



**ZYMO RESEARCH**

*The Beauty of Science is to Make Things Simple*

# INSTRUCTION MANUAL

## **DNA Clean & Concentrator™-500**

Catalog Nos. D4031 & D4032

### **Highlights**

- Simple, rapid recovery of ultra-pure DNA from large-scale sample sources.
- Unique column construction allows sample washing to be performed using a centrifuge or vacuum source.
- Column design allows DNA to be eluted at high concentrations into minimal volumes of water or TE buffer.
- Eluted DNA is well suited for use in PCR, DNA sequencing, DNA transfection, DNA ligation, endonuclease digestion, RNA transcription, radiolabeling, etc.

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For Laboratory Use Only

**ZYMO RESEARCH CORP.**

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## Product Contents

<b>DNA Clean &amp; Concentrator™-500</b> (Kit Size)	<b>D4031</b> (10 preps.)	<b>D4032</b> (20 preps.)	<b>Storage Temperature</b>
<b>DNA Binding Buffer</b>	100 ml	2 x 100 ml	Room Temp.
<b>DNA Wash Buffer*</b>	24 ml	48 ml	Room Temp.
<b>Zymo-Spin™ VI Columns</b>	10 columns	20 columns	Room Temp.
<b>Instruction Manual</b>	1	1	-

Note - Integrity of kit components is guaranteed for up to one year from date of purchase. Reagents are routinely tested on a lot-to-lot basis to ensure they provide maximal performance and reliability.

\* Ethanol must be added prior to use as indicated on **DNA Wash Buffer** label.

**Note:** Satisfaction of all Zymo Research products is guaranteed. If you should be dissatisfied with this product please call 1-888-882-9682.

## Typical DNA Clean & Concentrator™ (DCC™) Applications

- **Post-PCR DNA Clean-up:** Efficient desalting with the removal of DNA polymerases, primers, and free dNTPs.
- **DNA Clean-up from Enzymatic Reactions:** Efficient desalting with the removal of DNA and RNA polymerases, modifying enzymes, ligases, kinases, nucleases, phosphatases, endonucleases, etc.
- **Post-Reverse Transcription (RT) & cDNA Clean-up:** Efficiently purifies DNA following RT, either as a DNA/RNA complex or as single stranded cDNA following chemical hydrolysis of the RNA Template.
- **Plasmid DNA Clean-up:** The DCC™ can be used to purify plasmid DNA from cell-free lysates from “home-made” preparations or from commercial kits. Plasmid DNA, purified and concentrated using the DCC™ has proven an excellent substrate for high quality sequencing.
- **Isotope and Dye Removal:** The DCC™ effectively removes unincorporated fluorescent (i.e., AMCA, FITC, BIO, DIG, Cy3, Cy5, FAME, Etc.) and radiolabeled dNTP derivatives from DNA following *in vitro* labeling reactions.
- **Purification of M13 ssDNA:** The DCC™ can be used for rapid isolation of single stranded M13 phage DNA directly from phage-infected *E.coli* culture supernatant.

Note - ™ Trademarks of Zymo Research Corporation. This product is for research use only and should only be used by trained professionals. Some reagents included with this kit are irritants. Wear protective gloves and eye protection. Follow the safety guidelines and rules enacted by your research institution or facility.

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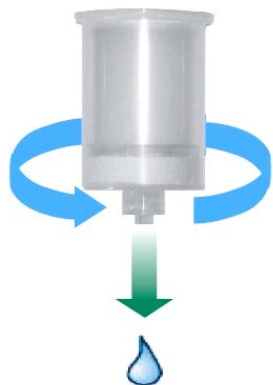
## Product Description

Zymo Research's **DNA Clean & Concentrator™-500 (DCC™-500)** was designed for the rapid, large format purification and concentration of up to 500 µg of high quality DNA from samples including large-scale restriction endonuclease digestions and "crude" DNA preparations. The **DCC™-500** features a single-buffer system that allows for efficient DNA adsorption onto the matrix of the supplied **Zymo-Spin™ VI column**. Simply add the specially formulated **DNA Binding Buffer** to your samples and transfer the mixtures to the supplied **Zymo-Spin™ VI Column**. There is no need for organic denaturants or chloroform. The DNA is washed twice using a centrifuge or vacuum source, then eluted with small volume ( $\geq 2$  ml) of water using a centrifuge. DNA purified using the **DCC™-500** is suitable for nucleotide sequencing, array analysis, PCR, nucleotide blotting, restriction endonuclease digestion procedures, or any other downstream applications requiring high quality DNA.

