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EDUCATION *Ph.D. Supervised*
EXPERIENCE *Serving since 1970*
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Study Title

Modified EPA Food Contact Sanitizer Test For Previously Cleaned Food-Contact Surfaces (AOAC Germicidal and Detergent Sanitizing Action of Disinfectant)

Product Identity

Perasan A

Data Requirement

EPA Pesticide Assessment Guidelines Subdivision G, 1982, 91-2

Author

Daniel L. Prince, Ph.D.
President

Study Completion Date

5/12/2005

Testing Facility

Gibraltar Laboratories, Inc.
122 Fairfield Road
Fairfield, NJ 07004

Laboratory Project Number (Study File)

GBL Study # GR 2049

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STUDY CONCLUSION

Perasan A, Lot # 35-411021 prepared in 400 ppm AOAC hard water inactivated $\geq 99.999\%$ of *Bacillus subtilis* var. *globigii*, *Byssochlamys fulva* and *Aspergillus niger* when tested at 2.5 ounces / gallon (977 ppm) at 46C and 60C within 15 seconds contact time. Complete activity was also obtained against *Aspergillus niger* when tested 1 ounce/ gallon (391 ppm) at 60C and against *Byssochlamys fulva* when tested 1 ounce / gallon (391 ppm) at 46C and 60C prepared in 400 ppm AOAC hard water.

REPORT SUBMITTED BY:

J. J. Mastej
 Study Director
 Jozef Mastej

5/12/05
 Study Completion Date

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Table 1: Raw Data Results for *Aspergillus niger* (Perasan A Lot # 35-411021)

Concentration in ppm (v/v)	Test temperature	Exposure Time	Flask	Plate Counts (CFU/plate)			
				Number Surviving membrane filtration (10 ⁻²)		Number Controls (10 ⁻⁶) (Microbes Initially Present) Sum of membrane filtration 10 mL	
				90 mL	10 mL	Flask A	Flask B
391 ppm	46C	15 seconds	Flask A	>200	29	36	43
			Flask B	>200	32		
	60C	15 seconds	Flask A	0	0		
			Flask B	0	0		
977 ppm	46C	15 seconds	Flask A	0	0		
			Flask B	0	0		
	60C	15 seconds	Flask A	0	0		
			Flask B	0	0		
Avg. of Flask A and B 4.0 x 10 ⁷ = 7.6 Log							

Table 2: Calculated Results for *Aspergillus niger* (cfu/mL) by Concentration, Exposure, Temperature and corresponding Percent and Log₁₀ Reduction

Concentration in ppm (v/v)	Exposure Time	Test Temperature	Average Number Surviving (cfu/mL)	Microbes Initially Present (cfu/mL)	Microbes Initially Present (Log ₁₀)	Log ₁₀ Reduction	Percent Reduction
391 ppm	15 seconds	46C	3.1 x 10 ³	4.0 x 10 ⁷	7.6	4.11	>99.99%
	15 seconds	60C	0	4.0 x 10 ⁷	7.6	7.6	>99.999%
977 ppm	15 seconds	46C	0	4.0 x 10 ⁷	7.6	7.6	>99.999%
	15 seconds	60C	0	4.0 x 10 ⁷	7.6	7.6	>99.999%

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Table 3: Raw Data Results for *Bacillus subtilis* var. *globigii* (Perasan A Lot # 35-411021)

Concentration in ppm (v/v)	Test temperature	Exposure Time	Flask	Plate Counts (CFU/plate)			
				Number Surviving membrane filtration (10 ⁻²)		Number Controls (10 ⁻⁶) (Microbes Initially Present) Sum of membrane filtration 10 mL	
				90 mL	10 mL	Flask A	Flask B
391 ppm	46C	15 seconds	Flask A	TNTC	>200	78	83
			Flask B	TNTC	>200		
	60C	15 seconds	Flask A	>200	126		
			Flask B	>200	109		
977 ppm	46C	15 seconds	Flask A	0	0		
			Flask B	0	0		
	60C	15 seconds	Flask A	0	0		
			Flask B	0	0		
TNTC = Too Numerous To Count						Avg. of Flask A and B 8.1 x 10 ⁷ = 7.91 Log	

