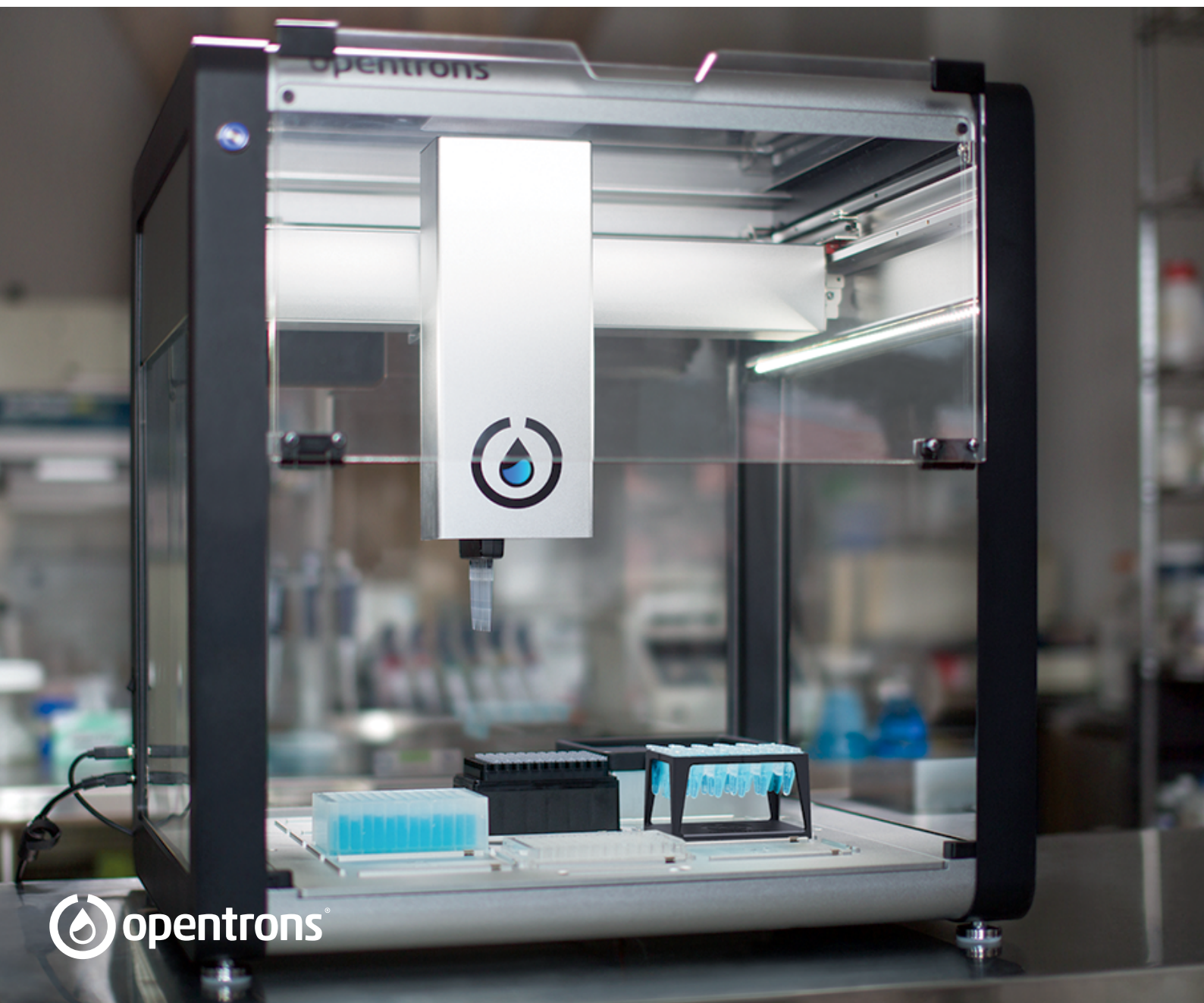


MIKROLAB FRISENETTE

Opentrons OT-2 Liquid Handling Robot

Version 3.2.0



 opentrons®



Lab automation has never been easier

The OT-2 can automate hundreds of life science protocols and workflows.

If you can manually pipette it, you can automate it with OT-2.

**AUTO-
MATION AT
AN UN-
BEATABLE
PRICE!**

Fast, Accurate, Precise

Precision engineered so you can reproduce your results quickly and accurately, every time.

