MGI

MGIEasy

DNA Clean Beads User Manual

Cat. No.: 1000005278, 1000005279

Kit Version: V1.0

Manual Version: A1

Revision History

Manual Version	Kit Version	Date	Description
A1	V1.0	Jan. 2021	• Update contact information.
A0	V1.0	Mar. 2019	• Initial release.

Note: Please download the latest version of the manual and use it with the corresponding kit.

Search manual by Cat. No. or product name from website:

https://en.mgi-tech.com/download/files.html

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Chapter 1 Product Description

1.1 Introduction

MGIEasy DNA Clean Beads are used for purification and size selection of DNA samples. With our optimized buffer system, DNA products more than 100bp in length can be very efficiently recovered. MGIEasy DNA Clean Beads are compatible with a variety of vendors' DNA and RNA library construction kits. They can be used in exactly the same way as AMPure XP Beads. The PCR yield and fragment size distribution of the constructed libraries following MGIEasy DNA Clean Beads usage are consistent with those following AMPure XP Beads usage. AMPure XP Beads can be directly replaced by MGIEasy DNA Clean Beads.

1.2 Application

MGIEasy DNA Clean Beads are used for DNA and RNA purification.

1.3 Contents

Table 1 MGIEasy DNA Clean Beads

Components	Cat. No.& Spec	
	1000005278	1000005279
DNA Clean Beads	1× 8 mL	1× 50 mL
TE Buffer	1× 4 mL	1× 25 mL

1.4 Storage Conditions and Shelf Life

MGIEasy DNA Clean Beads

- Storage Temperature: 2°C to 8°C
- Production Date and Expiration Date: refer to the label.
- Transport Conditions: transported with ice packs.

* Please ensure that an abundance of dry ice or ice packs remains after transportation.

* Performance of products is guaranteed until the expiration date, under appropriate transport, storage, and usage conditions.

1.5 Equipment and Materials Required but not Provided

Table 2 Equipment and Materials Required but not Provided

Equipment	Vortex Mixer
	Benchtop Centrifuge
	Pipets
Reagents	Nuclease free water (NF water) (Ambion, Cat. No. AM9937)
	100% Ethanol (Analytical Grade)
Consumables	Pipette Tips
	1.5 mL centrifuge tubes (Axygen, Cat. No. MCT-150-C)
	0.2 mL PCR tubes (Axygen, Cat. No. PCR-02-C)

Chapter 2 Protocol

2.1 Size Selection

Refer to the recommended size selection conditions in Appendix B. As an example, using a 0.8× first selection + a 0.2×second selection with DNA Clean Beads for a 50 μL fragmentation product will result in a peak fragment size of 280 bp. The detailed operation steps of this example are as follows. If using a different set of recommended size selection steps or if using different volume of fragmentation product other than 50 μL, please adjust the volume of DNA Clean Beads used accordingly.

⚠ **Note: Please read Appendix A carefully before you begin.**

2.1.1 Remove DNA Clean Beads from the refrigerator and allow 30 minutes for the solution to come to room temperature. Vortex and mix thoroughly before use.

2.1.2 Transfer 40 μL (adjust volume according to Table 3 First Selection) of DNA Clean Beads to a 1.5 mL centrifuge tube containing 50 μL of fragmentation product. Pipette up and down at least 10 times to mix thoroughly. Ensure that all of the liquid and beads are fully dispensed from the pipette tip into the centrifuge tube before proceeding.

2.1.3 Incubate at room temperature for 5 minutes.

2.1.4 Centrifuge briefly and place the tube onto the Magnetic Separation Rack for 2-5 minutes until the liquid becomes clear. Then, carefully transfer the supernatant to a new 1.5 mL centrifuge tube.

⚠ **Note: Retain the supernatant and discard the Beads.**

2.1.5 Transfer 10 μL (adjust volume according to Table 3 Second Selection) of DNA Clean Beads to the centrifuge tube containing 80 μL of supernatant. Pipette at least 10 times to mix thoroughly.

2.1.6 Incubate at room temperature for 5 minutes.

2.1.7 Centrifuge briefly and place the tube onto a Magnetic Separation Rack for 2-5 minutes until the liquid becomes clear. Carefully remove and discard the supernatant with a pipette.

2.1.8 Keep the centrifuge tube on the Magnetic Separation Rack and add 200 μL of freshly prepared 80% ethanol to wash the beads and the walls of the tube. Carefully remove and discard the supernatant.

2.1.9 Repeat step 2.1.8 and try to remove all of the liquid from the tube.

2.1.10 Keep the centrifuge tube on the Magnetic Separation Rack with the lid open and air-dry the beads until they no longer appear shiny but before the bead pellet starts to crack.

2.1.11 Remove the centrifuge tube from the Magnetic Separation Rack and add 42 μL of TE Buffer to elute the DNA. Pipette up and down at least 10 times to mix thoroughly.

