

# ChargeSwitch<sup>®</sup> PCR Clean-Up Kit

Catalog no. CS12000

Quantity: 100 reactions

## Description

### Shipping and Storage

The ChargeSwitch<sup>®</sup> PCR Clean-Up Kit is shipped at room temperature. Upon receipt, store all components at room temperature.

All components are guaranteed stable for 6 months when stored properly.

### Kit Contents

The components supplied in the ChargeSwitch<sup>®</sup> PCR Clean-Up Kit are listed below. The reagents supplied are sufficient to perform 100 purifications.

Product	Contents
ChargeSwitch <sup>®</sup> Magnetic Beads (25 mg/ml in 10 mM MES, pH 5.0, 10 mM NaCl, 0.1% Tween 20)	1 ml
ChargeSwitch <sup>®</sup> Purification Buffer (N5)	8 ml
ChargeSwitch <sup>®</sup> Wash Buffer (W12)	40 ml
ChargeSwitch <sup>®</sup> Elution Buffer (E5; 10 mM Tris-HCl, pH 8.5)	10 ml

**Note:** Some reagents in the kit may be provided in excess in the amount needed.

### Description

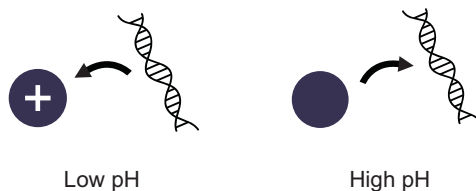
The ChargeSwitch<sup>®</sup> PCR Clean-Up Kit allows rapid and efficient purification of PCR products from salts, primers, dNTPs, and other non-nucleic acid reagents.

After PCR, the PCR product is purified in less than 10 minutes using the ChargeSwitch<sup>®</sup> Technology without the use of a centrifuge or organic solvents. For more information on the Charge Switch<sup>®</sup> Technology, see below.

The kit is designed for the purification of DNA fragments ranging in size from 90 bp-40 kb and the purified PCR product is suitable for any downstream applications of choice.

### The ChargeSwitch<sup>®</sup> Technology

The ChargeSwitch<sup>®</sup> Technology is a novel magnetic bead-based technology providing a switchable surface that is charge dependent on the surrounding buffer pH to facilitate nucleic acid purification. In low pH conditions, the ChargeSwitch<sup>®</sup> Magnetic Beads have a positive charge and binds the negatively charged nucleic acid backbone (see figure below). Proteins and other contaminants are not bound and are washed away using the wash buffer. To elute nucleic acids, the charge on the surface is neutralized by raising the pH to 8.5 using a low salt elution buffer (see figure below). Purified DNA elutes instantly into this elution buffer.



### System Specifications

Starting Material:	25-50 µl PCR sample
DNA Fragment Size:	90 bp to 40 kb
Bead Binding Capacity:	1 mg beads bind ~25 µg DNA
Elution Volume:	50 µl

Part No. 25-0823.pps

Rev. Date: 28 Sep 2006

# Purifying PCR Products

## Safety Information

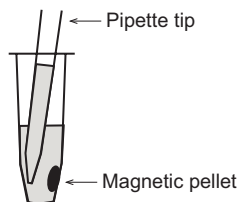
Follow the safety guidelines below when using the ChargeSwitch® Kit.

- Treat all reagents supplied in the kit as potential irritants.
- Always wear a suitable lab coat, disposable gloves, and protective goggles.
- If a spill of the buffers occurs, clean with a suitable laboratory detergent and water. If the liquid spill contains potentially infectious agents, clean the affected area first with laboratory detergent and water, then with 1% (v/v) sodium hypochlorite or a suitable laboratory disinfectant.

## Handling Magnetic Beads

Follow the recommendations below for best results:

- During the mixing, washing, and resuspending steps of the ChargeSwitch® Magnetic Beads, mix beads by pipetting up and down gently as directed in the protocol.
- Always mix the contents by pipetting up and down gently to avoid forming bubbles after bead addition.
- Do not allow the beads to dry as drying reduces the bead binding efficiency.
- To aspirate the supernatant after bead washing, place the pipette tip away from the beads by angling the pipette such that the tip is pointed away from the pellet and carefully remove the supernatant without disturbing or removing any beads (see figure below).



- **Do not freeze the magnetic beads**, as frozen beads cannot be used for nucleic acid purifications.

## Materials Needed

- 25-50 µl PCR sample
- MagnaRack™ Magnetic Rack (cat. no. CS15000)
- Sterile 1.5 ml microcentrifuge tubes
- Adjustable pipettes and aerosol barrier pipette tips

*Components supplied with the kit*

- ChargeSwitch® Magnetic Beads
- ChargeSwitch® Purification Buffer (N5)
- ChargeSwitch® Wash Buffer (W12)
- ChargeSwitch® Elution Buffer (E5)



### Note

Instructions are provided on the next page to purify the PCR product from 25-50 µl PCR sample. If you wish to process >50 µl of PCR sample, be sure to scale-up the volume of all reagents accordingly.

