August 2026

QIAmini DNA Blood Kit Instructions for Use

For automated purification of DNA from whole blood using QIAmini

Sample to Insight

Table of Contents

Kit Contents

QIAmini DNA Blood Kit **Catalog no.** **Number of reactions**	**(48)** **590105** **48**
Buffer AL*	12 mL
Proteinase K	1.25 mL
RNase-free water	10 mL
QIAmini DNA Blood Cartridges*	48
QIAmini Rod Covers	12
Quick-Start Protocol	1

* Contains chaotropic salt. Take appropriate laboratory safety measures and wear gloves when handling. Not compatible with disinfecting agents containing bleach. See the Safety Information section.

Shipping and Storage

The QIAmini DNA Blood Kit is shipped at ambient temperature. Store all kit components dry at room temperature (15–25°C).

When stored properly, buffers and reagent cartridges are stable until the expiration date on the kit label.

Intended Use

The QIAmini DNA Blood Kit is intended for research use only. This product is not intended for the diagnosis, prevention, or treatment of a disease.

All due care and attention should be exercised in the handling of the products. We recommend all users of QIAGEN® products to adhere to the NIH guidelines that have been developed for recombinant DNA experiments or to other applicable guidelines.

Safety Information

When working with chemicals, always wear a suitable lab coat, disposable gloves, and protective goggles. For more information, please consult the appropriate safety data sheets (SDSs). These are available online in convenient and compact PDF at **www.qiagen.com/safety**, where you can find, view, and print the SDS for each QIAGEN kit and kit component.

CAUTION Do not use bleach, or acidic solutions directly to the sample preparation waste.

Buffer AL and buffers in the QIAmini DNA Blood Cartridges contain chaotropic salts, which can form highly reactive compounds when combined with bleach. If liquid containing these buffers is spilled, clean with a suitable laboratory detergent and water. If the spilled liquid contains potentially infectious agents, clean the affected area first with laboratory detergent and water, and then with 1% (v/v) sodium hypochlorite.

If liquid containing potentially infectious agents is spilled on QIAmini, refer to the instrument user manual for decontamination instructions.

Quality Control

In accordance with QIAGEN's ISO-certified Quality Management System, each lot of the QIAmini DNA Blood Kit is tested against predetermined specifications to ensure consistent product quality.

Introduction

The QIAmini DNA Blood Kit is for purification of genomic DNA (gDNA) from whole blood samples. Magnetic-particle technology enables purification of high-quality nucleic acids that are free of proteins, nucleases, and other impurities. The purified nucleic acids are ready to use for highly sensitive detection in downstream assays, such as amplification or other enzymatic reactions. The application enables fully automated processing of samples after lysis, significantly reducing manual steps and hands-on time for greater convenience.

Principle and procedure

The QIAmini DNA Blood application combines the speed and efficiency of silica-based nucleic acid purification with the convenient handling of magnetic particles. The purification procedure is designed to ensure safe and reproducible handling of potentially infectious samples. The purification procedure comprises four steps: lyse, bind, wash, and elute.

Lysis with Proteinase K

Proteolysis of blood samples is performed under highly denaturing conditions at elevated temperatures. Lysis is performed in the presence of Proteinase K and lysis buffer, which together ensure protein digestion and RNase inactivation.

Binding to magnetic particles

The QIAmini DNA Blood application provides a fully automated protocol for purification of gDNA from blood. Samples are added to Proteinase K, followed by addition of Lysis Buffer. To ensure a consistent lysis, the samples must be mixed thoroughly, either by pulse vortexing or by efficient pipetting mix. Isopropanol and magnetic beads are added to the samples immediately before the run to ensure optimal adsorption of gDNA to the silica surface. Lysis at elevated temperature is then performed on the instrument.

Washing of bound nucleic acids

While gDNA remains bound to the magnetic particles, contaminants are efficiently washed away during a sequence of wash steps.