The entire DNA purification/concentration procedure typically takes less than 20 minutes.

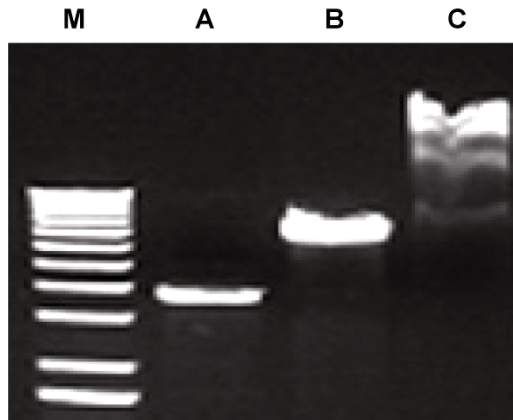
For Technical Assistance, please contact those at **Zymo Research's Technical Department** at 1-888-882-9682 or E-mail to [tech@zymoresearch.com](mailto:tech@zymoresearch.com).

### Elute DNA using a centrifuge



#### Ultra-pure DNA for:

- Sequencing
- DNA Transfection
- Endonuclease Digestion
- Cloning
- Etc.



Ultra-pure DNA from the **DNA Clean & Concentrator™** can be easily ligated for efficient cloning. Lanes: A: 3.5 kb blunt-ended vector; B: 7.4 kb blunt-ended DNA insert; C: Blunt-end ligation of A+B mixture.

## Specifications

- **Format:** Spin Column.
- **DNA Purity:** High-quality, purified DNA is eluted with water and is especially well suited for sequencing, ligation reactions, and restriction endonuclease digestions.
- **DNA Size Limits:** From 75 bp to 23 kb.
- **DNA Recovery:** Typically,  $\leq 500 \mu\text{g}$  total DNA can be eluted with  $\geq 2 \text{ ml}$  water or low salt elution buffer. For DNA 75 bp to 10 kb, the recovery is 70-90%. For DNA 11 kb to 23 kb, the recovery is 50-70%.
- **Sample Sources:** DNA from PCR, restriction endonuclease digestions, plasmid preparations, kinase reactions, etc.
- **Product Detergent Tolerance:**  $\leq 5\%$  Triton X-100,  $\leq 5\%$  Tween-20,  $\leq 5\%$  Sarkosyl,  $\leq 0.1\%$  SDS.
- **Equipment:** Centrifuge and vacuum source (optional).

**Loading and washing the Zymo-Spin™ VI Column can be performed using any combination of the following:**



**Centrifuge:** Zymo-Spin™ VI Column inside a 50 ml conical tube.



**Vacuum:** Zymo-Spin™ VI Column connected to a vacuum manifold.

## Reagent Preparation

Before starting, add 96 ml 100% ethanol to the 24 ml **DNA Wash Buffer** concentrate to obtain the final **DNA Wash Buffer** solution.

## Spin Protocol

1. Place the **Zymo-Spin™ VI Column** inside a 50 ml conical tube (see image on page 3). In a separate tube, add two volumes of **DNA Binding Buffer** to each volume of DNA sample. (e.g., 4 ml **DNA Binding Buffer** to 2 ml DNA sample). Mix briefly by vortexing then pour the sample mixture into the **Zymo-Spin™ VI Column**.

**Note:** The maximum capacity of the **Zymo-Spin™ VI Column** is 15 ml. If the total volume of sample and buffer is greater, load the column repeatedly.

2. Centrifuge at 4,000 rpm (~ 3,000 x g) for 5 minutes. Discard the flow-through.
3. Add 5 ml **Wash Buffer** to the **Zymo-Spin™ VI Column**. Centrifuge the **Zymo-Spin™ VI Column** at 4,000 rpm (~ 3,000 x g) for 5 minutes. Discard the flow-through and repeat the wash step.
4. Transfer the **Zymo-Spin™ VI Column** into a new 50 ml conical tube. Add 2-3 ml water or low salt elution buffer directly to the column matrix in the **Zymo-Spin™ VI Column**. Wait for one minute to ensure that the column matrix has been fully hydrated prior to centrifugation at 4,000 rpm (~ 3,000 x g) for 3 minutes to elute the DNA.

Ultra-pure, concentrated DNA in water is now ready for use.

