

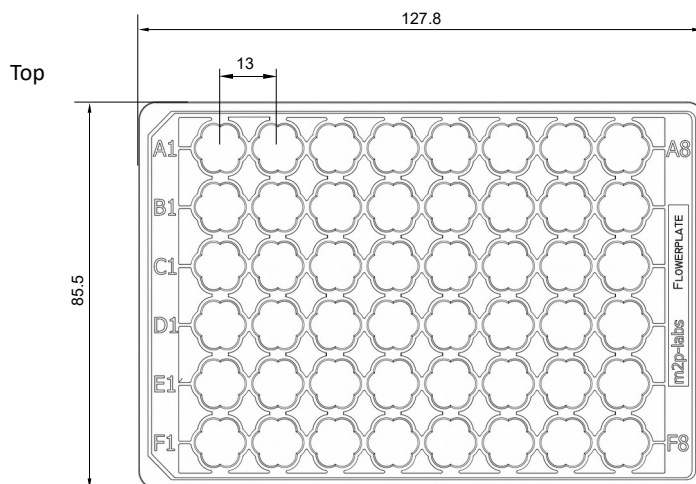
## FlowerPlate® (48 well MTP, flower) MTP-48-XXXX

Flat bottom, flower-shaped well, high-purity polystyrene

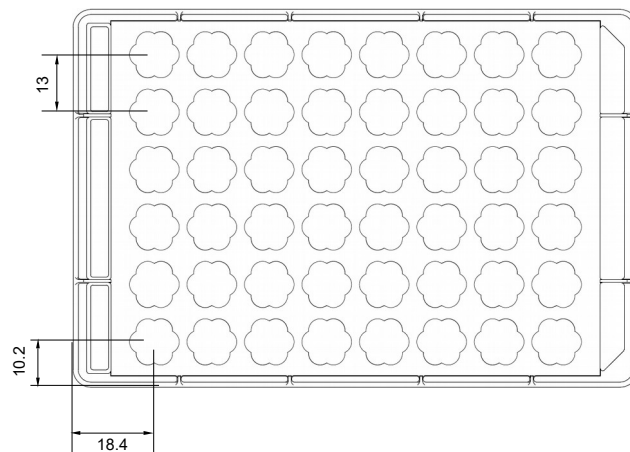
### Technical parameters

Specification	Description
Type	<ul style="list-style-type: none"> <li>- High-purity polystyrene microplate</li> <li>- 48 flower-shaped wells</li> <li>- Transparent polystyrene flat bottom *1</li> <li>- Free of heavy metal</li> </ul>
Dimension (standard SBS/SLAS footprint)	<ul style="list-style-type: none"> <li>- Length: 127.8 mm</li> <li>- Width: 85.5 mm</li> <li>- Height: 35 mm</li> <li>- Cavity depth: 33 mm</li> </ul>
Volume / well	<ul style="list-style-type: none"> <li>- Total well volume: 3200 µL</li> <li>- Working volumes: refer to next page</li> <li>- Note: Maximum filling volumes may vary with altered characteristics of fermentation broth</li> </ul>
Technical data (performance)	<ul style="list-style-type: none"> <li>- Refer to next page for detailed data on OTR within recommended conditions</li> <li>- Approx. range of OTR: 30 – 110 mmol/L/h</li> <li>- Approx. range of <math>k_L a</math>: 100 – 650 h<sup>-1</sup></li> <li>- Effective mixing: flower shape acts similar to baffles</li> <li>- No optical cross talk from well to well (black plate corpus)</li> <li>- Range of operation temperature: -20 – 60 °C</li> </ul>
Measurement options	<ul style="list-style-type: none"> <li>- Biomass (via scattered light) *1</li> <li>- Fluorescence (intensity measurement) *1</li> <li>- pH value with pre-calibrated optodes *1 *2</li> <li>- DO (dissolved oxygen) with pre-calibrated optodes *1 *2</li> </ul>
Sterilization	<ul style="list-style-type: none"> <li>- 20 kGy (β-radiation)</li> <li>- Sterile packed (single plate)</li> </ul>
Other information	<ul style="list-style-type: none"> <li>- Sedimentation of biomass may occur at shaking frequencies lower than 600 rpm *3</li> <li>- Autoclavability: no</li> <li>- For single use only</li> <li>- Centrifugation: max. 4000 x g (with swinging-bucket rotor for microplates)</li> </ul>

