

Honeywell Building Technologies TEST REPORT

SCOPE OF WORK

JIS Z 2801/ISO 22196:2011 - Measurement of antibacterial activity on plastics and other non-porous surfaces

Product: Peha STANDARD (UREA (Ref L) 371

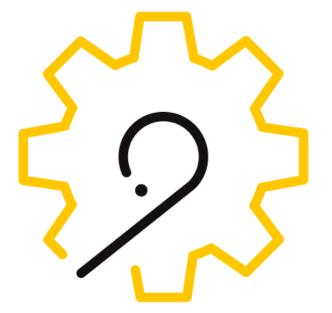
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MICROBIOLOGICAL PERFORMANCE TEST REPORT

	Client	Honeywell Building Technologies The Arnold Centre, Paycocke Road, Basildon, SS14 3EA		
Р	roject No.	G104428330		
Sample	Product / Model	Peha STANDARD (UREA (Ref L) 371		
	Identification No.	COL2007021108-001		
	Date Received	August 12, 2020		
	Condition	Good		
	Production or Prototype	Production		
Procedural	Tested By	Nicholas Unger		
	Reviewer	Lee Moomaw		
	Dates Tested	09-07-2020 to 10-19-2020		
	Report Date 10-26-2020			
Standard	JIS Z 2801/ISO 22196:2011 - Measurement of antibacterial activity on plastics and			
	other non-porous surfaces			
Deviation from	Additional micro-organisms added (see Test Parameter below). Samples were cut			
Standard	to 50mm by 50mm. Initial Viable counts taken from spectrophotometer			
	estimates and confirmed through $U_{0.}$			

Test Parameters:

Organism	ATCC No
Escherichia Coli	8739
Staphylococcus aureus	6538P
Listeria monocytogenes	19114
MRSA	BAA-2313
Escherichia Coli O157:H7	43888
Phi X-174	13706-B1
Salmonella enterica subsp. enteric serovar Typhimurium	13311
Klebsiella Pneumoniae	4352

Test Inoculum Volume	Viable E. coli in Inoculum	Viable S. aureus in Inoculum	Polymer Type	Polymer Thickness
0.4 mL	1.9 x 10⁵ cfu/mL	1.0 x 10⁵ cfu/mL	Para Film	0.127mm

Viable L. monocytogenes in Inoculum	Viable MRSA in Inoculum	Viable K. Pneumonia in Inoculum	Viable Escherichia Coli O157:H7 in Inoculum	Viable S. enterica in Inoculum
2.0 x 10⁵ cfu/mL	1.5 x 10⁵ cfu/mL	2.0 x 10⁵ cfu/mL	1.6 x 10⁵ cfu/mL	2.0 x 10⁵ cfu/mL

Viable Phi. X174 in Inoculum 2.0 x 10⁵ pfu/mL

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Test Parameter	Definition of Term
U ₀	Is the average of the common logarithm of the number of viable bacteria, in cells/cm ² recovered from the untreated test specimens immediately after inoculation.
Ut	Is the average of the common logarithm of the number of viable bacteria, in cells/cm ² recovered from the untreated test specimens after 24 h.
At	Is the average of the common logarithm of the number of viable bacteria, in cells/cm ² recovered from the treated test specimens after 24 h.
Antibacterial Activity Value	Is calculated utilizing the following equation: = $(U_{t} - U_0) - (A_{t} - U_0) = U_t - A_t$

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E. coli O157 Results		MRSA Results		
Test Parameter	Result	Test Parameter	Result	
Initial U ₀	3.94	Initial U ₀	5.35	
24 Hr U _t	5.4	24 Hr U _t	5.52	
24 Hr A _t	1	24 Hr A _t	1	
Antibacterial Activity Value	4.4	Antibacterial Activity Value	4.52	
Percentage Reduction	99.996%	Percentage Reduction	99.997%	

Listeria Results		E. coli Results	
Test Parameter	Result	Test Parameter Result	
Initial U ₀	4.17	Initial U ₀ 5.8	
24 Hr U _t	4.97	24 Hr U _t 6.17	
24 Hr A _t	1	24 Hr A _t 1	
Antibacterial Activity Value	3.97	Antibacterial Activity Value 5.17	
Percentage Reduction	99.99%	Percentage Reduction 99.999%	



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S. aureus Results		K. pneumoniae Results	
Test Parameter	Result	Test Parameter	Result
Initial U ₀	5.2	Initial U ₀	5.38
24 Hr U _t	5.46	24 Hr U _t	5.29
24 Hr A _t	1	24 Hr A t	0.95
Antibacterial Activity Value	4.46	Antibacterial Activity Value	4.34
Percentage Reduction	99.997%	Percentage Reduction	99.995%

Salmonella enterica subsp. entericaserovar Typhimurium Results			Phi-X174 Virus I	Results
Test Parameter	Result		Test Parameter	Result
Initial U ₀ 5.47			Initial U ₀	6
24 Hr U _t	5.7		24 Hr U _t	5.67
24 Hr A t	0.7		24 Hr At	1
Antibacterial Activity Value	5		Antibacterial Activity Value	4.67
Percentage Reduction	99.999%		Percentage Reduction	99.998%

Note: Antibacterial Activity Values are presented in Log form as per standard requirements. A value of 1.00 would equate to a 90% reduction. A 2 would be 99%, a 3 99.9% and so forth.

Date / Project Number	Engineer / Reviewer	Pages	Description of Change
November 17, 2020 G104428330	Nicholas Unger	All	Changed Product name from "Peha UREA (Ref L) – 371" to "Peha STANDARD (UREA (Ref L) 371"

Test Performed by:

Signature on File

Nicholas Unger Staff Engineer Columbus Office Report Approved by:

Signature on File

Lee Moomaw Engineering Team Lead Columbus Office