

Healthy Environment Innovations

Independent Testing of the Far-UV Sterilray Disinfection Wand

HEI has tested its patented Far-UV Sterilray disinfection system on a variety of organisms in several independent labs in the US and internationally. This data, combined with our expertise in using the Far-UV Sterilray Disinfection Wand to disinfect the noncritical high touch surfaces in hospital environments, is used to design room protocols and facility-wide service plans for our customers. These protocols — which include identifying greatest need, surfaces to treat, and number of treatments per day — are based upon the desired efficacy, the suspected organisms present, the number of areas being disinfected, and other variables such as the methods now being employed and the condition of the noncritical surfaces.

date	test location	Microorganism	Lamp power-irradiance	Surface	dose (mJ/cm ²)	Exposure time**	Percent reduction (Log reduction)
1/3/07	MRA ¹	MRSA	Low-4 mw/cm ²	petri	50	12 sec	100% (6.3)
1/3/07	MRA ¹	MRSA+1% load	Low-4 mw/cm ²	petri	82.4	20 sec	99.99% (7.3)
1/3/07	MRA ¹	A. baumannii	Low-4 mw/cm ²	petri	20	5 sec	100% (4.5)
1/3/07	MRA ¹	A. baumannii	High-12 mw/cm ²	petri	60	5 sec	100% (6.7)
1/3/07	MRA ¹	C sporogenes	Low-4 mw/cm ²	petri	83.1	22 sec	100% (6.6)
1/3/07	MRA ¹	B. Atropheaus	Low-4 mw/cm ²	dry slide	100	12 sec	99.99% (4.24)
1/3/07	MRA ¹	Feline calici	Low-4 mw/cm ²	petri	52	12 sec	100% (5.04)
6/11/08	VA-OH ¹	CA-MRSA	High-14 mw/cm ²	petri	48.9	3.5 sec	99.9% (3.0)
6/11/08	VA-OH ¹	VRE	High-14 mw/cm ²	petri	95.3	7 sec	99.9% (4.0)
6/11/08	VA-OH ¹	A. baumannii	High-14 mw/cm ²	petri	103.6	7 sec	100% (8.0)
6/14/08	VA-OH ²	CA-MRSA	High-14 mw/cm ²	petri	51.1	3.5 sec	99.99% (5.1)
6/14/08	VA-OH ²	VRE	High-14 mw/cm ²	petri	25.3	3.0 sec	100% (>6.9)
6/14/08	VA-OH ²	A. baumannii	High-14 mw/cm ²	petri	106.6	7 sec	100% (>9.0)
6/16/08	VA-OH ³	C. difficile spore	High-14 mw/cm ²	dry on lab table	50	5 sec	100% (5.8)
6/16/08	VA-OH ³	C. difficile spore	Low-10 mw/cm ²	dry on lab table	100	9 sec	100% (5.8)
7/22/08	VA-OH ⁴	Pseudomonas	Low-10 mw/cm ²	petri	50	5 sec	(>4.0)
7/22/08	VA-OH ⁴	C. albicans	Low-10 mw/cm ²	petri	50	5 sec	(>5.0)
7/22/08	VA-OH ⁴	Pseudomonas	Low-10 mw/cm ²	petri	100	9 sec	(>5.0)
7/22/08	VA-OH ⁴	Pseudomonas	High-14 mw/cm ²	petri	50	3.5 sec	(>5.0)
7/22/08	VA-OH ⁴	Pseudomonas	High-14 mw/cm ²	petri	100	7 sec	(>6.0)
7/22/08	VA-OH ⁴	C. albicans	Low-10 mw/cm ²	petri	100	9 sec	100% (7.0)
6/3/09	UNAM ¹	S. aureus	Low-10 mw/cm ²	petri	100	9 sec	99.92%
6/3/09	UNAM ¹	P. aeruginosa	Low-10 mw/cm ²	petri	100	9 sec	99.93%
6/3/09	UNAM ¹	A. israelii	Low-10 mw/cm ²	petri	100	9 sec	99.93%
6/3/09	UNAM ¹	S. sanguinis	Low-10 mw/cm ²	petri	100	9 sec	99.97%
6/3/09	UNAM ¹	E. coli	Low-10 mw/cm ²	petri	100	9 sec	99.99%