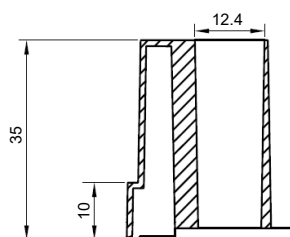
### MTP geometry for automation purpose [mm]



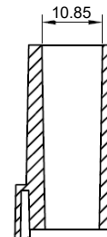
### Bottom



### Section (length)



### Section (width)



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#### HEADQUARTERS EUROPE

m2p-labs GmbH  
Arnold-Sommerfeld-Ring 2  
52499 Baesweiler  
Germany

#### USA / CANADA

m2p-labs, Inc.  
400 Oser Ave, Suite 1650  
Hauppauge, NY 11788  
USA

#### ASIA PACIFIC

m2p-labs Limited  
Unit 117, Biotech Centre 2  
HKSTP  
Shatin, NT, Hong Kong

Tel.: +49 - 2401 805 330  
Fax: +49 - 2401 805 33  
info@m2p-labs.com

Phone: +1 631 501 1878  
Fax: +1 631 501 1060  
infoUS@m2p-labs.com

Phone: +852 6092 6778  
Fax: +852 3594 6381  
infoAsia@m2p-labs.com

OTR: Oxygen transfer rate [mmol/L/h]  
 $k_L a$ : Volumetric oxygen transfer coefficient [h<sup>-1</sup>]  
 \*1: Not for MTP-48-OFF  
 \*2: Not for MTP without optodes  
 \*3: Shaking diameter 3 mm (measured in BioLector®)

## FlowerPlate® (48 well MTP, flower) MTP-48-XXXX

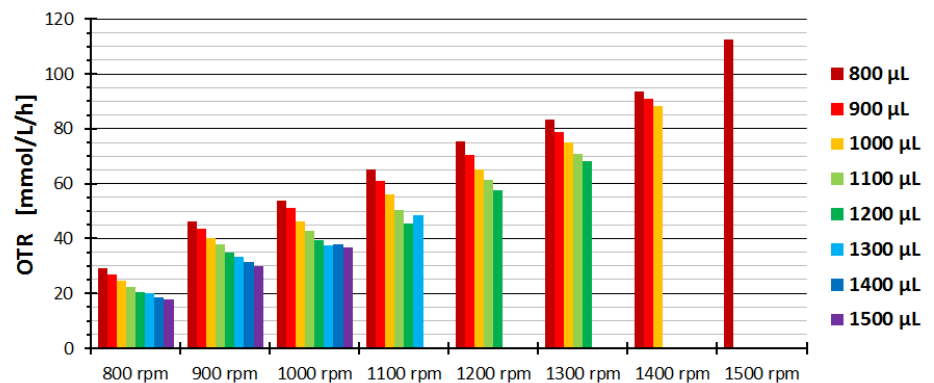
Flat bottom, flower-shaped well, high-purity polystyrene

### Operating conditions in the FlowerPlate®

#### Working volumes \*4

Shaking frequency	Maximum filling volume *6	Minimum filling volume
800 rpm	1900 µL	800 µL
900 rpm	1700 µL	800 µL
1000 rpm	1500 µL	800 µL
1100 rpm	1500 µL	800 µL
1200 rpm	1400 µL	800 µL
1300 rpm	1200 µL	800 µL
1400 rpm	1000 µL	800 µL
1500 rpm	900 µL	800 µL

#### Oxygen transfer rates for the recommended conditions \*4 \*5



### Optode (optical sensor spots) parameters

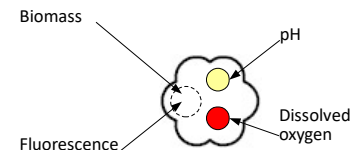
Dissolved oxygen measurement	MTP-48-BOH1	MTP-48-BOH2	MTP-48-BOH3
Measurement range	0 – 100 % O <sub>2</sub> (air saturation)	0 – 100 % O <sub>2</sub> (air saturation)	0 – 100 % O <sub>2</sub> (air saturation)
Accuracy (depending on batch calibration)	± 5 % dissolved oxygen (DO)	± 5 % dissolved oxygen (DO)	± 5 % dissolved oxygen (DO)
Wavelength	ex.: 520 nm; em.: 600 nm	ex.: 625 nm; em.: 775 nm	ex.: 625 nm; em.: 775 nm
Response time (t90)	At 25 °C < 30 s	At 25 °C < 30 s	At 25 °C < 30 s
Temperature range	15 – 50 °C	10 – 40 °C	10 – 40 °C
Compatibility (useable with)	pH 1 – 14, CO <sub>2</sub> , H <sub>2</sub> S, SO <sub>2</sub> , salinity	ethanol (≤ 5 % v/v), methanol (≤ 5 % v/v)	ethanol (≤ 5 % v/v), methanol (≤ 5 % v/v)
Cross sensitivity to	Organic solvents (acetone, chloroform, ...)	Organic solvents (acetone, chloroform, ...)	Organic solvents (acetone, chloroform, ...)

