

MICROBIOLOGICAL RESULTS

PERFORMANCE BY TYPE OF PACKAGING
(FRAUNHOFER INSTITUT / CLARANOR)

CAP STERILIZATION

Flat cap Bericap 28mm



- Spray inoculation *A. brasiliensis* on surface in contact with the product
- Initial contamination : $1,8 \times 10^5$
- 1 lamp reflector

Flash No	1	2
Mean log-reduction	4	4.4

Flat cap Portola with foil



- Spray inoculation *A. brasiliensis* on surface in contact with the product
- Initial contamination : $10^{4.9}$
- 1 lamp reflector

Flash No	1	2
Mean log-reduction	4.9	> 4.9

Sport cap Bericap 30 mm



- Spray inoculation *B. subtilis* on surface in contact with the product
- Initial contamination : 2.2×10^5
- 5 samples / modality
- 2 lamps reflector

Flash No	1	2
Mean log-reduction	5.1	> 5.3

Flat cap 43 mm with an aluminium foil



- Full cap sterilization : int/ext
- Spray inoculation *B. subtilis* spores SC 204-2
 - Initial contamination: 1.2×10^3
 - 2 lamps reflector for inside
 - 1 lamp reflector for outside

Flash No	1 int	1 ext
Mean log-reduction	> 4	> 3.8

PREFORM STERILIZATION

Preform neck



- Multi dots inoculation *A. brasiliensis*
- Initial contamination :
 - inner surface : $2,7 \times 10^4$
 - outer surface : 1.4×10^4
- 2 lamps reflector

Inner surface

Flash No	1	2	3
Mean log-reduction	4.4	4.3	4.3

Outer surface

Flash No	1	2	3
Mean log-reduction	4.0	4.1	4.0

Preform neck + body



- Multi spots inoculation *A. brasiliensis*
- Initial contamination : $1 \times 10^{4.7}$
- Combined treatment (IR immediately followed by Pulsed light)

Modality	Voltage	Flash No	Mean log-reduction
49 sec. 115-120°C	2500 V	1	3.7
		2	4.2
52 sec. 142-145°C		1	4.5
		2	4.4

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CUP STERILIZATION



Cardboard PE coated cup 150 ml

- Spray inoculation with *Aspergillus brasiliensis*
- Initial contamination : $1 \times 10^{4.7}$
- 5 samples / modality
- 1 lamp reflector

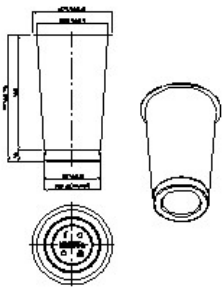
Flash No	1	2
Mean Log reduction	3.1	4.7



PS tub 1 Kg

- Spray inoculation with *Aspergillus brasiliensis*
- Initial contamination : $6,6 \times 10^4$
- 5 samples / modality
- 2 lamps reflector

Flash No	1	2
Mean Log reduction	3.3	4.2



PS cup 300 ml

- Spray inoculation *Bacillus subtilis*
- Initial contamination : $4,3 \times 10^5$
- 1 lamp reflector

Flash No	2	3
Mean Log reduction	4.2	5.4

Double chamber PS cup



- Spray inoculation *Aspergillus brasiliensis*
- Initial contamination : $9,9 \times 10^4$
- 5 samples / modality
- 2 lamps reflector

Flash No	2	3
Mean Log reduction	4.8	> 5.0



PP bucket 10,7 L (height 265 mm x up diameter 245 mm)

- Multi-dots deposition with *Aspergillus brasiliensis* on surface in contact with the product
- Initial contamination : 3×10^3
- 1 sample / modality
- 3 lamps reflector

Investigated area	Flash No	5
Bottom	Mean Log reduction	3.47
Angle		
Wall		