



UV1 除菌時間對照表

說明 UV1 在距離照射物品表面 1 公分及 3 公分時，於不同秒數之累積深紫外線 (UV-C)劑量。同時附上各病原體去除 90%、99%、99.9%及 99.99%所需的深紫外線劑量，方便使用者推算照射時間。

深紫外線(UV-C)劑量表												
測試高度	一公分											
時間(秒)	5	10	15	20	25	30	35	40	45	50	55	60
深紫外線劑量 (mJ/cm2)	12.95	25.9	38.85	51.8	64.75	77.7	90.65	103.6	116.55	129.5	142.45	155.4
測試高度	三公分											
時間(秒)	5	10	15	20	25	30	35	40	45	50	55	60
深紫外線劑量 (mJ/cm2)	4.35	8.7	13.05	17.4	21.75	26.1	30.45	34.8	39.15	43.5	47.85	52.2

*深紫外線劑量 (mJ/cm2) = 深紫外線輸出功率*時間 (mW/cm²*時間)

*UV1 在一公分照射距離時之深紫外線輸出功率 = 2.59mW/cm²

*UV1 在三公分照射距離時之深紫外線輸出功率 = 0.87mW/cm²

*以下各菌種除菌所需之深紫外線劑量數據來源為網路公開資料，僅供參考，UVengers 不保證其精
準度。

病原中文學名	病原英文學名	所需深紫外線劑量 vs. 除菌率				Reference
		Log 1 (90%)	Log 2 (99%)	Log 3 (99.9%)	Log 4 (99.99%)	
芽胞	Spore					
炭疽桿菌胞	Bacillus anthracis spores – Anthrax	24.32	48.64	72.96	97.28	UV-Light.co.UK
巨大芽孢桿菌胞	Bacillus megaterium sp. spores	2.73	5.46	8.19	10.92	UV-Light.co.UK
枯草桿菌胞	Bacillus subtilis spores	11.6	23.2	34.8	46.4	UV-Light.co.UK
艱難梭菌胞	Clostridium difficile spores	6.0	12.0	18.0	24.0	UV-Light.co.UK
破傷風梭菌胞	Clostridium tetani spores	13.0	26.0	39.0	52.0	UV-Light.co.UK
細菌	Bacterium					
氣單胞菌	Aeromonas salmonicida	1.5	2.7	3.1	5.9	Liltved and Landfald 1996
親水性產氣單胞菌	Aeromonas hydrophila	1.1	2.6	3.9	5	Wilson et al. 1992
炭疽桿菌	Bacillus anthracis - Anthrax	4.52	8.7			Light Sources Inc. 2014
	Bacillus paratyphusus	3.2	6.1			Light Sources Inc. 2014
枯草桿菌	Bacillus subtilis	5.8	11.0			Light Sources Inc. 2014

導致疾病: 菌血症, 心內膜炎, 肺炎, 敗血症

空腸曲桿菌	<i>Campylobacter jejuni</i>	1.6	3.4	4	4.6	Wilson et al. 1992
導致症狀: 腹瀉, 發燒, 腸胃痛						
克氏檸檬酸桿菌	<i>Citrobacter diversus</i>	5	7	9	11.5	Giese and Darby 2000
導致疾病: 泌尿道感染, 急性膀胱炎, 肺炎, 腸胃炎, 腦膜炎, 菌血症						
弗氏檸檬酸桿菌	<i>Citrobacter freundii</i>	5	9	13		Giese and Darby 2000
導致疾病: 膽道發炎						
破傷風梭菌	<i>Clostridium tetani</i>	13.0	22.0			Light Sources Inc. 2014
導致疾病: 破傷風						
白喉桿菌	<i>Corynebacterium diphtheriae</i>	3.37	6.74	10.11	13.48	UV-Light.co.UK
導致疾病: 白喉, 義膜性喉炎, 心肌炎(心律不整), 神經發炎(癱瘓)						
傷寒桿菌/腸熱桿菌	<i>Ebertelia typhosa</i>	2.14	4.28	6.42	8.56	UV-Light.co.UK
導致疾病: 傷寒						
大腸桿菌 O157:H7 CCUG 29193	<i>Escherichia coli</i> O157:H7 CCUG 29193	3.5	4.7	5.5	7	Sommer et al. 2000
導致疾病: 出血性腹瀉						
大腸桿菌 O157:H7 CCUG 29197	<i>Escherichia coli</i> O157:H7 CCUG 29197	2.5	3	4.6	5	Sommer et al. 2000

