



**sartorius stedim**  
biotech

**Technical data and operating instructions**

**Vivacon<sup>®</sup> 2**

For in vitro use only



85034-535-54

## Vivacon® 2 ml – Introduction

### Storage conditions | shelf life

Vivacon® ultrafiltration spin columns should be stored at room temperature. The devices should be used before the expiry date printed on the box.

### Introduction

Vivacon® 2 concentrators are disposable ultrafiltration devices optimally suited for DNA concentration. For optimal performance with DNA samples, they are equipped with the patented regenerated cellulose membrane Hydrosart®.

Vivacon® 2 is suitable for sample volumes of 100 µl to 2 ml. Vivacon® 2 can effectively be used in a fixed angle rotor accepting 15 ml conical bottom tubes.

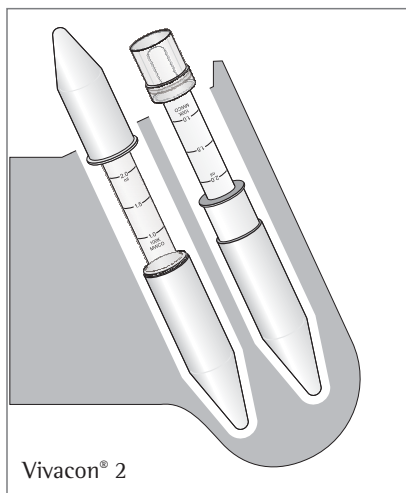
Vivacon® 2 is specifically designed with low internal surface and membrane area and allows a re-spin collection of the concentrate, in order to achieve superior recoveries from very dilute samples.

Vivacon® 2-PCR Grade units are treated with ethylene oxide (ETD) in a validated process in order deactivate all traces of DNA that might interfere with subsequent amplification procedures.

### Equipment required Vivacon® 2

Centrifuge	Vivacon® 2
Rotor type	Fixed angle
Minimum rotor angle	25°
Rotor cavity	To fit 17 × 120 mm   15 ml conical bottom tubes (recommended cavity depth 95 mm)

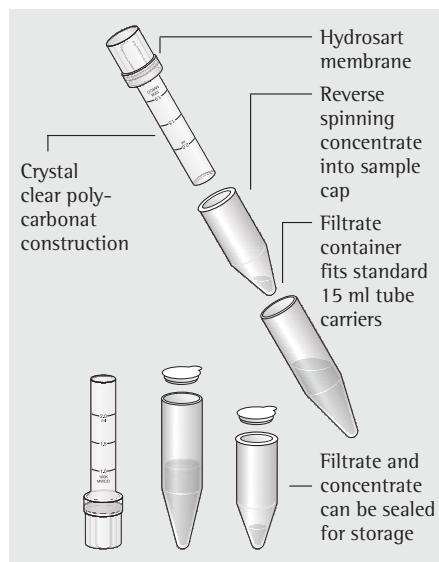
The backspin cap ridge must be below the top of the rotor cavity for correct support during centrifugation.



## Operation

1. When working with DNA samples, select a molecular weight cut off (MWCO) which retains the fragment size of double stranded DNA (ds DNA) as shown in Table 4. When working with proteins, select a MWCO at least 50% smaller than the molecular size of the protein of interest.
2. Fill concentrator with up to maximum volumes shown in Table 1. (Ensure lid is fully sealed).
3. Insert assembled concentrator into centrifuge.
4. Centrifuge at speeds recommended in Table 2, taking care not to exceed the maximum g force indicated by the MWCO.
5. Once the desired concentration is achieved, (see Table 3 for guide to concentration times), remove assembly and recover sample by reverse spinning the concentrate into the recovery cap. In this procedure remove filtrate tube, invert the concentrator body, insert concentrate recovery cap into filtrate tube and then spin at up to 2,500 g for 2 minutes. The concentrate recovery cap can be sealed for storage.

### Vivacon® 2 Reverse Spinning



### Desalting | Buffer Exchange

1. Concentrate sample to desired level.
2. Empty filtrate container.
3. Refill concentrator with an appropriate solvent.
4. Concentrate the sample again and repeat the process until the concentration of contaminating microsolutes is sufficiently reduced. Typically 3X wash cycles will remove 99% of initial salt concentration.

## Technical Specifications

**Table 1: Technical Specifications**

<b>Concentrator capacity</b>	<b>Vivacon® 2</b>
Fixed angle rotor	2.0 ml
<b>Dimensions</b>	
Total length (Concentration)	125 mm
Total length (Back-spin)	115 mm
Width	16 mm
Active membrane area	0.95 cm <sup>2</sup>
Hold-up volume	10 µl
Dead stop volume	55 µl (25° rotor)

### **Materials of construction**

Body	Polycarbonate
Filtrate vessel	Polypropylene
Back spin vial	Polypropylene
Concentrator cap	Polypropylene
Membrane	Hydrosart®
O-ring	Silicone

**Table 2: Recommended Spin Speed in Fixed Angle Rotor (x g)**

<b>Device</b>	<b>Vivacon® 2</b>
<b>Membrane cut off</b>	
2 kDa MWCO	7,500
10 kDa MWCO	5,000
30 kDa MWCO	2,500
50 kDa MWCO	2,500
100 kDa MWCO	2,500

## Usage Tips

### 1. Flow Rate

Filtration rate is affected by several parameters, including MWCO, porosity, sample concentration, viscosity, centrifugal force and temperature. Expect significantly longer spin times for starting solutions with over 5% solids. When operating at 4°C, flow rates are approximately 1.5 times slower than at 25°C. Viscous solutions such as 50% glycerine will take up to 5 times longer to concentrate than samples in a predominantly buffer solution.

