



# Ambr<sup>®</sup> 15 Fermentation

Advanced Microbioreactor System  
for Microbial Applications

Simplifying Progress

**SARTORIUS**

# Ambr<sup>®</sup> 15 Fermentation

## Automated High Throughput Microscale Bioreactor System for Microbial Applications

Ambr<sup>®</sup> 15 Fermentation is an automated microscale bioreactor system that is based on the gold standard Ambr<sup>®</sup> 15 technology. With the capacity to support high density fed batch microbial cultures it provides a consistent microscale model for early stage microbial screening experiments.

The benchtop system comprises single-use microbioreactor vessels, an automated workstation and user friendly software. It offers automated parallel processing and control of 24 bioreactor experiments by one operator.

Designed for installation in a standard biological safety cabinet for aseptic operation, Ambr<sup>®</sup> 15 Fermentation provides efficient, consistent and predictive results compared to classical laboratory bioreactors.

Ambr<sup>®</sup> 15 Fermentation transforms the way scientists undertake microbial strain selection and early process development in the 21st century.

- Increases lab productivity through automation of experiment setup, sampling and reagent addition, for up to 24 experiments in parallel
- Enhances scalability over shaken cultures with control of DO & pH in fed-batch culture, impeller stirring, gas sparging and pumped additions of base reagent and feed
- Provides predictive screening results early in development enabling the best early decisions and improving the overall efficiency and timeline of development process
- Enables data rich culture profiles with automated sampling and enough culture volume for many samples during a run
- Reduces the cost per experiment through savings on facility space, capital, labour, media and consumables

 **For more information, please visit**

[www.sartorius.com/en/products/fermentation-bioreactors/ambr-multi-parallel-bioreactors/ambr-15-fermentation](http://www.sartorius.com/en/products/fermentation-bioreactors/ambr-multi-parallel-bioreactors/ambr-15-fermentation)



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AMBR<sup>®</sup> 15  
FERMENTATION

# Workstation Features

Ambr<sup>®</sup> 15 Fermentation combines microbioreactor vessels, automated workstation and easy-to-use software

Optional Ambr<sup>®</sup> Analysis Module provides integrated at-line pH measurements for initial bioreactor vessel pH sensor calibration and subsequent in-process checks.



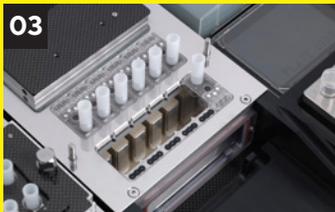
## Culture stations

Each culture station, two in total, can run 12 micro bioreactor vessels with control of temperature and impeller speed.



## Pumped addition of feed and base

Controlled feed and base delivery enabling high density fed-batch cultures with precise pH control.



## Individual vessel temperature control

Sensors and heaters for each vessel provide a steady, uniform culture temperature, even with a range of growth rates and heat outputs in different vessels.



## Liquid handling unit

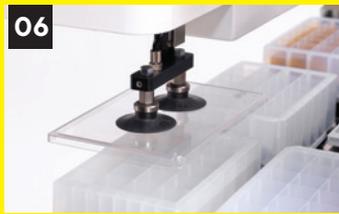
For media, feed and reagent addition plus sampling from the bioreactor vessels. Unit includes dual pipette heads, automated vessel decapper and plate delidder.





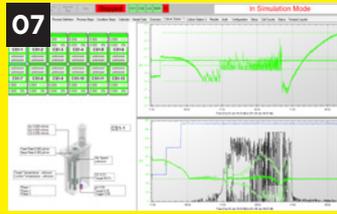
**Pipette tips**

Two sizes of high grade sterile pipette tips are available to transfer liquid volumes accurately and precisely.



**Labware lid management**

Lids are automatically removed prior to liquid transfer and replaced afterwards.