Elution of purified nucleic acids

In a single step, highly purified gDNA is eluted in RNase-free water. The purified nucleic acid can be either used immediately in downstream applications or stored for future use.

Automation

QIAmini can perform all steps following lysis and disruption of the sample. This automation is based on magnetic particle technology and includes nucleic acid binding, optional enzymatic digestion, washing, and elution. Up to eight samples can be processed in a single run.

Magnetic-particle technology combines the speed and efficiency of silica-based nucleic acid purification with the convenient handling of magnetic particles. Total nucleic acid, DNA-only, or RNA-only is isolated from lysates in one step through its binding to the silica surface of the particles in the presence of a chaotropic salt. The particles are subsequently separated from the lysates using a magnet. Additional washing steps remove any residual contaminants. Finally, the nucleic acids are efficiently eluted.

Equipment and Reagents Supplied by User

When working with chemicals, always wear a suitable lab coat, disposable gloves, and protective goggles. For more information, consult the appropriate safety data sheets (SDSs), available from the product supplier. These are available online in convenient and compact PDF at **www.qiagen.com/safety** where you can find, view, and print the SDS kit for each QIAGEN kit and kit component.

The following materials are not included in the kit and are to be supplied by the user:

- Pipettes and sterile pipette tips
- Disposable gloves
- 2 mL reaction vessel
- **For samples <200 µL**: PBS or 0.9% NaCl solution
- **Optional**: Vortexer
- **Optional**: RNase A (17,500 U) (cat. no. 19101)
- 1.5 mL tubes

Important Notes

Preparing samples

The purification procedure is optimized for the extraction of gDNA from 200 µL blood.

Storage of blood

Whole blood samples treated with EDTA, ACD, or heparin can be used and may be either fresh or frozen. In general, follow the instructions and guidelines provided by the blood collection tube manufacturer.

Frozen samples should be thawed at room temperature with gentle agitation before beginning the procedure. The yield and quality of the purified DNA depend on the blood storage conditions. Fresher blood samples may yield better results.

For short-term storage (up to 10 days), collect blood in tubes containing EDTA as the anticoagulant and store the tubes at 2–8°C. However, for applications requiring maximum DNA fragment size, such as Southern blotting, we recommend storing the tubes at 2–8°C for no longer than 3 days because low levels of DNA degradation occur after this time.

For long-term storage, collect blood in tubes containing a standard anticoagulant (preferably EDTA if high–molecular-weight DNA is required) and store the tubes at –70°C to –80°C.

Preparing lysis buffer

Precipitates may form in pretreatment Buffer AL during storage. Dissolve the precipitates by incubating the bottles at 50°C for 15 min and shaking them manually twice within this incubation period.

Working with QIAmini

The main features of QIAmini include the following:

- Purification of high-quality nucleic acids from a wide variety of sample types
- Flexible throughput, allowing processing of up to eight samples per run
- Simple, low-complexity automation of magnetic, particle-based bind–wash–elute workflows
- Pre-filled reagent cartridges enabling convenient load-and-go operation
- Compact footprint, designed to fit on any laboratory bench and allow rapid implementation
- User-friendly operation, making automated nucleic acid purification accessible even for occasional users
- Browser-based application for protocol management
- UV decontamination to help reduce sample carryover from run-to-run and allow pathogen decontamination on worktable surface

Note: UV decontamination helps reduce possible pathogen contamination on QIAmini worktable surfaces. The efficiency of inactivation must be determined for each specific organism and depends on factors such as sample type and contaminant load. QIAGEN cannot guarantee complete eradication of specific pathogens.

Protocol: QIAmini DNA Blood Kit

Important notes before starting

- A list of all imported protocols is available in the Run menu list view.
- For detailed protocol descriptions and the latest overview of all available QIAmini protocols, refer to the *QIAmini Protocol Overview* (**www.qiagen.com/HB-3870**), available for download separately.
- Download the appropriate protocol file from **www.qiagen.com/QIAmini** or from QIAmini Suite (**www.qiagen.com/QIAminiSuite**), and transfer to your QIAmini instrument.
- If using the QIAmini DNA Blood Kit for the first time, read "Important Notes".
- Buffer AL and buffers in the cartridge contain guanidine salt and are therefore not compatible with disinfecting reagents containing bleach.