date	test location	bacteria	Lamp power-irradiance	Surface	dose (mJ/cm ²)	Exposure time**	Percent reduction (Log reduction)
Mar-10	Bradford ¹	A. baumannii	Low-10 mw/cm ²	metal	50-250	Varied	(2.0-5.0)
Mar-10	Bradford ¹	A. baumannii	Low-10 mw/cm ²	Plastic	50-250	Varied	(3.2-5.50)
Mar-10	Bradford ¹	A. baumannii	Low-10 mw/cm ²	Glass	50-175	Varied	(5.0-6.0)
3/15/10	ATS	A. baumannii	Low-10 mw/cm ²	Glass	50	5 sec	>99.9% (>3.97)
3/15/10	ATS	P. aeruginosa	Low-10 mw/cm ²	fabrics	100 (50 each side)	5 sec	>99.9% (3.37)
3/15/10	ATS	MRSA	Low-10 mw/cm ²	Fabrics	100 (50 each side)	5 sec	>99.99% (4.53)
3/15/10	ATS	A. baumannii	Low-10 mw/cm ²	fabrics	100 (50 each side)	5 sec	>99.99% (4.75)
3/15/10	ATS	MRSA	Low-10 mw/cm ²	Glass	50	5 sec	>99.99% (4.83)
3/15/10	ATS	P. aeruginosa	Low-10 mw/cm ²	Glass	50	5 sec	>99.99% (4.86)
3/15/10	ATS	C. difficile spore	High-14 mw/cm ²	fabrics	100 (50 each side)	7 sec	91.3% (1.06)
3/15/10	ATS	B. subtilis	High-14 mw/cm ²	fabrics	100 (50 each side)	7 sec	98.6% (1.85)
3/15/10	ATS	C. difficile spore	High-14 mw/cm ²	Glass	100	7 sec	99.8% (2.65)
3/15/10	ATS	B. subtilis	High-14 mw/cm ²	Glass	100	7 sec	99.99% (4.13)
3/16/10	Bradford ²		Low-10 mw/cm ²	human skin	approx 4800	10 minutes	no visible damage to cells
4/29/10	MRA ²	B. pumilus spore	High-14 mw/cm ²	petri	106.8	7 sec	<99.99%
6/22/10	VA-OH ⁵	C. difficile spore	High-18 mw/cm ²	human finger pads	200	11 sec	(2.4)
8/5/10	VA-OH ⁶	C. difficile spore	High-18 mw/cm ²	human finger pads	200	11 sec	(3.2)
8/5/10	VA-OH ⁶	Staph warneri	Low-10 mw/cm ²	human finger pads	100	10 sec	(4.5)

ATS ATS Labs, Eagan MN-March 15, 2010
 Bradford¹ University of Bradford, UK-March 2010
 Bradford² University of Bradford, UK-March 16, 2010
 MRA¹ Microbiology Research Associates, Inc. Acton MA-Jan 03, 2007
 MRA² Microbiology Research Associates, Inc. Acton MA-April 29, 2010
 UNAM¹ National University of Mexico-June 3, 2009
 VA-OH¹ Veterans Hospital, Cleveland OH-June 11, 2008
 VA-OH² Veterans Hospital, Cleveland OH-June 14, 2008
 VA-OH³ Veterans Hospital, Cleveland OH-June 16, 2008
 VA-OH⁴ Veterans Hospital, Cleveland OH-July 22, 2008
 VA-OH⁵ Veterans Hospital, Cleveland OH-June 22, 2010
 VA-OH⁶ Veterans Hospital, Cleveland OH-Aug 05, 2008

****HEI conducted all tests with a special low-power Far-UV Sterilray lamp in order to control the total dose.
 The lamps varied between 1/30 to 1/5 the irradiance used in commercial units.
 Exposures of 1 second should achieve a dose greater than 50 mJ/cm² and may be significantly higher with the next generation power supply.
 Please contact us for the latest information.**

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Far-UV Sterilray -Test Summary 2007-2010