**Software**

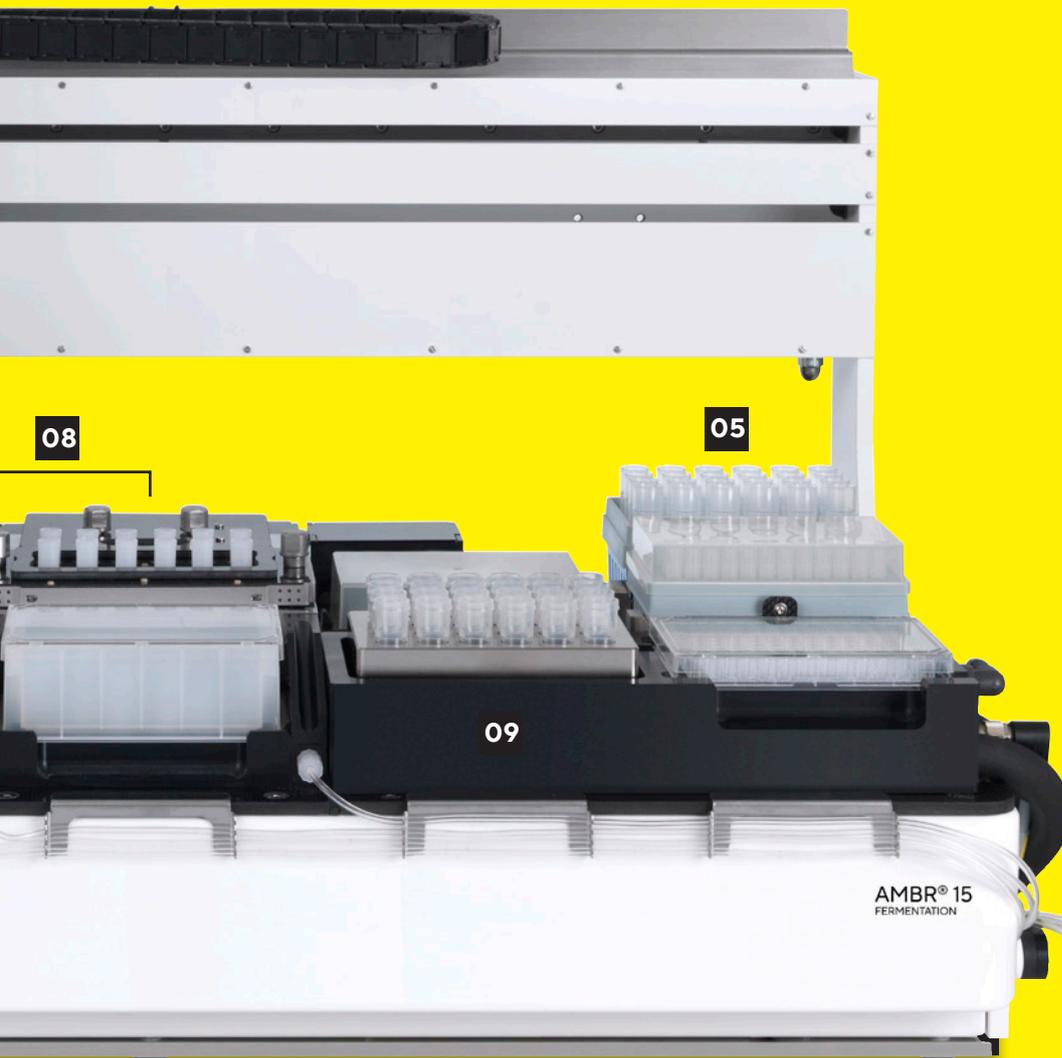
Software enables easy experiment construction, control and monitoring.



**Online biomass measurement**

Real-time continuous growth monitoring for microbial processes.

Ambr® 15 Fermentation 24 vessel system



**Chilled plate position**

Chilled storage of media or culture samples provides flexibility in scheduling of user interactions. Chilled sample storage facilitates data rich culture profiles with multiple samples during a run.



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# Functions

Ambr<sup>®</sup> 15 Fermentation automatically controls, feeds and samples  
24 bioreactor vessels in parallel

## Ambr<sup>®</sup> 15 Fermentation system

Fully automated parallel processing, control and evaluation of all bioreactor experiments with:

- Online monitoring and closed-loop control of pH
- Online monitoring of DO with cascade control possible using gas flow, stirrer speed and gas mixture
- Independent control of N<sub>2</sub>, air and O<sub>2</sub> for each vessel
- Individual sensors and heaters for precise bioreactor temperature control
- Online biomass measurement for continuous bioreactor growth monitoring

## Ambr<sup>®</sup> 15 Fermentation microbioreactor vessel

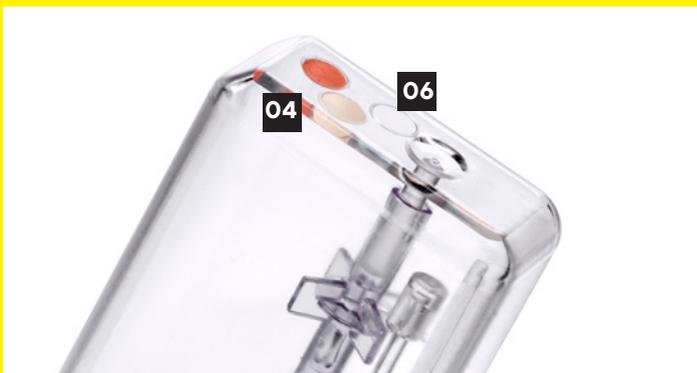
Mimics the characteristics of a classical lab scale bioreactor to enable reliable early stage predictions of cell growth and productivity:

- 8 to 12 mL working volume
- single-use pH and DO sensors
- Rushton-type impeller for efficient mixing
- Sparge tube delivers gas to the impeller mixing zone
- Sample port allows pipetted additions of antifoam, acid, inducer reagents as well as removal of samples for at-line/off-line analysis

## Bioreactor vessel

The core disposable microbioreactor technology includes sensors, stirring impeller, gas sparging, fluid additions and sample port.

1. Gas sparge tube
2. Base and feed addition tubes
3. Sample port
4. pH and DO sensor spots
5. Impeller
6. Online biomass window



# Integrated Online Biomass Measurement

Real-time continuous growth monitoring for microbial applications.

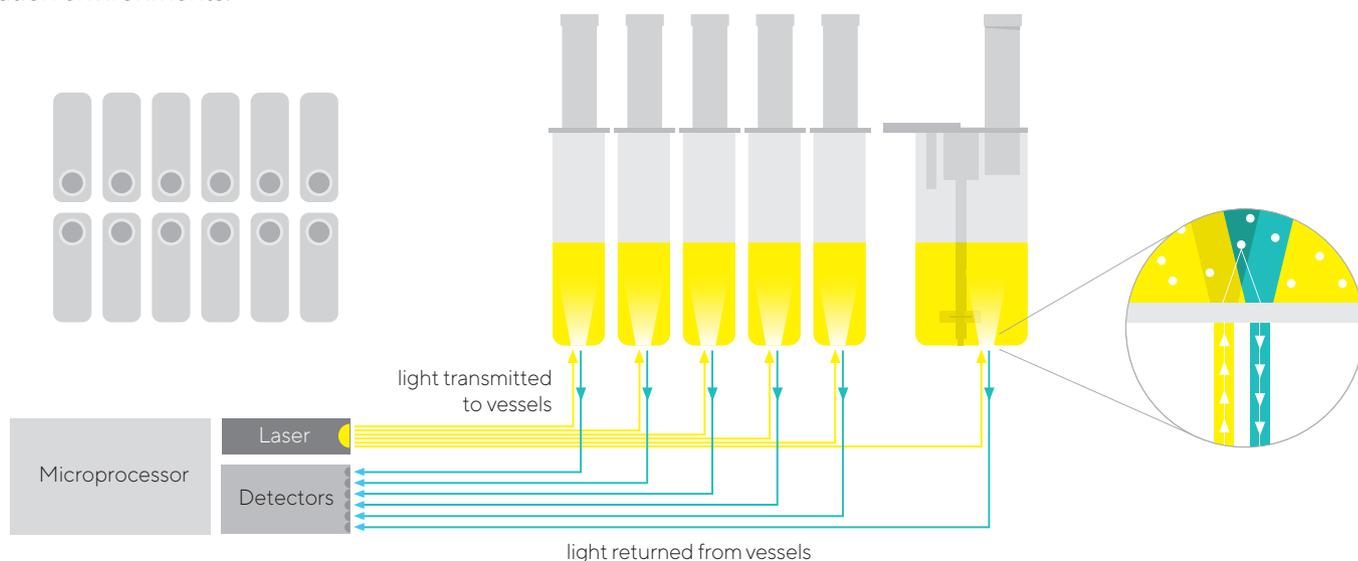
Reflectance-based measurement allowing fully automated, non-invasive analysis of 24 fermentation cultures running in parallel.

Calibration mapping of reflectance to  $OD_{600}$ , WCW or DCW allows comparison to offline data.

Wide dynamic range, even under high aeration and agitation environments.

This technology integration provides a further step forward in advanced microbial process monitoring and control:

- reducing the burden of frequent offline manual sampling
- fully automated; does not interrupt experiment or require operator hands on time
- non-invasive; does not reduce culture levels
- real-time biomass data available for programming of process events, such as induction or feed initiation



## Applications

Ambr® 15 Fermentation can be used as a microscale model to enhance results in a range of development applications such as:

- Strain selection
- Vector screening
- Media and feed development
- Early process optimization
- DoE studies



# Sales and Service Contacts

For further contacts, visit  
[www.sartorius.com](http://www.sartorius.com)

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