### 2. Pre-rinsing

Membranes fitted to Vivacon® concentrators contain trace amounts of glycerine. Should these interfere with analysis, they can be removed by rinsing fill volume of buffer solution or deionised water through the concentrator. Decant filtrate and concentrate before processing sample solution. If you do not want to use the pre-rinsed device immediately, store it in the refrigerator with buffer or water covering the membrane surface. Please do not allow the membrane to dry out.

### 3. Sterilisation of Vivacon® Devices

Vivacon® devices should not be autoclaved as high temperatures will substantially increase membrane MWCO. To sterilise, use a 70% ethanol solution or sterilising gas mixture.

### 4. Chemical Compatibility

Vivacon® concentrators are designed for use with biological fluids and aqueous solutions.

For chemical compatibility details, please refer to Table 5.

### 5. Retention and Recovery

The membranes used in Vivacon® are characterized by a molecular weight cut off (MWCO). For proteins, it corresponds to their ability to retain 90% of a molecule with this nominal molecular weight. For achieving better recovery, use a MWCO which is  $\frac{1}{2}$  to  $\frac{1}{3}$  of the species weight you need to concentrate.

For nucleic acid applications, strand length is the most useful parameter for selecting the Vivacon® device appropriate for a specific application. However, other parameters including DNA concentration, the magnitude of the driving force (g-force) and the salt concentration all act in concert to affect DNA recovery. For characteristic recoveries and concentration times, see Table 3a and 3b. For the correlation between MWCO and nucleotide cut-off (bp), see Table 4.

## Performance Characteristics

**Table 3: Performance Characteristics Vivacon® 2**

Start volume 2 ml, sample concentration 50 ng/ml

	Sample size (bp)	Time to concentrate up to 30x [min.] at 20°C	Concentrate recovery %	g-force (xg)
2,000 MWCO	10	120 min	92%	7,500
10,000 MWCO	30	60 min	94%	5,000
30,000 MWCO	50	60 min	95%	2,500
50,000 MWCO	300	45 min	96%	2,500
100,000 MWCO	600	30 min	93%	2,500

**Table 4: Conversion Table for Hydrosart® MWCO to Nucleotide Cut-off**

Membrane	MWCO	Double-Stranded Nucleotide Cut-off (bp)
Hydrosart®	2 kDa	> 10
Hydrosart®	10 kDa	> 30
Hydrosart®	30 kDa	> 50
Hydrosart®	50 kDa	> 300
Hydrosart®	100 kDa	> 600

**Table 5: Chemical Compatibility (2hr contact time)**

<b>Compatible pH range</b>	<b>pH 1-9</b>
Acetic Acid (25.0%)	OK
Acetone (10.0%)	NO
Acetonitrile (10.0%)	NO
Ammonium Hydroxide (5.0%)	OK
Benzene (100%)	NO
Chloroform (1%)	OK
Dimethyl Formamide (10.0%)	NO
Dimethyl Sulfoxide (5.0%)	NO
Ethanol (70.0%)	OK
Ethyl Acetate (100%)	NO
Formaldehyde (30%)	OK
Formic Acid (5.0%)	OK
Glycerine (70%)	OK
Guanidine HCl (6 M)	OK
Hydrocarbons, aromatic	NO
Hydrocarbons, chlorinated	NO
Hydrochloric Acid (1 M)	OK
Isopropanol (70%)	OK
Lactic Acid (5.0%)	OK
Mercaptoethanol (1.0 M)	OK
Methanol (60%)	OK

<b>Compatible pH range</b>	<b>pH 1–9</b>
Nitric Acid (10.0%)	NO
Phenol (1%)	OK
Phosphate Buffer (1.0 M)	OK
Sodium Dodecylsulfate (0.1 M)	OK
Sodium Hydroxide (1.0 M)	NO
Sodium Hypochlorite (200 ppm)	NO
Sodium Nitrate (1.0%)	OK
Tetrahydrofuran (5.0%)	NO
Toluene (1.0%)	NO
Trifluoroacetic Acid (10%)	OK
Tween 20 (0.1%)	OK
Triton X-100 (0.1%)	OK
Urea (8 M)	OK

OK = Acceptable      NO = Not recommended

#### **FAQ**

– DNA recovery is lower than expected

If the DNA sample contains a high salt concentration, dilute the sample.

Run the device at the recommended g-force.

– Can proteins be concentrated with Vivacon®?

Proteins can be concentrated with Vivacon®, using the guidelines on page 5 to choose the correct MWCO. However, we recommend Vivaspin® 2 for protein concentration due to faster concentration achieved with a verticle membrane design for protein applications.

## Ordering Information

<b>Vivacon® 2</b>	<b>Pack size</b>	<b>Prod. No.</b>
2,000 MWCO	25	VN02H91
2,000 MWCO	100	VN02H92
2,000 MWCO	500	VN02H93
10,000 MWCO	25	VN02H01
10,000 MWCO	100	VN02H02
10,000 MWCO	500	VN02H03
30,000 MWCO	25	VN02H21
30,000 MWCO	100	VN02H22
30,000 MWCO	500	VN02H23
50,000 MWCO	25	VN02H31
50,000 MWCO	100	VN02H32
50,000 MWCO	500	VN02H33
100,000 MWCO	25	VN02H41
100,000 MWCO	100	VN02H42
100,000 MWCO	500	VN02H43

<b>Vivacon® 2-PCR Grade</b>	<b>Pack size</b>	<b>Prod. No.</b>
30,000 MWCO	25	VN02H21ETO
30,000 MWCO	100	VN02H22ETO
100,000 MWCO	25	VN02H41ETO
100,000 MWCO	100	VN02H42ETO





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