

# Gen2 Microfluidic Round Well Plate

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

Now part of Beckman Coulter Life Sciences

## Technical parameters

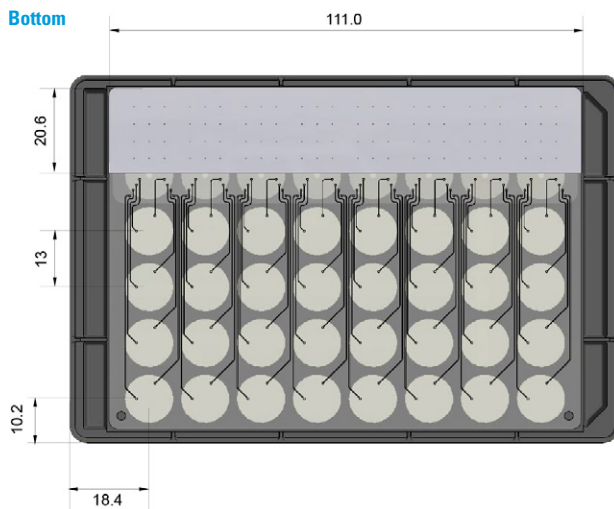
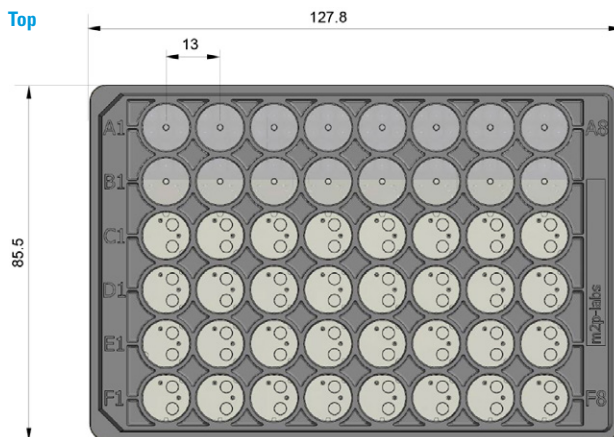
| Specification                           | Description   |
|---|---|
| Type                                    | <ul style="list-style-type: none"> <li>High-purity cyclic olefin copolymer (COC) microplate, high-purity polystyrene microplate body</li> <li>48 round wells: 16 reservoir wells, 32 cultivation wells</li> <li>Transparent microfluidic COC flat bottom</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: 3400 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>  |
| Microfluidic features                   | <ul style="list-style-type: none"> <li>Pump stroke volume: ca. 300 nL for aqueous solutions; ca. 160 nL for 500 g/L aq. glucose solution</li> <li>Maximum pump rate per well: up to 665 pump strokes per hour</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: 5 – 25 mmol/L/h</li> <li>Approx. range of <math>k_L a</math>: 30 – 160 h<sup>-1</sup></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)</li> <li>Fluorescence (intensity measurement)</li> <li>pH value with pre-calibrated optodes</li> <li>DO (dissolved oxygen) with pre-calibrated optodes</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-RSMF32-1 and F-GPRSMF32-1</li> <li>Sedimentation of biomass may occur at shaking frequencies lower than 600 rpm<sup>**</sup></li> <li>Autoclavability: no</li> <li>For single use only</li> </ul>        |

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

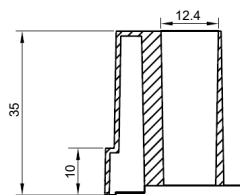
$k_L a$ : Volumetric oxygen transfer coefficient [h<sup>-1</sup>]

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

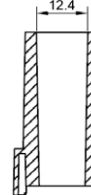
## MTP geometry for automation purpose [mm]



Section (length)



Section (width)



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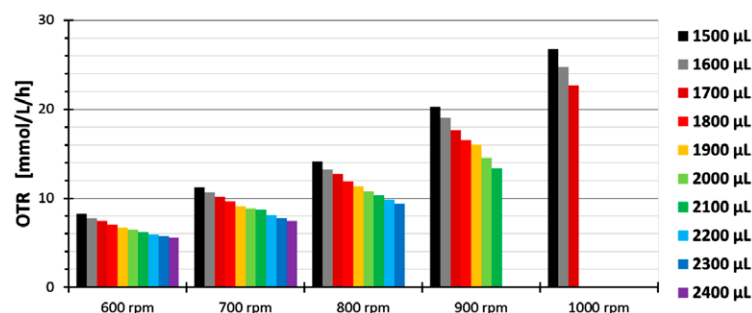
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## Operating conditions in the Round Well Plate

### Working volumes \*2

| Shaking frequency | Maximum filling volume*4 rows A+B | Maximum filling volume*4 rows C-F | Minimum filling volume |
|-------------------|-----------------------------------|-----------------------------------|------------------------|
| 600 rpm           | 2000 µl                           | 2400 µl                           | 1000 µl                |
| 700 rpm           | 2000 µl                           | 2400 µl                           | 1000 µl                |
| 800 rpm           | 2000 µl                           | 2300 µl                           | 1000 µl                |
| 900 rpm           | 2000 µl                           | 2100 µl                           | 1000 µl                |
| 1000 rpm          | 2000 µl                           | 1700 µl                           | 1000 µl                |

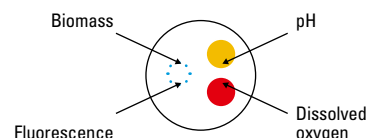
### Oxygen transfer rates for the recommended conditions \*2 \*3



### Optode (optical sensor spots) parameters

| DO measurement   | MTP-RMF32C-BOH 1   | MTP-RMF32C-BOH 2   | MTP-RMF32C-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-RMF32C-BOH 1   | MTP-RMF32C-BOH 2   | MTP-RMF32C-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 <sub>3</sub> PO <sub>4</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl | 3 M                               |
| CH <sub>3</sub> 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-RMF32C-BOH 1          | Microfluidic Round Well Plate (48 well MTP) incl. HP8/Pst3 pH/DO optode/cultivation well  |
| MTP-RMF32C-BOH 2          | Microfluidic Round Well Plate (48 well MTP) incl. LG1/RF pH/DO optode/cultivation well    |
| MTP-RMF32C-BOH 3 (low pH) | Microfluidic Round Well Plate (48 well MTP) incl. pH51/RF pH/DO optode/cultivation well   |
| BOH 1/ 2/ 3               | BOH 1: HP8/Pst3 (ID 402/403)<br>BOH 2: LG1/RF (ID 421/428)<br>BOH 3: pH51/RF (ID 424/428) |

#### INFORMATION

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