Things to do before starting

- If necessary, redissolve any precipitate in Buffer AL by warming.
- Equilibrate the buffers/cartridge to room temperature.
- All steps should be performed at room temperature. Work quickly.
- Prepare or thaw and equilibrate up to 96 fresh or frozen whole blood samples at room temperature (15–25°C).

Procedure

Homogenization and lysis of blood samples

1. Pipet 15 µL QIAGEN Proteinase K into the bottom of a 2 mL tube (not provided). Add 200 µL blood to the Proteinase K.

   RNA might be co-purified in parallel if present in the sample. RNA may inhibit some downstream enzymatic reactions. If RNA-free genomic DNA is required, 4 µL RNase A (20 mg/mL) (not provided) should be added to the sample prior to the addition of Buffer AL in step 2.

2. Add 200 µL Buffer AL and mix thoroughly either by vortexing for 20 s or by vigorously pipetting up and down at least 10 times. To ensure efficient lysis, it is essential that the sample and Buffer AL are mixed thoroughly to yield a homogeneous solution.

   Note: Do not add QIAGEN Proteinase K directly to Buffer AL.

Cartridge preparation

3. Invert the pre-filled cartridge(s) to resuspend magnetic beads. Flick down to remove reagents and bead suspension from under the foil.
4. Place the cartridge(s) into the cartridge frame. Make sure to keep the pull tab accessible. Ensure that the cartridge(s) are fully inserted into the cartridge frame.
5. **Important**: Carefully remove the sealing foil. Avoid splashing of reagents.
6. Transfer RNase-free water into well 5 of the cartridges for elution with the respective volume according to the selected protocol.
7. Transfer 415 µL lysate into well 1 of the cartridge.

Procedure on QIAmini

1. Turn on QIAmini.
2. Select the desired protocol.

   Note: A list of all imported protocols is available in the Run menu list view.

   Note: For detailed protocol descriptions and the latest overview of all available QIAmini protocols, refer to the *QIAmini Protocol Overview* (**www.qiagen.com/HB- 3870**), available for download separately.
3. Open the instrument door. Load the cartridge frame holding the cartridge(s) into the instrument.

   Note: Ensure that the cartridge frame is placed in correct orientation. Press the cartridges down to fully engage with the heater block.
4. Slide rod cover(s) into the rod cover holder.

   Note: Press the clip down to allow full insertion of the rod cover holder.
5. Close the instrument door, press ▶, and confirm that consumables have been installed correctly to initiate the protocol run.
6. The display shows "End of run" when the run is completed. Select **Confirm** and press ⏎.
7. Open the instrument door. Remove and discard the rod cover(s). Then remove the cartridge frame holding the cartridge(s) and transfer the purified nucleic acids from well 5 of each cartridge into a new reaction tube (e.g., 1.5 mL tube). Discard the cartridge(s).

   Recommended: Clean the instrument and perform a UV decontamination of the instrument chamber.

Troubleshooting Guide

This troubleshooting guide may be helpful in solving any problems that may arise. For more information, see also the Frequently Asked Questions page at our Technical Support Center: **www.qiagen.com/FAQ/FAQList.aspx** (for contact information, visit **support.qiagen.com**).