Flexibility for your lab

Swap modules, customize volume definitions, and adapt protocols to run exactly the experiment you want.

Open the possibilities

Tinker, hack or get under the hood of our robot - or don't. Our open-source hardware and software are user-friendly either way.

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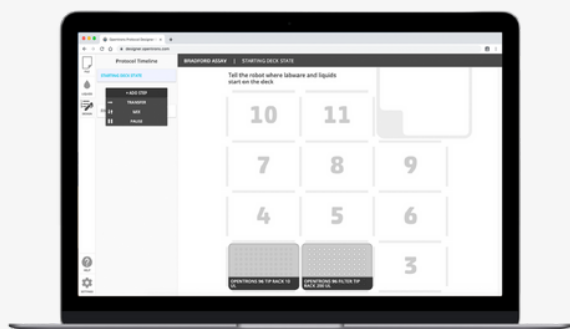


User-friendly software

Click and drag graphical interface lets you design and run your own protocols in minutes.

Software for success

A suite of software tools to help you automate your workflow from end-to-end - including a Protocol Designer, Protocol Library, Labware Library, Labware Creator and Python API.



Modular hardware

Expand your robot's capabilities with swappable on-deck modules.

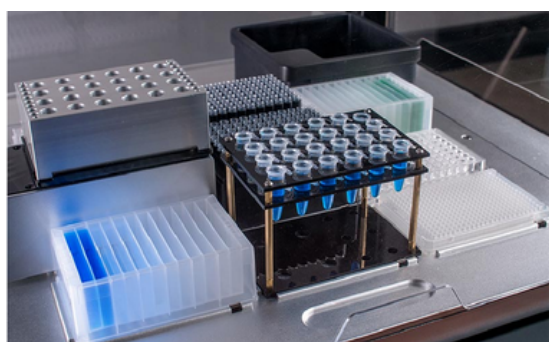
Thermocycler Module: Fully automate thermocycler throughput quickly and easily

Magnetic Module: Automate magbead-based protocols

Temperature Module: Keep reagents at a constant temperature from 4-95°C

Heater-shaker Module: Provides on-deck heating and orbital shaking of microplates

HEPA Module: Run sensitive contamination-prone applications in a clean environment

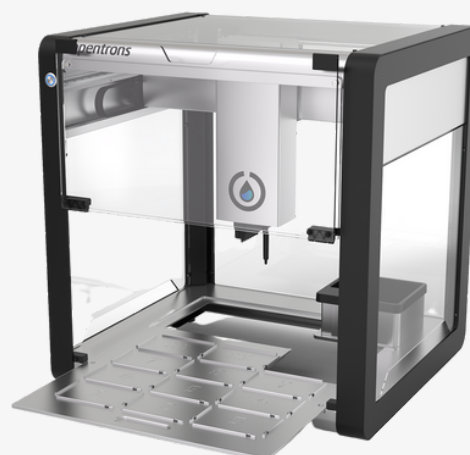


Use what you have

Opentrons sells verified labware and tips engineered & verified for maximum accuracy - but if you already have labware you like, you can use that, too. We just can't verify it.

Full Specifications

Number of deck slots	11 (plus permanent trash)
Number of pipette mounts	2
Speed	Fills a 96-well plate in 20 seconds
Accuracy	Accurate down to 384-well plates
Connectivity	Wifi 2.4 GHz IEEE 802.11/b/g/n, USB 2.0
Dimensions	63 cm x 57 cm x 66 cm
Power requirements	110-250 VAC / 50-60 Hz
Weight	40 kg



High-Precision Pipettes

Reliable liquid transfers from 1 μL - 1000 μL .