## Vacuum Protocol

1. Attach **Zymo-Spin™ VI column** to a suitable vacuum manifold (see image on page 3). In a separate tube, add two volumes of **DNA Binding Buffer** to each volume of DNA sample. Mix briefly by vortexing. Then, pour the mixture into the **Zymo-Spin™ VI column**. Turn on the vacuum source until all of the mixture has cleared the column.

**Note:** The maximum capacity of the **Zymo-Spin™ VI Column** is 15 ml. If the total volume of sample and buffer is greater, load the column repeatedly.

2. Add 5 ml **Wash Buffer** to the **Zymo-Spin™ VI Column**. Turn on the vacuum source until all of the mixture has cleared the column. Repeat wash step. After washing, leave the vacuum source “on” for an additional 5 minutes to remove any residual **Wash Buffer** from the column.
3. Transfer the **Zymo-Spin™ VI Column** into a new 50 ml conical tube. Add 2-3 ml water or low salt elution buffer directly to the column matrix in the **Zymo-Spin™ VI Column**. Wait for one minute to ensure that the column matrix has been fully hydrated prior to centrifugation at 4,000 rpm (~ 3,000 x g) for 3 minutes to elute the DNA.

Ultra-pure, concentrated DNA in water is now ready for use.

**Note:** Alternatively, add 104 ml of 95% ethanol to the 24 ml size of the **DNA Wash Buffer** concentrate.

**Note:** For ssDNA (e.g., single stranded cDNA), add 7 volumes to each volume of sample. For example, 350 µl **DNA Binding Buffer** to a 50 µl sample.

**Note:** Alternatively, you can wash once with 10 ml **Wash Buffer** and centrifuging at 4,000 rpm (~ 3,000 x g) for 5 minutes.

**Note:** Minimal elution volume of 2 ml results in a highly concentrated DNA sample. If a larger volume is desired, more water or elution buffer can be used for a less concentrated sample.

**Note:** Elution of DNA from the column is dependent on pH and temperature. If water is used, make sure the pH is >5.0. Waiting 1 minute after adding water to the column may improve the yield of larger (> 6 kb) DNA. For even larger DNA (> 10 kb) the total yield may be improved by eluting the DNA with 60-70°C water.

**Note:** TE buffer (10 mM Tris-HCl, 1 mM EDTA, pH 8.0) or modified TE (10 mM Tris, 0.1 mM EDTA, pH 8.5) can also be used for elution if required by your experiment.

**Ordering Information**

Product Description	Catalog No.	Kit Size
DNA Clean & Concentrator™-500	D4031	10 preps.
DNA Clean & Concentrator™-500	D4032	20 preps.

For Individual Sale	Catalog No.	Amount
DNA Binding Buffer	D4004-1-L	100 ml
DNA Wash Buffer (concentrate)	D4003-2-24	24 ml
	D4003-2-48	48 ml
Zymo-Spin™ VI Columns w/ Reservoirs	C1018-10	10 columns
	C1018-20	20 columns

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## Popular DNA Purification & Analysis Products from Zymo