	Comments and suggestions
General handling	
Loss of reagents	To resuspend the magnetic particles, make sure to flick down the cartridges to deposit the reagents at the bottom of the wells.
Low DNA yield	
Mixing after addition of Buffer AL not sufficient	Make sure to mix thoroughly after adding Buffer AL, either by vortexing or by pipetting up and down. The lysate should turn dark red completely and no different phases should be visible.
Magnetic particles not completely resuspended	Ensure that you resuspend the magnetic particles either by thoroughly vortexing or by shaking until no precipitate is visible at the bottom of the bottle.
Frozen samples were not mixed properly after thawing	Thaw frozen blood or buffy coat samples at room temperature, with mild agitation to ensure thorough mixing.
Blood sample is clotted	Ensure that the tubes used to collect and store whole blood contain EDTA, ACD, or heparin as anticoagulant. Follow the instructions of the collection tube provider. Fresh blood can be stored at 2–8°C for up to 10 days. Frozen blood should be in tubes containing EDTA. It can keep for more than 10 days if stored at –70°C to –80°C.
DNA does not perform well in downstream applications	
Insufficient DNA used in downstream application	Quantify the purified DNA by spectrophotometric measurement of the absorbance at 260 nm.
Excess DNA used in downstream application	Excess DNA can inhibit some enzymatic reactions. Quantify the purified DNA by spectrophotometric measurement of the absorbance at 260 nm.
Inhibition of downstream application	Downstream applications may show superior performance if an 80% ethanol wash is performed instead of washes using buffers in the reagent cartridges.

	Comments and suggestions
Poor storage conditions led to poor-quality DNA	For storage of up to 10 days, collect blood in tubes with EDTA as anticoagulant, and store the tubes at 2–8°C. However, for applications requiring maximum fragment size, such as Southern blotting, we recommend storage at 2–8°C for up to 3 days only, because low levels of DNA degradation will occur after this time. For storage longer than 10 days, collect blood in tubes containing a standard anticoagulant (preferably EDTA, if high-molecular-weight DNA is required), and store the tubes at –70°C to –80°C. Do not use blood that shows signs of coagulation. Fresher blood samples may yield better results. Follow the collection tube provider's instructions.
DNA contaminated with RNA	Repeat the purification procedure with new samples and include an RNase A treatment in step 2.
Low A_{260}/A_{280} ratio for purified nucleic acids	
Absorbance reading at 320 nm not subtracted from the absorbance readings obtained at 260 and 280 nm	To correct for the presence of magnetic particles in the eluate, an absorbance reading at 320 nm should be taken and subtracted from the absorbance readings obtained at 260 and 280 nm.
Low DNA yield from buffy coat	
Clogging due to sample overload	Reduce the amount of sample. The maximum recommended amount of cells to use as starting material is 5×10^6.
Poor buffy coat preparation	Ensure that the leukocyte fraction is harvested efficiently.
Low leukocyte count in the whole blood sample	Increase whole blood amount and keep the volume of leukocytes harvested constant.
Beads in eluate	
Too much input material used	Adhere to the instructions regarding sample material, and carry out initial tests with lower amounts. Too much material may increase viscosity of the sample that can impact bead handling throughout the protocol.

Ordering Information

Product	Contents	Cat. no.
QIAmini DNA Blood Kit (48)	For the isolation of DNA from whole blood	590105
Related products		
QIAmini	Benchtop instrument for automated isolation of nucleic acids; includes 1 year warranty on parts and labor	Varies*
QIAmini Rod Covers (2)	Set of 2 rod cover frames for use with QIAmini	1137997
Buffer ATL (4 ×50 mL)	4 × 50 mL Tissue Lysis Buffer for use in purification of nucleic acids	939011
RNase A (17,500 U)	2.5 mL solution for removal of RNA	19101

* Contact your QIAGEN sales team or local distributor to determine the instrument available in your country.

For up-to-date licensing information and product-specific disclaimers, see the respective QIAGEN kit instructions for use or user manual. QIAGEN kit instructions for use and user manuals are available at **www.qiagen.com** or can be requested from QIAGEN Technical Service or your local distributor.

Document Revision History

Date	Description
08/2026	Initial release

Limited License Agreement for QIAmini DNA Blood Kit

Use of this product signifies the agreement of any purchaser or user of the product to the following terms:

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