Opentrons pipettes are **designed for lab automation** and optimized for use with the OT-2:

Accurate: comparable specs to pipettes 10x as expensive

Flexible: swap single- and 8-channel pipettes in newly expanded volume ranges to complete protocols

Single-Channel (GEN2)



Specifications

Available Models		Volume	Accuracy		Precision	
			%D	μL	%CV	μL
P20 GEN2	1-20 μL	1	$\pm 15\%$	0.15 μL	$\pm 5\%$	0.05 μL
		10	$\pm 2\%$	0.2 μL	$\pm 1\%$	0.1 μL
		20	$\pm 1.5\%$	0.3 μL	$\pm 0.8\%$	0.16 μL
P300 GEN2	20-300 μL	20	$\pm 4\%$	0.8 μL	$\pm 2.5\%$	0.5 μL
		150	$\pm 1\%$	1.5 μL	$\pm 0.4\%$	0.6 μL
		300	$\pm 0.6\%$	1.8 μL	$\pm 0.3\%$	0.9 μL
P1000 GEN2	100-1000 μL	100	$\pm 2\%$	2.0 μL	$\pm 1\%$	1 μL
		500	$\pm 1\%$	5.0 μL	$\pm 0.2\%$	1 μL
		1000	$\pm 0.7\%$	7.0 μL	$\pm 0.15\%$	1.5 μL

8-Channel (GEN2)



Specifications

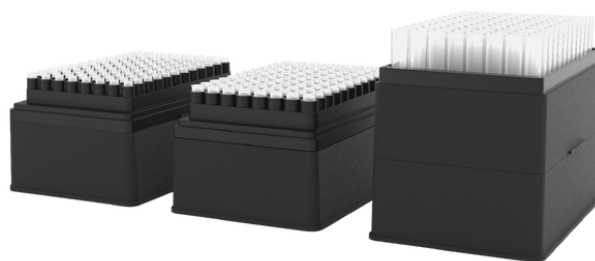
Available Models		Volume	Accuracy		Precision	
			%D	μL	%CV	μL
P20 GEN2	1-20 μL	1	$\pm 20\%$	0.2 μL	$\pm 10\%$	0.1 μL
		10	$\pm 3\%$	0.3 μL	$\pm 2\%$	0.2 μL
		20	$\pm 2.2\%$	0.44 μL	$\pm 1.5\%$	0.3 μL
P300 GEN2	20-300 μL	20	$\pm 10\%$	2.0 μL	$\pm 4\%$	0.8 μL
		150	$\pm 2.5\%$	3.75 μL	$\pm 0.8\%$	1.2 μL
		300	$\pm 1.5\%$	4.5 μL	$\pm 0.5\%$	1.5 μL



More information

Additional specs and technical drawings for pipettes GEN1 & GEN2 can be found through the QR-code.

Tips

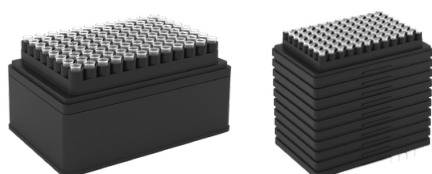


All labware is **verified and tested** to perfectly fit on the deck of the OT-2, and is preloaded into Opentrons' software and hardware for **easy setup and use**.

- Free of DNase, RNase, protease and pyrogens.
- Stored in individual compartments inside rack with lift-off cover to eliminate cross contamination
- Designed for fixed and variable volume pipettors equipped with a tip-ejector function
- Hardened and optimized for automated liquid handling—and affordably priced, particularly when compared to other similar quality tips for automated liquid handling
- Opentrons Tips are autoclavable. Opentrons Tip Racks are not.
- Available in Racks, or in space saving Stacked Refills
- All tips are available in a filtered version

Opentrons 10/20 µl Tips

Standard and stacked refills



Filler tips



Compatible with

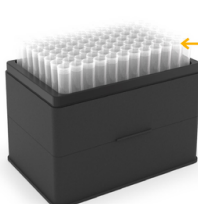
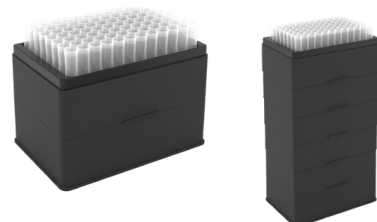
8-Channel GEN2 P20
8-Channel GEN1 P10
Single-Channel GEN2 P20
Single-Channel GEN1 P10

Opentrons 300 µl Tips



Single-Channel GEN2 P300
Single-Channel GEN1 P300
Single-Channel GEN1 P50
8-Channel GEN2 P300
8-Channel GEN1 P300
8-Channel GEN1 P50

Opentrons 1000 µl Tips



Single-Channel GEN2 P1000
Single-Channel GEN1 P1000

Modules



Thermocycler Module (GEN2)

The Thermocycler Module is fully automated on deck thermocycler with programmable lid and block temperatures. It has performance comparable to machines 5x its price, and enables automation of upstream and downstream workflow steps.

