

Gen2 Microfluidic FlowerPlate®

(48 well MTP, flower) | Flat microfluidic bottom | flower-shaped well | high-purity polystyrene, cyclic olefin copolymer (COC)

Now part of Beckman Coulter Life Sciences

Technical parameters

Specification	Description
Type	<ul style="list-style-type: none"> High-purity cyclic olefin copolymer (COC) microplate chip, high-purity polystyrene microplate body 48 flower-shaped wells: 16 reservoir wells, 32 cultivation wells Transparent microfluidic COC flat bottom Free of heavy metal
Dimension (standard SBS/SLAS footprint)	<ul style="list-style-type: none"> Length: 127.8 mm Width: 85.5 mm Height: 35 mm Cavity depth: 33 mm
Volume / well	<ul style="list-style-type: none"> Total well volume: 3200 µL Working volumes: refer to next page Note: Maximum filling volumes may vary with altered characteristics of fermentation broth
Microfluidic features	<ul style="list-style-type: none"> Pump stroke volume: ca. 300 nL for aqueous solutions; ca. 160 nL for 500 g/L aq. glucose solution Maximum pump rate per well: up to 665 pump strokes per hour
Technical data (performance)	<ul style="list-style-type: none"> Refer to next page for detailed data on OTR within recommended conditions Approx. range of OTR: 30 – 110 mmol/L/h Approx. range of $k_L a$: 100 – 650 h⁻¹ Effective mixing: flower shape acts similar like baffles No optical cross talk from well to well (black plate corpus) Range of operation temperature: -20 – 50 °C
Measurement options	<ul style="list-style-type: none"> Biomass (via scattered light) Fluorescence (intensity measurement) pH value with pre-calibrated optodes DO (dissolved oxygen) with pre-calibrated optodes
Sterilization	<ul style="list-style-type: none"> 20 kGy (β-radiation) Sterile packed (single plate)
Other information	<ul style="list-style-type: none"> Store at ambient temperature and protect from sunlight! Only to be used in combination with sealing foils F-RSMF32-1 and F-GPRSMF32-1 Sedimentation of biomass may occur at shaking frequencies lower than 600 rpm ^{†1} Autoclavability: no For single use only

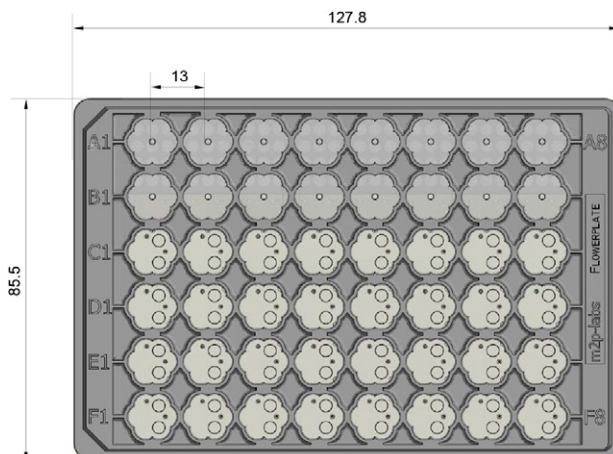
OTR: Oxygen transfer rate [mmol/L/h]

$k_L a$: Volumetric oxygen transfer coefficient [h⁻¹]

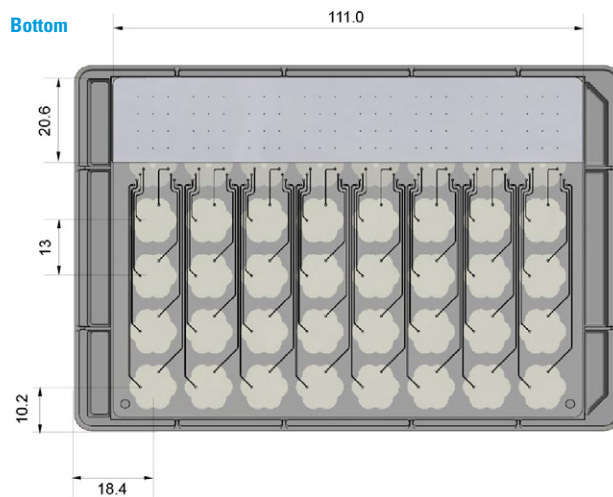
^{†1}: Shaking diameter 3 mm (measured in BioLector®); depending on media and strain

