

APPLICATION NOTE

EVALUATION OF LOST OF AGAR MOISTURE IN
STANDARD 90 MM PETRI DISHES DURING SAMPLING
CYCLE USING AN IMPACTION METHOD SAMPLER LIKE SAS

AIR-HANDS-SURFACES

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APPLICATION NOTE

□ Glossary

Air sampler, Agar, Colony, CFU, Colony Forming Unit, Contact Plate, Dehydration, Growth, Impact, Mean, Medium, Population, RODAC Plate, Sampling time, Sequential sampling cycle, Standard sampling cycle.

□ Introduction

The growth of micro-organisms population in the nutrient agar of a Contact plate is influenced not only by the quality of the components but also from the correct level of moisture of the medium. To obtain the best growth of the micro-organisms the nutrient medium should be freshly prepared and the ready plates stored at a correct temperature, according to the manufacturer prescription. The agar plates can also lose moisture during the sampling time, due to the impact of air on the agar surface. This must be less than 10% according to the literature.

□ STANDARD OPERATING PROCEDURE

- TITLE

Lost of agar moisture during sampling cycle using an impaction method sampler.

- SCOPE OF TEST

This test should be performed to evaluate the lost of moisture in Contact plates (RODAC) during the sampling cycle of the SAS ISO 180 microbiological air sampler.

- GLOSSARY

Air sampler, Agar, Colony, CFU, Colony Forming Unit, Contact Plate, Dehydration, Growth, Impact, Mean, Medium, Population, RODAC Plate, Sampling time, Sequential sampling cycle, Standard sampling cycle.

- RESPONSIBILITY

Microbiological Laboratory Manager.

- STANDARD

SAS Super 180 air sampler Instruction Manual.

- MATERIAL

SAS Super ISO microbiological air sampler -180 litres per minute - (180 lts/minute)
Petri dishes (International PBI)
Laboratory balance "Sara"

- ENVIRONMENTAL CONDITIONS

Temperature 23°C
Humidity 55%

- PROTOCOL

Standard sampling cycle

4 Petri dishes were submitted to a total consecutive air aspirating volume of 1000 litres (= single cycle of 5,5 minutes).

Sequential sampling cycle

4 Petri dishes were submitted to sequential air aspirating volume of 1000 litres but with ten cycle of 100 litres repeated every 20 minutes (=180 minutes total delay time + 5,5 minutes run time = 185,5 minutes total sample coverage time).

- THE RESULTS

STANDARD SAMPLING CYCLE	PLATE 1	PLATE 2	PLATE 3	PLATE 4	Mean
Weight of 90 mm Petri dish before cycle starting	31,71	32,10	30,63	31,17	
Weight of 90 mm Petri dish at the end of aspirating cycle	30,43	30,80	29,40	29,92	
Weight difference	30,43	30,80	29,40	29,92	
% Dehydration	4,04 %	4,05 %	4,02 %	4,01 %	4,03 %

With the Standard Sampling Cycle the lost of moisture remains around 4%. According to the literature, a value below 10% is not significant for the micro-organisms multiplication.

SEQUENTIAL SAMPLING CYCLE	PLATE 5	PLATE 6	PLATE 7	PLATE 8	Mean
Weight of 90 mm Petri dish before cycle starting	32,04	31,10	31,51	31,72	
Weight of 90 mm Petri dish at the end of aspirating cycle	29,93	29,63	29,42	29,85	
Weight difference	2,11	1,47	2,09	1,87	
% Dehydration	6,59 %	4,73 %	6,63 %	5,90 %	5,96 %

While the sequential sampling cycle lost most moisture, it remains around 6%. According to the literature, a value below 10% is not significant for the micro-organisms multiplication.

Conclusion

The mean dehydration of poured standard 90 mm Petri dishes applying a standard 1000 litres single sampling cycle is 4,03; applying a three hours 1000 litres (10x100 litres Sequential sampling) is 5,96%. This weight lost doesn't affect agar medium growth characteristics, if fresh media plates are used.



Microbiological air sampler
"SAS Super ISO"



Microbiological air sampler
"Duo SAS 360"