- Pipette samples on OT-2 deck
- Disposable seal system for preventing sample loss
- Program lid temperatures up to 110°C
- Program block temperatures from 4 - 99°C
- Max working volume range: 10 - 100 µl
- Recommended volume range for up to 80-sample PCR: 25 - 100 µl



More information



Video



Manual



Whitepaper

Magnetic Module (GEN2)

The Magnetic Module is a magnetic bead-based chemistry block for extraction and purification. It automatically engages and disengages high strength magnetic bars to seated well plates for magnetic bead-based purification protocols.

- High-strength N42 neodymium magnets
- Two adjustable plate brackets
- Compatible with standard and deep well labware from 22 mm to 44 mm, various magnetic bead products, and protocols with volumes from 10 µl to 2 ml



More information



Video



Whitepaper

More information



Video



Whitepaper



Temperature Module (GEN2)

The Temperature Module sits securely on the deck of the OT-2 and holds plated reagents at temperatures between 4°C and 95°C

- Includes aluminum block to hold labware including 1.5 ml tubes, 2 ml tubes and PCR strips.
- Standard size capable of holding 96-well plates and other labware on-deck
- NOTE: it is highly recommended that users place water between aluminum thermal blocks and plastic well tubes, strips and/or plates



HEPA Filter Module

When space in the Laminar Flow Bench is limited and samples are precious and numerous, the Opentrons HEPA filter module is a way to manage liquid handling automation while keeping the samples in a HEPA filtered environment. The HEPA filter removes 99,99% of 0,3 µm DNA- particulates and biological contaminants like bacteria, fungi, and other microorganisms from the air.

- Reduces contamination risk during sensitive workflows
- Vertical airflow downflow of 0.4 m/s - 0.7 m/s
- 3 year fan lifetime at moderate use
- 1 year filter lifetime at moderate use
- Replaceable H14 HEPA filter
- Compatible with all other OT-2 hardware modules

TIP!

Mikrolab - Frisenette offers to retrofit UV-lamps as well as exhaust duct for coupling with existing ventilation. Ask for more information on this.

More information



Video



Manual



Whitepaper

Heater-Shaker Module

The Opentrons Heater-Shaker Module provides on-deck heating and orbital shaking of microplates. The module can be heated to 95°C, and can shake samples from 200 to 3000 rpm. It is compatible with a number of deep-well and 96-well plates. The Heater-Shaker can be used simultaneously with other Opentrons modules on your Opentrons platform.

- Orbital shaking range of 200 to 3000 rpm
- Temperature range of ambient to 95°C
- Active clamping and automated locking on plate sides to secure precious samples
- Fixed home position allows robot to accurately access microplate wells
- Programmable through Python API and Protocol Designer, or operate directly from the Opentrons App
- Compatible with ANSI/SLAS compliant consumables

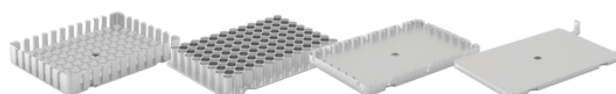


More information



Manual

Get one of the following adapters with your purchase:



Deep Well

PCR

Flat Bottom

Universal Flat

Racks and accessories

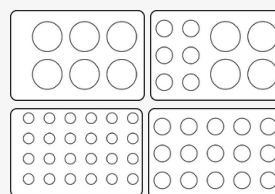


4-in-1 Tube rack set

Set includes 2 base stands and 4 tube holder tops: 1.5 ml, 2 ml, 15 ml + 50 ml, 15 ml, and 50 ml. The tube holder tops snap securely on the base stand, which fits directly on the deck of OT-2. The Tube Rack Set is not autoclavable



