

# miniPERM®

Bioreactor for protein production



**SARSTEDT**

## Bioreactor for protein production

- High cell densities
- High product concentration
- Easy handling
- Multiple harvesting
- Range of cell culture volumes



### Applications

- Hybridoma cells
- Transfected cells
- Biomass production
- Virus-producing cells
- Entomological cells
- Plant cells

The miniPERM® is an easy-to-handle bioreactor which was developed for the cultivation of eukaryotic cells (mammalian, insect and plant cells) in high density and therefore for biomass production and for the production of cell products.

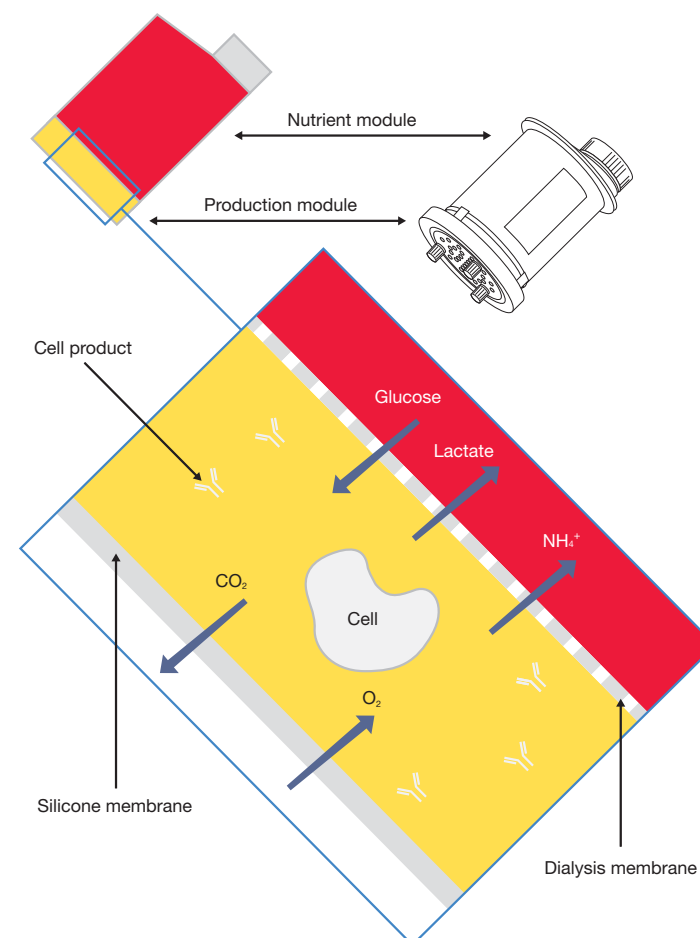
The sub-division of the bioreactor into production and nutrient modules and the rotating cultivation allow for the production of highly concentrated cell products in small volumes. Therefore, depending on the cell line, cell densities of more than  $10^7$  cells/ml and product concentrations of several mg/ml can be achieved. This means that the miniPERM® bioreactor is a cost-effective and time-saving alternative to using conventional roller bottles and fermentation systems.

## Universal Turning Device

For optimal supply of nutrients and removal of metabolic waste products during cultivation, cells are kept in suspension by continuous rotation. The Universal Turning Device can accommodate up to 4 miniPERM® bioreactors and is placed into a CO<sub>2</sub> incubator at a relative air humidity of 70% during cultivation.



## Function



The miniPERM® bioreactor is a membrane-based two-compartment system.

A dialysis membrane subdivides the culturing chamber of the miniPERM® bioreactor into a production module (optionally 35 or 50 ml cell culture volume) and nutrient module (400 ml medium volume).

The small pore size of the dialysis membrane (MWCO 12.5 kD) prevents both the cells and released cell products from passing through the membrane. These are accumulated to high cell densities and product concentrations in the production module.

Simultaneously, the metabolites released from the cells diffuse through the dialysis membrane from the production module into the nutrient module to be diluted or neutralized in the medium.

The outer side of the production module consists of a thin O<sub>2</sub>- and CO<sub>2</sub>-permeable silicone membrane for optimal gas exchange.

## Different cell culture volumes

Depending on the production scale, the miniPERM® production modules are available for cultivation in two different cell culture volumes:

### miniPERM® classic “High density culture 35 ml”

The production module has a cell volume of 35 ml and is ideally suited for production in laboratories or research.

### miniPERM® HDC 50 “High density culture 50 ml”

The HDC 50 with a cell culture volume of 50 ml is suited for the large-scale production of proteins and biomass.

The outer dimensions of this production module are identical to those of the miniPERM® classic.



## The bioreactor and accessories

### miniPERM® bioreactors

- miniPERM® sterile:  
The production and nutrient modules are certified sterile, pyrogen-free/endotoxin-free and non-cytotoxic and are supplied as a single-use bioreactors.
- miniPERM® reusable:  
The nutrient module is autoclavable and designed for multiple use. The production modules are sterile, certified pyrogen-free/endotoxin-free and non-cytotoxic and are available as individually packaged single-use products.

### miniPERM® accessories

The following accessories are available for easy handling of the miniPERM® bioreactor:

- Sterile single-use syringes (2 ml, 50 ml)
- miniPERM® stand
- Sterile screw caps for the modules
- Sterile syringe needles (25G x 5/8")
- Sterile filling tube

### miniPERM® start-up support kit

This kit contains all the accessories required for starting the culture, sampling and harvesting.

### Ordering information – miniPERM®

Order no	Description	Packaging units/box
94.6001.059	miniPERM® classic Bioreactor, sterile	2
94.6001.055	miniPERM® classic Production module, sterile	4
94.6077.121	miniPERM® HDC 50 Bioreactor, sterile	2
94.6077.017	miniPERM® HDC 50 Production module, sterile	4

### Ordering information – accessories

Order no	Description	Packaging units/box
94.6001.153	Nutrient module for miniPERM®, autoclavable	4
94.6001.054	Stands for miniPERM®	4
94.6001.036	Screw caps for production module, sterile	6
94.6077.037	Screw cap for nutrient module, sterile	16
94.6077.135	Luer syringe needle, 25G x 5/8", sterile	100
94.6077.136	Single use 2 ml Luer syringe, sterile	100
94.6077.137	Single use 50 ml Luer lock syringe, sterile	60
94.6077.138	Filling tube 5", Luer, sterile	50
94.6001.094	Start-up support kit	1
	• Single use 50 ml Luer lock syringe, sterile	8
	• Single use 2 ml Luer syringe, sterile	20
	• Filling tube 5", Luer, sterile	8
	• Luer needle, 25G x 5/8", sterile	20
	• Septum seal, sterile	6
	• Stand for miniPERM®	1

### Ordering information – universal turning device

Order no	Description	Packaging units/box
94.6001.061	Universal Turning Device 115/230 V	1

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