MTP geometry for automation purpose [mm]

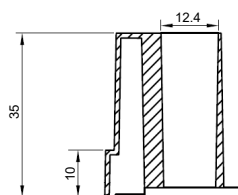
Top



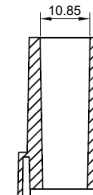
Bottom



Section (length)



Section (width)



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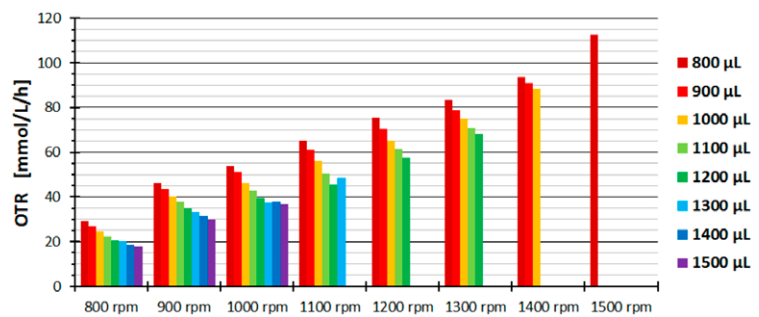
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Operating conditions in the Microfluidic FlowerPlate®

Working volumes *2

Shaking frequency	Maximum filling volume*4 rows A+B	Maximum filling volume*4 rows C-F	Minimum filling volume
800 rpm	1800 µl	1900 µl	800 µl
900 rpm	1800 µl	1700 µl	800 µl
1000 rpm	1800 µl	1500 µl	800 µl
1100 rpm	1800 µl	1500 µl	800 µl
1200 rpm	1800 µl	1400 µl	800 µl
1300 rpm	1800 µl	1200 µl	800 µl
1400 rpm	1800 µl	1000 µl	800 µl
1500 rpm	1800 µl	900 µl	800 µl

Oxygen transfer rates for the recommended conditions *2 *3

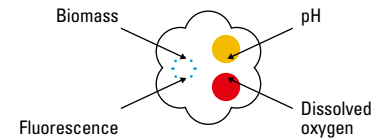


Optode (optical sensor spots) parameters

DO measurement	MTP-MF32C-BOH 1	MTP-MF32C-BOH 2	MTP-MF32C-BOH 3
Measurement range	0 – 100 % O ₂ (air saturation)	0 – 100 % O ₂ (air saturation)	0 – 100 % O ₂ (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 ₂ , H ₂ S, SO ₂ , 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-MF32C-BOH 1	MTP-MF32C-BOH 2	MTP-MF32C-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



Reservoir well solutions (feed/pH)

Solution	Maximum Recommended Concentration
Glucose, Fructose, Glycerin (≥ 25 °C)	max. 500 g/L
NaOH, KOH	3 M
Ammonia Solution	10 %
H ₃ PO ₄ , H ₂ SO ₄ , HCl	3 M
CH ₃ COOH	30 %

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

*3: OTR determined with aqueous sulfite oxidation system (0.5 M)

*4: Depending on the composition of the liquid medium, the maximum working volume at a defined shaking frequency may be less.

Available plate types

MTP-MF32C-BOH 1	Microfluidic FlowerPlate® (48 well MTP) incl. HP8/Pst3 pH/DO optode/cultivation well
MTP-MF32C-BOH 2	Microfluidic FlowerPlate® (48 well MTP) incl. LG1/RF pH/DO optode/cultivation well
MTP-MF32C-BOH 3 (low pH)	Microfluidic FlowerPlate® (48 well MTP) incl. pH51/RF pH/DO optode/cultivation well
BOH 1/ 2/ 3	BOH 1: HP8/Pst3 (ID 402/403) BOH 2: LG1/RF (ID 421/428) BOH 3: pH51/RF (ID 424/428)

INFORMATION

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