Xpert DNA Magnetic Beads

#GK29.0025 (25 ml) | GK29s (trial size)
(FOR RESEARCH ONLY)

Product: Xpert DNA Magnetic Beads consists of paramagnetic particles coated with carboxyl groups that reversibly bind DNA (Solid Phase Reversible Immobilization). The magnetic beads are supplied in a buffer that has been optimized in order to selectively and reversibly bind DNA fragments of 100bp and larger. This allows for easy PCR clean-up, as primers, primer-dimers, dNTPs, enzymes, excess salts, and other impurities can be removed quickly and efficiently by a simple washing procedure. Because this purification method does not require centrifugation or vacuum filtration, it can be readily adapted to 96-well or 384-well microplate automation platforms. Moreover, these beads can be seamlessly integrated into NGS Library preparation workflows.

Applications: PCR clean-up, Cloning, Fragment Analysis, Genotyping, High-throughput, NGS Library preparation, and other downstream applications requiring highly purified DNA.

Content: #GK29.0025 contains 25 ml of Xpert DNA Magnetic Beads, which is sufficient for 695 samples of 20µl, 2,780 samples of 5µl or 6,950 samples of 2µl. (standard protocol using ratio of 1.8x). #GK29s is a trial sample (1ml).

Component	GK29.0025	GK29s
Xpert DNA Magnetic Beads	25 ml	1 ml

Additional required materials or reagents (not included): 70% ethanol, nuclease-free water, 10mM Tris-Acetate pH 8.0 or TE Buffer and a magnetic separation rack (for tubes or 96-well plates).

Storage: Store tightly sealed at 2 to 8ºC, protected from light, for up to 1 year. DO NOT freeze.

Prior to use

Ensure that Xpert DNA Magnetic Beads have been warmed up to room temperature (~30 min). Prepare sufficient 70% ethanol for the washing steps. Note that 70% ethanol is hygroscopic and should therefore be prepared freshly.
Immediately before use, resuspend any beads that may have settled by shaking the bottle vigorously. In case of processing large amounts of samples, repeat shaking regularly.

Basic Protocol

This basic protocol for PCR purification using either 96-well or 384-well microplates is based on a beads-to-DNA ratio of 1.8 (e.g., 36µl of beads per 20µl of sample), however, it can easily be adapted for different sample volumes and/or other ratios for size selection. For samples larger than 100µl, it is recommended to split the sample into more wells or use a 1.5-ml microcentrifuge tube with a corresponding magnetic separation rack.

DNA Purification

1. Add Xpert DNA Magnetic Beads to the DNA samples according to the tables below. For other volumes, simply modify proportionally using a beads-to-DNA ratio of 1.8

96-well microplate	
sample (µl)	beads (µl)
5	9
10	18
20	36
50	90
100	180

384-well microplate	
sample (µl)	beads (µl)
2	3.6
5	9
7	12.6
10	18
12.5	22.5

2. Mix thoroughly to a homogenous appearance by pipetting up and down the entire mixture 10 times. Allow for optimal DNA binding by incubation at room temperature for 5 minutes.
3. In order to separate the magnetic beads from the solution, place the microplate onto a magnetic separation rack for 5 minutes (Ensure the solution has becomes clear before proceeding to step 4).

   During steps 4 to 8 maintain the microplate on the magnetic separation rack at all times.
4. Carefully aspirate off the cleared solution and discard. Avoid disturbing the magnetic beads.
5. Dispense 70% ethanol to each well: 200µl/well in case of a 96-well plate or 30µl/well in case of a 384-well plate.
6. Incubate at room temperature for 30 seconds.
7. Carefully aspirate off the ethanol and discard. Avoid disturbing the magnetic beads.
8. Repeat steps 5-7 once, then allow the plate to air-dry for 3-5 minutes to remove any residual ethanol.

9. Remove the microplate from the magnetic rack and elute DNA with 10-50µl/well (as desired) of elution buffer (e.g., nuclease-free water, TE, 10mM Tris-HCl pH 8.0 or 10mM Tris-acetate pH 8.0).
10. Mix thoroughly by pipetting up and down the entire mixture 10 times.
11. Incubate at room temperature for 2-5 minutes.
12. Place the microplate back onto the magnetic separation rack for 5 minutes.
13. Carefully transfer the eluent to a new plate. In case of carryover of beads, repeat step 12 and transfer into another new plate (or tube).
14. Store purified DNA at -20ºC or proceed with downstream application.

Size Selection

This basic protocol is optimized for PCR Clean-up. Xpert DNA magnetic beads can also be used for other applications by using different beads:DNA volume ratios. In general, the higher the ratio the smaller the fragments that are captured. For example, using a ratio of 0.6x instead of 1.8x would results in the removal of DNA fragments smaller than 200bp (instead of smaller than 100bp), or alternatively the removal of DNA fragments that are larger than 200bp if the unbound fraction was retained. A 0.9x ratio is effective at removing primers or adapter dimers of under 100bp compared to unpurified samples and hence useful for NGS library preparation applications.