
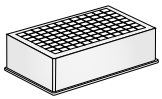
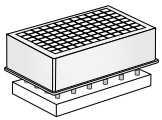
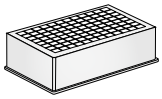
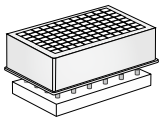
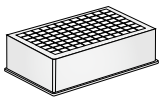
5.2 Isolation of genomic DNA from forensic samples

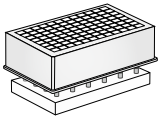
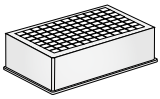
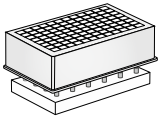
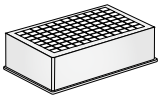
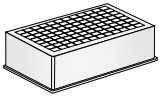
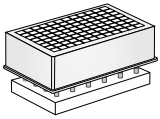
Protocol-at-a-glance

- For hardware requirements refer to section 2.3.
- For detailed information on each step see page 17.

Before starting the preparation:

- Check that Proteinase K was prepared according to section 3.

1	Lyse sample	**To each sample add:** **450 µL FEB** **45 µL Proteinase K** **5 µL 1 M DTT** **Mix** **56 °C, 1 h or overnight**	
2	Bind DNA to NucleoMag® F-Beads	**800 µL FBB** **12 µL F-Beads**	
		Mix by shaking for 10 min at RT *(Optional: Mix by pipetting up and down)*	⟷
		Remove supernatant after 2 min separation	
3	Wash with FWB1	**Remove Square-well Block from NucleoMag® SEP** **600 µL FWB1**	
		Resuspend: Shake 1 min at RT	⟷
		Remove supernatant after 2 min separation	
4	Wash with FWB2 (1st)	**Remove Square-well Block from NucleoMag® SEP** **600 µL FWB2**	
		Resuspend: Shake 1 min at RT	⟷

		Remove supernatant after 2 min separation	
5	Wash with FWB2 (2nd)	**Remove Square-well Block from NucleoMag® SEP** **600 µL FWB2**	
		Resuspend: Shake 1 min at RT	⟷
		Remove supernatant after 2 min separation	
6	Air-dry magnetic beads	**Air-dry 15 min at RT**	
7	Elute DNA	**Remove Square-well Block from NucleoMag® SEP** **25–50 µL FEL**	
		Shake 10 min at 70 °C *(Optional: Mix by pipetting up and down)*	⟷
		Separate 2 min and transfer DNA into elution plate / tubes	

Detailed protocol

This protocol is designed for magnetic separators with static pins (e.g., NucleoMag® SEP) and suitable plate shakers. It is recommended using a Square-well Block for separation (see ordering information). Alternatively, isolation of DNA can be performed in reaction tubes with suitable magnetic separators. This protocol is for manual use and serves as a guideline for adapting the kit to robotic instruments.

1 Lyse sample

Add **45 µL Proteinase K**, **5 µL 1M DTT**, and **450 µL Lysis Buffer FEB** to a reaction tube containing the sample. Mix well by repeated pipetting up and down and incubate at **56 °C** for at least **60 min** or **overnight** with shaking. Alternatively, lysis step can be performed in Tube Strips (see ordering information).

Following the lysis incubation, spin down to collect any sample from the lysis tube lids and transfer each lysate to the wells of a Square-well Block.

2 Bind nucleic acid to magnetic beads

Add **12 µL resuspended F-Beads** and **800 µL Buffer FBB** to the lysed sample.

Mix by pipetting up and down 6 times and **shake** for **10 min** at **room temperature**. Alternatively, when processing the kit without a shaker, pipette up and down 10 times and incubate for 5 min at room temperature.

Be sure to resuspend the NucleoMag® F-Beads before removing them from the storage bottle. Vortex storage bottle briefly until a homogenous suspension has been formed.

Separate the magnetic beads against the side of the wells by placing the Square-well Block on the NucleoMag® SEP a magnetic separator. Wait at least **2 min** until all the beads have been attracted to the magnets. Remove and discard supernatant by pipetting.

Do not disturb the attracted beads while aspirating the supernatant.

3 Wash with FWB1

Remove the Square-well Block from the NucleoMag® SEP magnetic separator. Add **600 µL Buffer FWB1** and resuspend the beads by shaking until the beads are resuspended completely (1–3 min). Alternatively, resuspend beads completely by repeated pipetting up and down.

Separate the magnetic beads by placing the Square-well Block on the NucleoMag® SEP magnetic separator. Wait at least **2 min** until all the beads have been attracted to the magnet. Remove and discard supernatant by pipetting.

4 Wash with FWB2 (1st)

Remove the Square-well Block from the NucleoMag® SEP magnetic separator. Add **600 µL Buffer FWB2** and resuspend the beads by shaking until the beads are resuspended completely (1–3 min). Alternatively, resuspend beads completely by repeated pipetting up and down.

Separate the magnetic beads by placing the Square-well Block on the NucleoMag® SEP magnetic separator. Wait at least **2 min** until all the beads have been attracted to the magnet. Remove and discard supernatant by pipetting.

