

# FlowerPlate® (48 well MTP, flower)

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

Now part of Beckman Coulter Life Sciences

## 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 <sup>*1</sup></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 – 50 °C</li> </ul>
Measurement options	<ul style="list-style-type: none"> <li>Biomass (via scattered light) <sup>*1</sup></li> <li>Fluorescence (intensity measurement) <sup>*1</sup></li> <li>pH value with pre-calibrated optodes <sup>*1,2</sup></li> <li>DO (dissolved oxygen) with pre-calibrated optodes <sup>*1,2</sup></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><b>Store at ambient temperature and protect from sunlight!</b></li> <li>Only to be used in combination with sealing foils F-GP-10, F-GPR48-10, F-GPRS48-10 and F-RS48-10</li> <li>Sedimentation of biomass may occur at shaking frequencies lower than 600 rpm <sup>*3</sup></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>

OTR: Oxygen transfer rate [mmol/L/h]

$k_L a$ : Volumetric oxygen transfer coefficient [h<sup>-1</sup>]

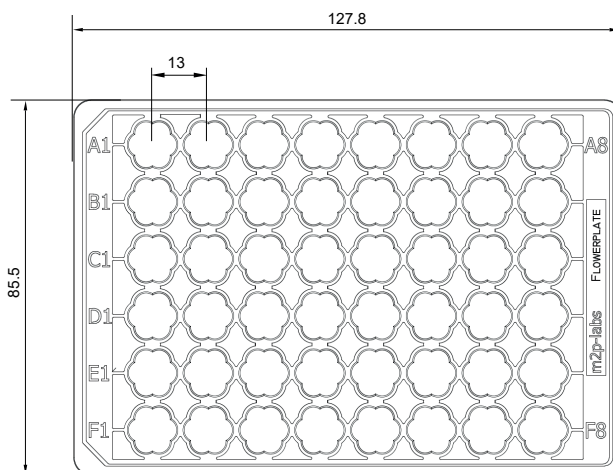
<sup>\*1</sup>: Not for MTP-48-OFF

<sup>\*2</sup>: Not for MTP without optodes

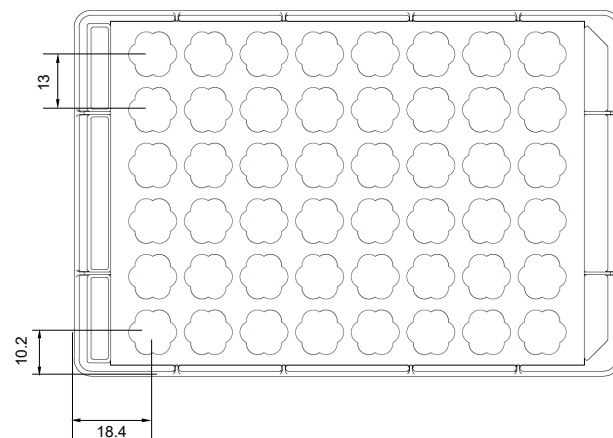
<sup>\*3</sup>: Shaking diameter 3 mm (measured in BioLector®); depending on media and strain

## MTP geometry for automation purpose [mm]

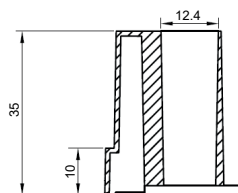
Top



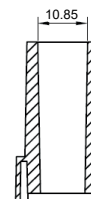
Bottom



Section (length)



Section (width)



### HEADQUARTERS

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

Phone +49-2401-805-330  
Fax +49-2401-805-333  
info@m2p-labs.com

### SUPPORT

**EUROPE**  
Phone +49-2401-805-335  
support@m2p-labs.com

**N. & S. AMERICAS**  
Phone +1-631-501-1878  
supportUS@m2p-labs.com

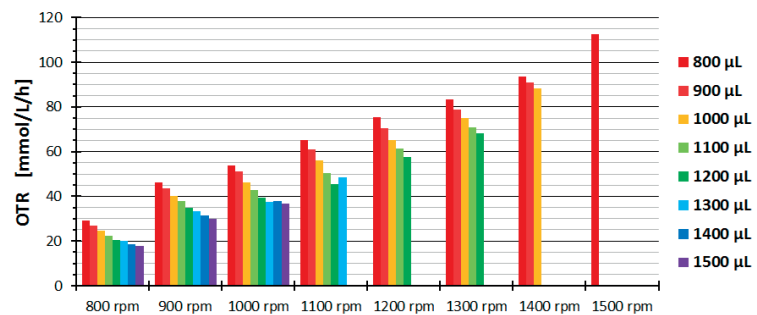
**ASIA PACIFIC**  
Phone: +852-9207-6841  
supportAsia@m2p-labs.com

## Operating conditions in the FlowerPlate®

### Working volumes

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



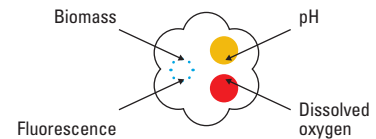
### Optode (optical sensor spots) parameters

DO measurement	MTP-48-BOH 1	MTP-48-BOH 2	MTP-48-BOH 3
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, ...)

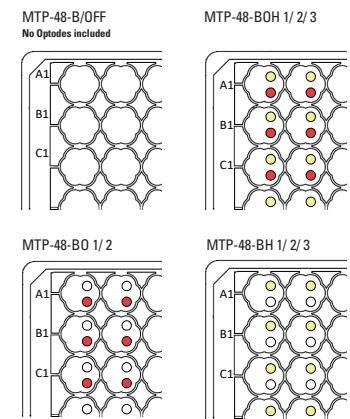
  

pH measurement	MTP-48-BOH 1	MTP-48-BOH 2	MTP-48-BOH 3
Dynamic range (depending on batch calibration and media)	4.4 – 7.8 pH	3.7 – 8.0 pH	3.6 – 6.5 pH
Accuracy (depending on batch calibration and media)	at pH 5.1 – 7.1: ± 0.1 pH	at pH 4.7 – 7.0: ± 0.1 pH	at pH 4.2 – 6.0: ± 0.1 pH
Wavelength	ex.: 470 nm; 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)

### Measuring position for



### Configuration of optodes



\*4: Measured in BioLector®Pro (shaking diameter 3.0 mm, 25 °C, humidity off, horizontal alignment, test fluid: aqueous Coomassie Brilliant Blue solution)

\*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.

\*7: Single optode MTPs only on demand. Longer delivery times and minimum order quantities apply.

### Available plate types

MTP-48-OFF	FlowerPlate® (48 well MTP) for offline cultivation (with non-transparent bottom)
MTP-48-B	FlowerPlate® (48 well MTP) without optodes
MTP-48-BH 1/2/3 *7	FlowerPlate® (48 well MTP) incl. pH optode/well
MTP-48-BO 1/2 *7	FlowerPlate® (48 well MTP) incl. DO optode/well
MTP-48-BOH 1/2/3	FlowerPlate® (48 well MTP) incl. pH and DO optode/well
BOH 1/2/3	BOH 1: HP8/Pst3 (ID 202/203 or ID 402/403) BOH 2: LG1/RF (ID 221/228 or ID 421/428) BOH 3: pH51/RF (ID 424/228 or ID 424/428)

### INFORMATION

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