Layers included



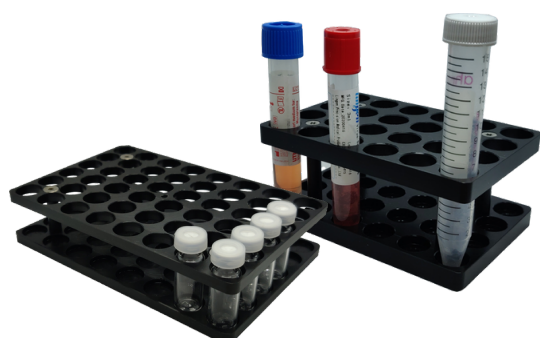
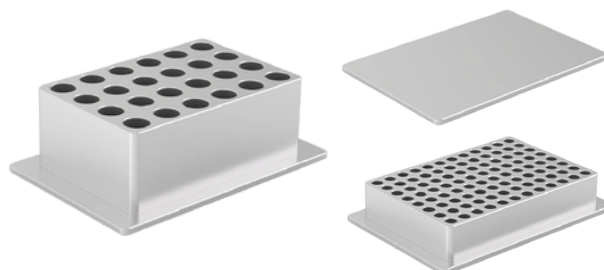
More information



Whitepaper

Aluminium Block Set

Extra 3-piece Aluminum Block Set for use with Opentrons Temperature module or standalone. Keep your 2 ml, 1.5 ml tubes, 96-well PCR / PCR strips at a constant temperature. 24 position block will also fit most 1,5ml glass vials.



Mikrolab Custom Racks

We make custom racks and accessories to supplement the accessories made by Opentrons. Examples of useful holders could be fixtures for petri dishes, laboratory bottles, sample vials, specimen jars etc. We can make such accessories in a range of materials, including both plastics, metals and fluoropolymers, using CNC or 3D printing. On the left is two examples of Mikrolab racks (left rack for universal transfer media tubes and 15 ml Falcon tubes; right, rack for 1.5 ml analytical glass vials)

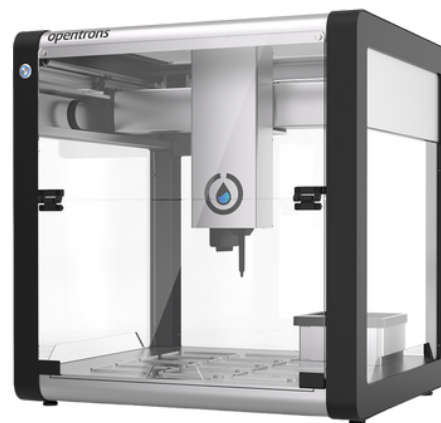
TIP!

Mikrolab - Frisenette makes custom racks, blocks and labware, to enable users with specific needs. Contact us for more information.

Item numbers

Want to be off to a good start?

Mikrolab - Frisenette offers a start-up package, including preparation of the robot, installation on-site, and the first initial introduction for you and you colleagues. Ask us for more information.



Available Models	Item number
Robot configurations	
Opentrons LH Robot OT-2 w/o pipettes	OT101
Pipettes	
Opentrons Pipette 1-Channel, GEN2, 1-20 µl	OT203P20
Opentrons Pipette 1-Channel, GEN2, 20-300 µl	OT203P300
Opentrons Pipette 1-Channel, GEN2, 100-1000 µl	OT203P1000
Opentrons Pipette 8-Channel, GEN2, 1-20 µl	OT202P20
Opentrons Pipette 8-Channel, GEN2, 30-300 µl	OT202P300
Modules and Accessories	
Opentrons Thermocycler Module	OT201
Opentrons Magnetic Module	OT205
Opentrons Heater-Shaker Module incl. 1 Adapter	OT208
Opentrons Temperature Module, incl. Alu. Blocks	OT209
Opentrons HEPA Filter Module	OT210
Opentrons Aluminum Block Set	OT204
Opentrons Thermocycler seals, 10 pcs	OT220
Opentrons 4-in-1 Tube Rack Set, 2 racks, 4 tops	OT207
Opentrons Shaker Adapter PCR Plate	OT20864
Opentrons Shaker Adapter 96 Flat Bottom Plate	OT20865
Opentrons Shaker Adapter 96 Deep Well Plate	OT20866
Opentrons Shaker Adapter 96 Universal Flat Plate	OT20867

Contact us for further information and pricing.

Item numbers



Haven't found the tips you are looking for?

Mikrolab - Frisenette offer an expanded range of alternative brand tips, compatible with the Opentrons OT-2, including necessary deck adapters. Contact us for more information.