## Purifying PCR Products, Continued

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### Binding DNA

1. Vortex the tube containing the ChargeSwitch® Magnetic Beads to fully resuspend and evenly distribute the beads in the storage buffer.
  2. Transfer 25-50 µl PCR sample to a sterile 1.5 ml microcentrifuge tube.
  3. Add 25 µl (for 25 µl PCR sample) or 50 µl (for 50 µl PCR sample) Purification Buffer (N5) to the tube.
  4. Add 10 µl ChargeSwitch® Magnetic Beads to the tube and pipet up and down gently to mix without forming bubbles.
  5. Incubate at room temperature for 1 minute.
  6. Place the sample on the MagnaRack™ for 1 minute or until the beads form a tight pellet.
  7. Without removing the tube from the MagnaRack™, carefully remove and discard the supernatant without disturbing the pellet of beads by angling the pipette such that the tip is pointed away from the pellet (see figure on previous page).
  8. Proceed immediately to **Washing DNA**, below.
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### Washing DNA

1. Remove the tube containing the pelleted magnetic beads from the MagnaRack™ (above).
  2. Add 150 µl Wash Buffer (W12) to the tube and pipet up and down gently to mix the sample without forming bubbles.
  3. Place the sample on the MagnaRack™ for 1 minute or until the beads form a tight pellet.
  4. Without removing the tube from the MagnaRack™, carefully remove and discard the supernatant without disturbing the pellet of beads by angling the pipette such that the tip is pointed away from the pellet (see figure on previous page).
  5. **Repeat** Steps 1-4 once.
  6. Proceed immediately to **Eluting DNA**, below.
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### Eluting DNA

1. Remove the tube containing the pelleted magnetic beads from the MagnaRack™ (above).
  2. Add 25-50 µl Elution Buffer (E5; 10 mM Tris-HCl, pH 8.5) to the tube and pipet up and down gently to mix the sample without forming bubbles.
  3. Incubate at room temperature for 1 minute.
  4. Place the sample on the MagnaRack™ for 1 minute or until the beads form a tight pellet.
  5. Without removing the tube from the MagnaRack™, carefully transfer the **supernatant containing the purified PCR product** to a sterile microcentrifuge tube without disturbing the pellet of beads.
  6. Store the purified PCR product at -20°C or use the PCR product in the downstream application of choice.
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### Trouble-shooting

Review the information below to troubleshoot your experiments.

Problem	Cause	Solution
Low DNA yield	PCR conditions not optimal	Check amplicon on gel to verify the PCR product prior to purification.
	Incorrect binding conditions	Use 25-50 µl Purification Buffer (N5) for sample preparation.
	Incorrect elution conditions	After adding Elution Buffer (E5) to the sample, pipet up and down to resuspend the magnetic beads before incubation.

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# Product Qualification and Purchaser Notification

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## Functional Qualification

Each kit is functionally tested to ensure conformance with the most current approved product specifications.

Current specifications consist of tests for:

- Bead size, charge, and binding capacity
- Nucleic acid quality and quantity
- Buffer turbidity, volume, and absence of RNases and DNases
- Kit packaging and labeling accuracy

For individual lot test results and more information, visit [www.invitrogen.com](http://www.invitrogen.com) to download the Certificate of Analysis.

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## Accessory Products

The table below lists additional products available from Invitrogen that may be used with the ChargeSwitch® PCR Clean-Up Kit.

<u>Product</u>	<u>Quantity</u>	<u>Catalog no.</u>
MagnaRack™ Magnetic Rack	1 rack	CS15000
ChargeSwitch® PCR Clean-Up Kit	960 purifications	CS12000-10
Quant-iT™ DNA Assay Kit, High Sensitivity	1000 assays	Q33120
Quant-iT™ DNA Assay Kit, Broad Range	1000 assays	Q33130
Quant-iT™ PicoGreen® dsDNA Assay	1 kit	P7589

A large selection of ChargeSwitch® products is available from Invitrogen for plasmid and genomic DNA purification from various sources.

E-Gel® Agarose Gels are bufferless pre-cast agarose gels designed for fast, convenient electrophoresis of DNA samples. E-Gel® agarose gels are available in different agarose percentages and well formats. A large variety of DNA ladders is available from Invitrogen for sizing DNA.

For more information on these products, visit [www.invitrogen.com](http://www.invitrogen.com) or contact Technical Support.

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## Purchaser Notification

### Limited Use Label License No. 5: Invitrogen Technology

The purchase of this product conveys to the buyer the non-transferable right to use the purchased amount of the product and components of the product in research conducted by the buyer (whether the buyer is an academic or for-profit entity). The buyer cannot sell or otherwise transfer (a) this product (b) its components or (c) materials made using this product or its components to a third party or otherwise use this product or its components or materials made using this product or its components for Commercial Purposes. The buyer may transfer information or materials made through the use of this product to a scientific collaborator, provided that such transfer is not for any Commercial Purpose, and that such collaborator agrees in writing (a) not to transfer such materials to any third party, and (b) to use such transferred materials and/or information solely for research and not for Commercial Purposes. Commercial Purposes means any activity by a party for consideration and may include, but is not limited to: (1) use of the product or its components in manufacturing; (2) use of the product or its components to provide a service, information, or data; (3) use of the product or its components for therapeutic, diagnostic or prophylactic purposes; or (4) resale of the product or its components, whether or not such product or its components are resold for use in research. Invitrogen Corporation will not assert a claim against the buyer of infringement of patents owned or controlled by Invitrogen Corporation which cover this product based upon the manufacture, use or sale of a therapeutic, clinical diagnostic, vaccine or prophylactic product developed in research by the buyer in which this product or its components was employed, provided that neither this product nor any of its components was used in the manufacture of such product. If the purchaser is not willing to accept the limitations of this limited use statement, Invitrogen is willing to accept return of the product with a full refund. For information on purchasing a license to this product for purposes other than research, contact Licensing Department, Invitrogen Corporation, 1600 Faraday Avenue, Carlsbad, California 92008. Phone (760) 603-7200. Fax (760) 602-6500. Email: [outlicensing@invitrogen.com](mailto:outlicensing@invitrogen.com)

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