2.1.12 Incubate at room temperature for 5 minutes.

2.1.13 Centrifuge briefly and place the tube onto a Magnetic Separation Rack for 2-5 minutes until the liquid becomes clear. Carefully transfer 40 μL of supernatant to a new 0.2 mL PCR tube.

2.2 DNA Cleanup Procedures

Using 1×DNA Clean Beads for 50 μL of fragmentation product, DNA above 150 bp in size can be purified. The detailed operation steps are as follows.

⚠ **Note: Please read Appendix A carefully before you begin.**

2.2.1 Remove DNA Clean Beads from the refrigerator and allow 30 minutes for the solution to come to room temperature. Vortex and mix thoroughly before use.

2.2.2 Transfer 50 μL of DNA Clean Beads to the 1.5 mL centrifuge tube containing 50 μL of fragmentation product. Pipette up and down at least 10 times to mix thoroughly. Ensure that all of the liquid and beads are fully dispensed from the pipette tip into the tube before proceeding.

2.2.3 Incubate at room temperature for 5 minutes.

2.2.4 Centrifuge briefly and place the tube onto a Magnetic Separation Rack for 2-5 minutes until the liquid becomes clear. Carefully remove and discard the supernatant with a pipette.

2.2.5 Keep the tube on the Magnetic Separation Rack and add 200 μL freshly prepared 80% ethanol to wash the beads and the walls of the tube. Incubate for 30 seconds, then carefully remove and discard the supernatant.

2.2.6 Repeat step 2.2.5 once, remove all of the liquid from the tube without disrupting the beads. You may centrifuge briefly to collect any remaining liquid at the bottom of the centrifuge tube, separate the beads magnetically and then remove any remaining liquid using a small volume pipette.

2.2.7 Keep the centrifuge tube on the Magnetic Separation Rack with the lid open, and air-dry beads at room temperature until no wetness (reflectiveness) is observed but before the pellet begins to crack.

2.2.8 Remove the centrifuge tube from the Magnetic Separation Rack and add **42 µL of** TE Buffer to elute the DNA. Pipette up and down at least 10 times to mix thoroughly.

2.2.9 Incubate at room temperature for 5 minutes.

2.2.10 Centrifuge briefly and place the centrifuge tube back onto the Magnetic Separation Rack for 2–5 minutes until the liquid becomes clear. Transfer **40 µL of** supernatant to a new 0.2 mL PCR tube.

Appendix

Appendix A Guidelines for MGIEasy DNA Clean Beads Usage

Before You Use

- To ensure capture efficiency of the Magnetic Beads, remove the beads from 4°C refrigerator storage, and equilibrate at room temperature for 30 minutes before use. Vortex and mix thoroughly before use.
- Vortex or pipette up and down to ensure that the beads are thoroughly mixed before each use.
- The volume of the beads determines the lower limit of fragment size that can be purified.

Operation Notes

- If the sample volume decreases due to evaporation during incubation, add additional TE buffer to reach the designated volume before using the beads to purify. This ensures that the correct ratio for the beads is used.
- In the magnetic separation step, please allow the solution to become completely clear before removing the supernatant. This process takes approximately 2-3 minutes. Consider the different magnetic strength of your specific Separation Plate or Rack and allow enough time for the solution to turn completely clear.
- Avoid touching the beads with the pipette tips when pipetting. 2-3 µL of fluids can be left in the tube to avoid contact. In the event of contact between the beads and the pipette tip, expel all of the solution and beads back into the tube and restart the separation process.
- Use freshly prepared 80% ethanol (at room temperature) to wash the beads. Keep the centrifuge tube on the Magnetic Separation Rack when washing with ethanol. Do not shake or disturb the beads in any way.
- After the 2nd ethanol wash, try to remove all of the liquid from within the tube. You may centrifuge briefly to collect any remaining liquid at the bottom of the tube. Then separate the beads magnetically and remove the remaining liquid by using a small volume pipette.
- After washing twice with ethanol, air-dry the beads at room temperature. Drying takes approximately 2-5 minutes depending on your specific lab environment. Watch closely until the pellet appears sufficiently dry with a matte appearance, then continue to the elution step with TE Buffer.
- During the elution step, do not touch the beads with the pipette tips when removing the supernatant. Contamination of DNA by the beads may affect subsequent purification. Therefore, the total volume of

TE buffer and beads should be 2 μL more than the volume of the supernatant.

- Pay attention when opening and closing the lids of the centrifuge tubes on the Separation Rack. Strong vibrations may cause sample loss by spilling liquid or beads from the tubes. Secure the tubes before opening the lids.

Appendix B Size Selection conditions for reference

Table 3 Recommended Size Selection Conditions

Target Peak Fragment Size (bp)	180	230	280	335	420	550
First Selection (×)	1.0	0.9	0.8	0.7	0.6	0.5
Second Selection (×)	0.5	0.2	0.2	0.2	0.2	0.2

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