



Speedy Breedy: Versatile, Portable Microbial Respirometry

Principle & Background:

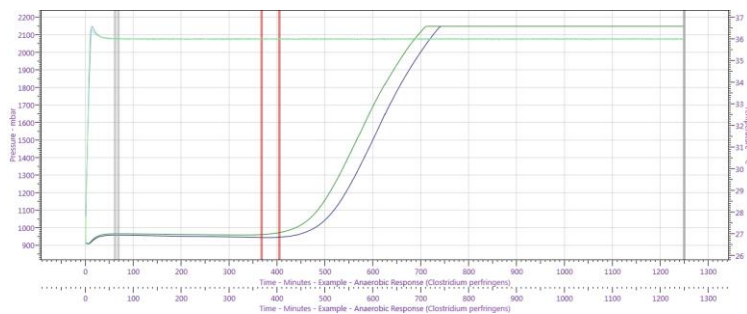
Speedy Breedy is an easy to use, compact, portable research and development instrument for microbiologists in manufacturing, quality assurance, hygiene control, R&D and education who are interested in investigating, measuring and observing microbial behaviour in liquids, powders, macerated solids or from swabbed samples.

In repeated independent studies, Speedy Breedy is proven as a simple to use tool for the rapid, selective, quantitative detection of micro-organisms, with significant time savings in time taken to obtain results when compared with plate culture techniques and large laboratory instrumentation (e.g. BacT/Alert®).

Speedy Breedy can be used:

- ... with a wide range of culture media.
- ... with selective culture media for the growth and detection of specific organisms.
- ... for detecting aerobes, facultative anaerobes, anaerobes and microaerophilic organisms.
- ... for detecting yeasts and differentiating for wild yeasts (in the brewing industry).
- ... to provide quantitative results relating to the number of CFU present in a sample.
- ... to incubate over a range of temperatures, including a pasteurisation function.
- ... to determine the efficacy of antimicrobial compounds.

Optimised Growth Conditions & Sensitive Respirometry for Rapid Detection:



Sensitive pressure transients are used to detect microbial activity and significant pressure change events are calculated internally to provide early detection of contamination.

Displaying a message on Speedy Breedy to confirm contamination, the data can also be output to PC

and presented in different ways including graphical representation of actual pressure (illustrated here, with a red line indicating the time of detection), rate of change or as raw numerical data.

Conclusions

Time to detection can be influenced by a number of factors including culture medium, temperature, inhibitors or promoters within the sample, plus the number and condition of the organisms within the sample. Heavily contaminated samples will be detected more quickly.

Development of specific protocols can therefore improve upon the times indicated for specific applications. Conversely, organisms taken from stressed environments may require further time for confirmation.

Typical Detection Times*:

Organism	CFU in 50ml Sample	SB Culture Vessel Type	Time to Detection
Aerobes			
<i>Pseudomonas aeruginosa</i>	30	Aeruginosa Vessel	15 Hr, 8 Min
<i>Pseudomonas aeruginosa</i>	5.05 x 10 ³	Aeruginosa Vessel	9 Hr, 20 Min
Facultative Anaerobes			
<i>Citrobacter freundii</i>	180	MacConkey Vessel	13 Hr, 52 Min
<i>Citrobacter freundii</i>	1.26 x 10 ⁴	MacConkey Vessel	11 Hr, 54 Min
<i>Enterococcus faecalis</i>	100	Ethyl Violet Azide Vessel	14 Hr, 5 Min
<i>Enterococcus faecalis</i>	3.40 x 10 ³	Ethyl Violet Azide Vessel	11 Hr, 16 Min
<i>Escherichia coli</i>	1	MacConkey Vessel	10 Hr, 26 Min
<i>Escherichia coli</i>	4.04 x 10 ⁴	MacConkey Vessel	6 Hr, 52 Min
<i>Lactobacillus brevis</i>	8	Lactic Acid Bacteria Vessel	27 Hr, 30 Min
<i>Lactobacillus brevis</i>	1.84 x 10 ⁴	Lactic Acid Bacteria Vessel	17 Hr, 0 Min
<i>Listeria monocytogenes</i>	30	Listeria Vessel	22 Hr, 45 Min
<i>Listeria monocytogenes</i>	3.80 x 10 ⁴	Listeria Vessel	14 Hr, 24 Min
<i>Salmonella enterica</i>	68	Salmonella Vessel	20 Hr, 38 Min
<i>Salmonella enterica</i>	1.12 x 10 ⁴	Salmonella Vessel	13 Hr, 31 Min
<i>Staphylococcus aureus</i>	160	Staphylococcus Vessel	19 Hr, 36 Min
<i>Staphylococcus aureus</i>	1.99 x 10 ⁵	Staphylococcus Vessel	12 Hr, 21 Min
<i>Vibrio parahaemolyticus</i>	20	Vibrio Vessel	13 Hr, 19 Min
<i>Vibrio parahaemolyticus</i>	3.10 x 10 ⁴	Vibrio Vessel	7 Hr, 58 Min
<i>Vibrio vulnificus</i>	84	Vibrio Vessel	12 Hr, 58 Min
<i>Vibrio vulnificus</i>	1.03 x 10 ⁴	Vibrio Vessel	8 Hr, 18 Min
Anaerobes			
<i>Clostridium perfringens</i>	20	Perfringens Vessel	9 Hr, 59 Min
<i>Clostridium perfringens</i>	3.10 x 10 ⁴	Perfringens Vessel	5 Hr, 12 Min
Yeasts			
<i>Candida albicans</i>	48	All Yeasts Vessel	32 Hr, 41 Min
<i>Candida albicans</i>	3.10 x 10 ⁴	All Yeasts Vessel	17 Hr, 12 Min
<i>Saccharomyces cerevisiae</i>	35	All Yeasts Vessel	41 Hr, 15 Min
<i>Saccharomyces cerevisiae</i>	4.90 x 10 ⁴	All Yeasts Vessel	17 Hr, 52 Min
<i>Saccharomyces diastaticus</i>	180	Wild Yeasts Vessel	31 Hr, 52 Min
<i>Saccharomyces diastaticus</i>	1.50 x 10 ⁴	Wild Yeasts Vessel	15 Hr, 0 Min

* Sample type used in these tests was sterile, de-ionised water.

Speedy Breedy

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