Product	Description	Kit Size	Cat No. (Column Format)
<b>DNA Clean &amp; Concentrator™-5</b>	Clean and concentrate DNA from any reaction or “crude” preparation in 2 min. A 6 µl minimum elution volume allows for highly concentrated DNA. Designed for samples containing up to 5 µg of DNA.	50 Preps	<b>D4003</b> (uncapped)
		200 Preps	<b>D4004</b> (uncapped)
		50 Preps	<b>D4013</b> (capped)
		200 Preps	<b>D4014</b> (capped)
<b>ZR-96 DNA Clean &amp; Concentrator™-5</b>	Quick (15 minute), high-output recovery of pure DNA from PCR, endonuclease digestions, plasmid preparations, etc. 10-15 µl minimum elution volume allows for highly concentrated DNA. Designed for samples containing up to 5 µg of DNA.	2x96 Preps	<b>D4023</b>
		4x96 Preps	<b>D4024</b>
<b>DNA Clean &amp; Concentrator™-25</b>	Clean and concentrate DNA from any reaction in 2 min. 25 µl minimum elution volume allows for highly concentrated DNA. Designed for samples containing up to 25 µg of DNA.	50 Preps	<b>D4005</b>
		200 Preps	<b>D4006</b>
<b>Zymoclean Gel DNA Recovery Kit™</b>	Purify DNA from agarose gels in as little as 15 min. DNA sizes range from 75 bp to 23 Kb. 6 µl minimal elution volume (70-95% recovery rate).	50 Preps	<b>D4001</b>
		200 Preps	<b>D4002</b>
<b>ZR-96 Zymoclean Gel DNA Recovery Kit™</b>	High-output DNA purification from agarose gels in as little as 15 min. DNA sizes range from 75 bp to 23 Kb.	2x96 Preps	<b>D4021</b>
		4x96 Preps	<b>D4022</b>
<b>EZ DNA Methylation Kit™</b>	Streamlined kit for the conversion of unmethylated cytosines in DNA to uracil via the <u>chemical-denaturation</u> of DNA and a specially designed CT Conversion Reagent™. DNA is then desulphonated and subsequently cleaned using Fast-Spin column technology. No messy precipitations. Ultra-pure recovered DNA can be used for Methylation Specific PCR (MSP) and bisulfite sequencing applications.	50 Rxns	<b>D5001</b>
		200 Rxns	<b>D5002</b>
		2x96 Rxns	<b>D5003</b>
<b>EZ DNA Methylation-Gold Kit™</b>	Streamlined kit for the conversion of unmethylated cytosines in DNA to uracil via <u>heat-denaturation</u> of DNA and a specially designed CT Conversion Reagent™. DNA is then desulphonated and subsequently cleaned using Fast-Spin column technology. No messy precipitations. Ultra-pure recovered DNA can be used for Methylation Specific PCR (MSP) and bisulfite sequencing applications.	50 Rxns	<b>D5005</b>
		200 Rxns	<b>D5006</b>
		2x96 Rxns	<b>D5007</b>
<b>Pinpoint Slide DNA Isolation System™</b>	Recover genomic DNA from paraffin-embedded or fresh tissue sections for PCR. Ideal for isolating DNA from clinical tissue samples.	50 Preps	<b>D3001</b>
<b>ZR Genomic DNA I Kit™</b>	Genomic DNA isolation from whole blood, tissue culture cells, solid tissue and liquid samples. (Silica bead format is scalable to fit your requirements).	100 Preps	<b>D3004</b>
		400 Preps	<b>D3005</b>
<b>ZR Genomic DNA II Kit™</b>	Genomic DNA purification from whole blood, tissue culture cells, solid tissue and liquid samples. No requirement for beads or phenol chloroform.	50 Preps	<b>D3006</b>
		200 Preps	<b>D3007</b>
<b>ZR-96 Genomic DNA Kit™</b>	High-output genomic DNA purification from whole blood, tissue culture cells, solid tissue and liquid samples. No requirement for beads or phenol chloroform.	2x96 Preps	<b>D3010</b>
		4x96 Preps	<b>D3011</b>
<b>Zymoprep I™</b>	Efficient purification method for yeast plasmid DNA: Works well for library plasmid recovery from yeast two-hybrid screens.	100 Preps	<b>D2001</b>
<b>Zymoprep II™</b>	Efficient purification method for yeast plasmid DNA: Works well for library plasmid recovery from yeast two-hybrid screens.	50 Preps	<b>D2004</b>
<b>Zyppy Plasmid Miniprep I Kit™</b>	High-purity plasmid DNA purification in minutes: (alkaline lysis/Fast-Spin column format for low elution volume 40 µl).	100 Preps	<b>D4015</b>
		400 Preps	<b>D4016</b>
<b>Zyppy Plasmid Miniprep II Kit™</b>	High-purity plasmid DNA purification in minutes: (alkaline lysis/Fast-Spin column format for low elution volume 25 µl).	100 Preps	<b>D4019</b>
		400 Preps	<b>D4020</b>
<b>ZR Viral DNA Kit™</b>	Isolation of viral DNA from cell-free body fluids or sample mixtures containing cells at concentrations less than 10 <sup>5</sup> cells per ml.	50 Preps	<b>D3015</b>
		200 Preps	<b>D3016</b>
<b>ZR-96 Viral DNA Kit™</b>	High-output (96-well) isolation of viral DNA from cell-free body fluids or sample mixtures containing cells at concentrations less than 10 <sup>5</sup> cells per ml.	2x96 Preps	<b>D3017</b>
		4x96 Preps	<b>D3018</b>

\*Bulk quantities are available upon request. Please contact: [busdev@zymoresearch.com](mailto:busdev@zymoresearch.com) or call 1-888-882-9682 for assistance.

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