Table 4: Calculated Results for *Bacillus subtilis* var. *globigii* (cfu/mL) by Concentration, Exposure, Temperature and corresponding Percent and Log₁₀ Reduction

Concentration in ppm (v/v)	Exposure Time	Test Temperature	Average Number Surviving (cfu/mL)	Microbes Initially Present (cfu/mL)	Microbes Initially Present (Log ₁₀)	Log ₁₀ Reduction	Percent Reduction
391 ppm	15 seconds	46C	TNTC	8.1 x 10 ⁷	7.91	0	0%
	15 seconds	60C	1.2 x 10 ⁴	8.1 x 10 ⁷	7.91	3.83	>99.9%
977 ppm	15 seconds	46C	0	8.1 x 10 ⁷	7.91	7.91	>99.999%
	15 seconds	60C	0	8.1 x 10 ⁷	7.91	7.91	>99.999%

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Table 5: Raw Data Results for *Byssochlamys fulva* (Perasan A Lot # 35-411021)

Concentration in ppm (v/v)	Test temperature	Exposure Time	Flask	Plate Counts (CFU/plate)			
				Number Surviving membrane filtration (10 ²)		Number Controls (10 ⁵) (Microbes Initially Present) Sum of membrane filtration 10 mL	
				90 mL	10 mL	Flask A	Flask B
391 ppm	46C	15 seconds	Flask A	0	0	15	18
			Flask B	0	0		
	60C	15 seconds	Flask A	0	0		
			Flask B	0	0		
977 ppm	46C	15 seconds	Flask A	0	0		
			Flask B	0	0		
	60C	15 seconds	Flask A	0	0		
			Flask B	0	0		
Avg. of Flask A and B 1.7 x 10 ⁶ = 6.23 Log							

Table 6: Calculated Results for *Byssochlamys fulva* (cfu/mL) by Concentration, Exposure, Temperature and corresponding Percent and Log₁₀ Reduction

Concentration in ppm (v/v)	Exposure Time	Test Temperature	Average Number Surviving (cfu/mL)	Microbes Initially Present (cfu/mL)	Microbes Initially Present (Log ₁₀)	Log ₁₀ Reduction	Percent Reduction
391 ppm	15 seconds	46C	0	1.7 x 10 ⁶	6.23	6.23	>99.999%
	15 seconds	60C	0	1.7 x 10 ⁶	6.23	6.23	>99.999%
977 ppm	15 seconds	46C	0	1.7 x 10 ⁶	6.23	6.23	>99.999%
	15 seconds	60C	0	1.7 x 10 ⁶	6.23	6.23	>99.999%

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Table 7: Neutralization Effectiveness and Neutralization System Toxicity Control Results

Test Substance and Test	<i>Aspergillus niger</i>			<i>Bacillus subtilis var. globigii</i>		
	Flask A (cfu)	Flask B (cfu)	Inoculum (cfu)	Flask A (cfu)	Flask B (cfu)	Inoculum (cfu)
Neutralization Effectiveness Control Perasan A Lot # 35-411021 1 ounce / gallon	30	24	31	76	81	82
Neutralization Effectiveness Control Perasan A Lot # 35-411021 2.5 ounces / gallon	25	26		79	77	
Neutralization System Toxicity Control	28	23		77	78	

Table 8: Neutralization Effectiveness and Neutralization System Toxicity Control Results

Test Substance and Test	<i>Byssochlamys fulva</i>		
	Flask A (cfu)	Flask B (cfu)	Inoculum (cfu)
Neutralization Effectiveness Control Perasan A Lot # 35-411021 1 ounce / gallon	11	12	14
Neutralization Effectiveness Control Perasan A Lot # 35-411021 2.5 ounces / gallon	10	13	
Neutralization System Toxicity Control	13	11	

Table 9: Sterility Control Results

Reagents and Lot #'s	Result
AOAC Hard Water Lot # C-1349, C-1351, C-1354, C-1360	Sterile
Phosphate Buffer Dilution Water Lot # D-122, 123	Sterile
Neutralizer Broth (Phosphate Buffer Dilution Water containing 23.8 units catalase / mL and 0.055 Sodium thiosulfate) Lot # D-122, 123	Sterile

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