5 Wash with FWB2 (2nd)

Remove the Square-well Block from the NucleoMag® SEP magnetic separator. Add **600 µL Buffer FWB2** and resuspend the beads by shaking until the beads are resuspended completely (1–3 min). Alternatively, resuspend beads completely by repeated pipetting up and down.

Separate the magnetic beads by placing the Square-well Block on the NucleoMag® SEP magnetic separator. Wait at least **2 min** until all the beads have been attracted to the magnet. Remove and discard supernatant by pipetting.

6 Air-dry magnetic beads

Air-dry the magnetic bead pellet for **15 min** at **room temperature**.

7 Elute DNA

Add desired volume of **Buffer FEL (25–50 µL)** to each well of the Square-well Block and resuspend the beads by shaking **5 min** at **room temperature**. Alternatively, resuspend beads completely by repeated pipetting up and down and incubate for **10 min** at **72 °C**.

Separate the magnetic beads by placing the Square-well Block on the NucleoMag® SEP magnetic separator. Wait at least **2 min** until all the beads have been attracted to the magnets. Transfer the supernatant containing the purified DNA to either elution plates or tube strips (see ordering information).

6 Appendix

6.1 Troubleshooting

Problem	Possible cause and suggestions
Poor yield/ low sensitivity	*Insufficient elution buffer volume* • Beads pellet must be covered completely with elution buffer. *Insufficient performance of elution buffer during elution step* • Remove residual buffers during the separation steps completely. Remaining buffers decrease the efficiency of following wash and elution steps. *Beads dried out* • Do not let the beads dry as this might result in lower elution efficiencies. *Aspiration of attracted bead pellet* • Do not disturb the attracted beads while aspirating the supernatant, especially when the magnetic bead pellet is not visible in the lysate. *Aspiration and loss of beads* • Time for magnetic separation too short or aspiration speed too high.
Low purity/ low sensitivity	*Insufficient washing procedure* • Use only the appropriate combinations of separator and plate, for example, Square-well Block in combination with NucleoMag® SEP. • Make sure that beads are resuspended completely during the washing procedure. If shaking is not sufficient to resuspend the beads completely mix by repeated pipetting up and down.
Poor performance of RNA in downstream applications	*Carry-over of ethanol from wash buffers* • Be sure to remove all of the ethanolic Buffer FWB2 from the final wash, as residual ethanol interferes with downstream applications.

Poor performance of DNA in downstream applications *(continued)*	*Ethanol evaporation from wash buffers* • Close buffer bottles tightly, avoid ethanol evaporation from buffer bottles as well as from buffer filled in reservoirs. Do not reuse buffers from buffer reservoirs.
Carry-over of beads	*Time for magnetic separation too short* • Increase separation time to allow the beads to be completely attracted to the magnetic pins before aspirating any liquid from the well. *Aspiration speed too high (elution step)* • High aspiration speed during the elution step may cause bead carry-over. Reduce aspiration speed for elution step.

6.2 Ordering information

Product	REF	Pack of
NucleoMag® Forensic	744650.1 744650.4	1 x 96 preps 4 x 96 preps
NucleoMag® SEP	744900	1
Square-well Blocks, ethylene oxide-treated	740481EO	4
Self-adhering PE Foil	740676	50 sheets
KingFisher® 96 Accessory Kit A (Square-well Blocks, Deep-well tip combs, Elution Plates for 4 x 96 NucleoMag® Forensic preps using KingFisher® 96 platform)	744950	1 set

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

6.3 Product use restriction/warranty

NucleoMag® Forensic 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.

There is no warranty for and MACHEREY-NAGEL is not liable for damages or defects arising in shipping and handling (transport insurance for customers excluded), or out of accident or improper or abnormal use of this product; defects in products or

components not manufactured by MACHEREY-NAGEL, or damages resulting from such non-MACHEREY-NAGEL components or products.

MACHEREY-NAGEL makes no other warranty of any kind whatsoever, and SPECIFICALLY DISCLAIMS AND EXCLUDES ALL OTHER WARRANTIES OF ANY KIND OR NATURE WHATSOEVER, DIRECTLY OR INDIRECTLY, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, AS TO THE SUITABILITY, REPRODUCTIVITY, DURABILITY, FITNESS FOR A PARTICULAR PURPOSE OR USE, MERCHANTABILITY, CONDITION, OR ANY OTHER MATTER WITH RESPECT TO MACHEREY-NAGEL PRODUCTS.

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Product claims are subject to change. Therefore please contact our Technical Service Team for the most up-to-date information on MACHEREY-NAGEL products. You may also contact your local distributor for general scientific information. Applications mentioned in MACHEREY-NAGEL literature are provided for informational purposes only. MACHEREY-NAGEL does not warrant that all applications have been tested in MACHEREY-NAGEL laboratories using MACHEREY-NAGEL products. MACHEREY-NAGEL does not warrant the correctness of any of those applications.

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