Available Models	Quantities included		Item number
Opentrons Tips	Racks	Refill Layers	
Opentrons 20 µl Tips Racks - 4.800 Tips	50x 		OT301
Opentrons 20 µl Tips Refills - 9.600 Tips		100x 	OT305
Opentrons 300 µl Tips Racks - 4.800 Tips	50x 		OT307
Opentrons 300 µl Tips Refills - 9.600 Tips		100x 	OT311
Opentrons 1000 µl Tips Racks - 4.800 Tips	50x 		OT313
Opentrons 1000 µl Tips Refills - 4.800 Tips		50x 	OT317
Opentrons Filter tips	Racks		
Opentrons 20 µl Filter Tips Racks - 4.800 Tips	50x 		OT322
Opentrons 200 µl Filter Tips Racks - 4.800 Tips	50x 		OT320
Opentrons 1000 µl Filter Tips Racks - 4.800 Tips	50x 		OT321

Contact us for further information and pricing.

Item numbers

Haven't found the plates or reservoirs you need?

Mikrolab - Frisenette offer an expanded range of alternative brand tips, compatible with the Opentrons OT-2, and we can help with the setup of custom labware on the robot. Contact us for more information.



Available Models	Wells	Volume	Shape	Rows	Columns	Plate height	Material	Qty /pck	Item number
Porvair 1-well reservoirs, 85 ml		85 ml	 v	1	1	19 mm	PP	25	POR390009
NEST 1-well reservoirs, 195 ml		195 ml	 v	1	1	31,4 mm	PP	50	OT99900078
Porvair 1-well reservoirs, 290 ml		290 ml	 v	1	1	44 mm	PP	25	POR390002
Porvair 2-well reservoirs, 146 ml		146 ml	 v	1	2	44 mm	PP	25	POR391003
Porvair 4-well reservoirs, 75 ml		75 ml	 v	1	4	44 mm	PP	25	POR390107
Porvair 4-well reservoirs, 75 ml		75 ml	 v	4	1	44 mm	PP	25	POR390111
Porvair 6-well reservoirs, 47 ml		47 ml	 v	1	6	44 mm	PP	25	POR390015
Porvair 8-well reservoirs, 10 ml		10 ml	 v	8	1	19 mm	PP	25	POR390014
Porvair 8-well reservoirs, 32 ml		32 ml	 v	8	1	44 mm	PP	25	POR390006
Porvair 12-well reservoir, 7 ml		7 ml	 v	1	12	19 mm	PP	25	POR390012
NEST 12-well reservoirs, 15 ml		15 ml	 v	1	12	31,4 mm	PP	50	OT99900076
Porvair 12-well reservoirs, 21 ml		21 ml	 v	1	12	44 mm	PP	25	POR390005
Porvair 24-well deep-well plate, 10 ml		10 ml	 v	4	6	44 mm	PP	25	POR360013
Porvair 48-well deep-well plate, 5 ml		5 ml	 v	8	6	44 mm	PP	25	POR360002
Porvair 48-well deep-well plate, 7 ml		7 ml	 v	8	6	68 mm	PP	30	POR360004
Porvair 96-well plate, 270 µl		0,27 ml	 v	8	12	14 mm	PS	100	POR210004
Porvair 96-well plate, 350 µl		0,35 ml	 F	8	12	14 mm	PS	100	POR208004
Porvair 96-well plate, 220 µl		0,22 ml	 v	8	12	14 mm	PP	100	POR210003
Porvair 96-well plate, 350 µl		0,35 ml	 F	8	12	14 mm	PP	100	POR208003
BRAND 96-well PCR Plate, 150 µl		0,15 ml	 v	8	12	15 mm	PP	100	OMN5442493
NEST 96-well PCR Plate, 100 µl		0,1 ml	 v	8	12	15,7 mm	PP	100	OT99900050
NEST 96-well Plate, round, 200 µl		0,2 ml	 F	8	12	14,3 mm	PP	100	OT99900048

Mikrolab - Frisenette A/S is a supplier of laboratory equipment, everything from basic laboratory equipment to consumables, laboratory accessories, solvents, standards and chemicals.

Mikrolab adds value to the products we deliver using our expertise and experience. We understand the challenges and tasks our customers have in everyday life. Everyone in the sales department is laboratory trained or has a higher technical education. We are a company where the customer is in focus, and all employees have customer service as the highest priority.

Contact us and we will find a solution together.

– Your laboratory, our technology



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