pH measurement	MTP-48-BOH1	MTP-48-BOH2	MTP-48-BOH3
Measurement range	4.5 – 7.5 pH	4.5 – 7.0 pH	4.0 – 6.0 pH
Accuracy (depending on batch calibration)	at pH = 7: ± 0.1 pH	at pH = 7: ± 0.1 pH	at pH = 5: ± 0.1 pH
Wavelength	ex.: 470 nm; em.: 525 nm	ex.: 508 nm; em.: 550 nm	ex.: 625 nm; em.: 750 nm
Response time (t90)	At 25 °C < 30 s	At 25 °C < 30 s	At 25 °C < 30 s
Temperature range	15 – 50 °C	15 – 50 °C	15 – 50 °C
Compatibility (useable with)	Aqu. solutions, ethanol (≤ 5 % v/v), methanol (≤ 5 % v/v)	Aqu. solutions, ethanol (≤ 5 % v/v), methanol (≤ 5 % v/v)	Aqu. solutions, ethanol (≤ 5 % v/v), methanol (≤ 5 % v/v)
Cross sensitivity	At red. ionic strength (< 100 mM); fluorescent metabolites in yellow/green wavelengths (GFP, Riboflavine, YFP)	At red. ionic strength (< 100 mM); fluorescent metabolites in yellow/green wavelengths (GFP, Riboflavine, YFP)	At reduced ionic strength (< 100 mM)

#### Available plate types

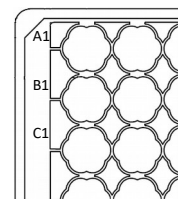
Art. No.	Description
MTP-48-B	FlowerPlate® (48 well MTP) without optodes
MTP-48-BH	FlowerPlate® (48 well MTP) incl. pH optode/well
MTP-48-BO	FlowerPlate® (48 well MTP) incl. DO optode/well
MTP-48-BOH1/2/3	FlowerPlate® (48 well MTP) incl. pH and DO optode/well
MTP-48-OFF	FlowerPlate® (48 well MTP) for offline cultivation (with non-transparent bottom)
BOH1/2/3	BOH1: HP8/PS13 (ID 202/203); BOH2: LG1/RF (ID 221/228); BOH3: pH51/RF (ID 424/228)

### Measuring position for

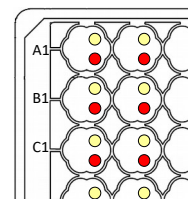


### Configuration of optodes

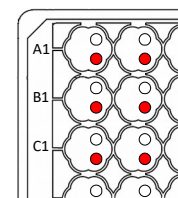
MTP-48-B/OFF  
No Optodes included



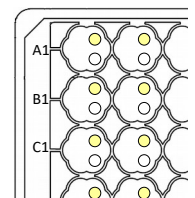
MTP-48-BOHX



MTP-48-BO



MTP-48-BH



- \*4: Measured in BioLector®Pro (shaking diameter 3.0 mm, 25 °C, humidity off, horizontal alignment, test fluid: water with Coomassie Blue)
- \*5: OTR determined with aqueous sulfite oxidation system (0.5 M)
- \*6: Depending on the composition of the liquid medium, the maximum working volume at a defined shaking frequency may be less.

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#### HEADQUARTERS EUROPE

m2p-labs GmbH  
Arnold-Sommerfeld-Ring 2  
52499 Baesweiler  
Germany

Tel.: +49 - 2401 805 330  
Fax: +49 - 2401 805 33  
info@m2p-labs.com

#### USA / CANADA

m2p-labs, Inc.  
400 Oser Ave, Suite 1650  
Hauppauge, NY 11788  
USA

Phone: +1 631 501 1878  
Fax: +1 631 501 1060  
infoUS@m2p-labs.com

#### ASIA PACIFIC

m2p-labs Limited  
Unit 117, Biotech Centre 2  
HKSTP  
Shatin, NT, Hong Kong

Phone: +852 6092 6778  
Fax: +852 3594 6381  
infoAsia@m2p-labs.com

www.m2p-labs.com

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