大腸桿菌 O157:H7 CCUG 29199	Escherichia coli O157:H7 CCUG 29199	0.4	0.7	1	1.1	Sommer et al. 2000
大腸桿菌 O157:H7 ATCC 43894	Escherichia coli O157:H7 ATCC 43894	1.5	2.8	4.1	5.6	Wilson et al. 1992
大腸桿菌 ATCC 11229	Escherichia coli ATCC 11229	2.5	3	3.5	5	Harris et al. 1987
大腸桿菌	Escherichia coli	3.0	6.0	9.0	12.0	UV-Light.co.UK
大腸桿菌 ATCC 25922	Escherichia coli ATCC 25922	6	6.5	7	8	Sommer et al. 1998
大腸桿菌 C 型	Escherichia coli C	2	3	4	5.6	Otaki et al. 2003
大腸桿菌 K-12 IFO330	Escherichia coli K-12 IFO3301	1.5	2	3.5	4.2	Otaki et al. 2003
大腸桿菌 O157:H7	Escherichia coli O157:H7	1.5	3	4.5	6	Tosa and Hirata 1999
大腸桿菌 O25:K98:NM	Escherichia coli O25:K98:NM	5	7.5	9	10	Sommer et al. 2000
大腸桿菌 O26	Escherichia coli O26	5.4	8	10.5	12.8	Tosa and Hirata 1999
大腸桿菌 O50:H7	Escherichia coli O50:H7	2.5	3	3.5	4.5	Sommer et al. 2000
大腸桿菌 O78:H11	Escherichia coli O78:H11	4	5	5.5	6	Sommer et al. 2000

鹽桿菌屬 ATCC33173	Halobacterium elongate ATCC33173	0.4	0.7	1		Martin et al. 2000
鹽桿菌屬 ATCC43214	Halobacterium salinarum ATCC43214	12	15	17.5	20	Martin et al. 2000
克雷伯氏肺炎菌	Klebsiella pneumoniae	12	15	17.5	20	Giese and Darby 2000
克雷伯氏土生菌 ATCC33257	Klebsiella terrigena ATCC33257	4.6	6.7	8.9	11	Wilson et al. 1992
退伍軍人菌 ATCC 43660	Legionella pneumophila ATCC 43660	3.1	5	6.9	9.4	Wilson et al. 1992
退伍軍人菌 ATCC33152	Legionella pneumophila ATCC33152	1.6	3.2	4.8	6.4	Oguma et al. 2004
犬鉤端螺旋體病	Leptospira canicola	3.15	6.3	9.45	12.6	UV-Light.co.UK
	Micrococcus candidus	6.05	12.1	18.15	24.2	UV-Light.co.UK
	Micrococcus sphaeroides	1.0	2.0	3.0	4.0	UV-Light.co.UK
結核桿菌	Mycobacterium tuberculosis	6.2	12.4	18.6	24.8	UV-Light.co.UK
耐甲氧西林金黃 色葡萄球菌	Methicillin-resistant Staphylococcus aureus (MRSA)	3.2	6.4	9.6	12.8	UV-Light.co.UK
卡他莫拉菌	Neisseria catarrhalis	4.4	8.8	13.2	17.6	UV-Light.co.UK
根癌農桿菌	Phytomonas tumefaciens	4.4	8.8	13.2	17.6	UV-Light.co.UK
普通變形桿菌	Proteus vulgaris	3.0	6.0	9.0	12.0	UV-Light.co.UK
綠膿桿菌	Pseudomonas aeruginosa	5.5	11.0	16.5	22.0	UV-Light.co.UK

導致疾病: 急性膀胱炎, 呼吸道感染, 皮膚炎, 軟組織感染, 菌血症, 腸胃炎

螢光假單胞菌	<i>Pseudomonas fluorescens</i>	3.5	7.0	10.5	14.0	UV-Light.co.UK
沙門氏菌亞種 I 型	<i>Salmonella paratyphi - Enteric fever</i>	3.2	6.4	9.6	12.8	UV-Light.co.UK
沙門氏菌 <i>anatum</i>	<i>Salmonella anatum</i>	7.5	12	15		Tosa and Hirata 1998
沙門氏菌 <i>derby</i>	<i>Salmonella derby</i>	3.5	7.5			Tosa and Hirata 1998
腸道沙門氏菌	<i>Salmonella enteritidis</i>	5	7	9	10	Tosa and Hirata 1998
沙門氏菌 <i>infantis</i>	<i>Salmonella infantis</i>	2	4	6		Tosa and Hirata 1998
沙門氏菌屬	<i>Salmonella spp.</i>	<2	2	3.5	7	Yaun et al. 2003

導致疾病: 1) 腸炎 -> 噁心、嘔吐, 腹痛, 帶血腹瀉 2) 傷寒 -> 便秘、發高燒, 肝脾腫大, 帶血性腹瀉 3) 敗血症 -> 腹瀉, 焦慮, 發燒發冷, 血壓降低, 白血球過高或過低(器官衰竭)

傷寒沙門氏菌 ATCC 19430	<i>Salmonella typhi</i> ATCC 19430	1.8	4.8	6.4	8.2	Wilson et al. 1992
傷寒沙門氏菌 ATCC 6539	<i>Salmonella typhi</i> ATCC 6539	2.7	4.1	5.5	7.1	Chang et al. 1985
	<i>Salmonella paratyphi - Enteric fever</i>	3.2	6.4	9.6	12.8	UV-Light.co.UK
	<i>Salmonella typhosa - Typhoid fever</i>	2.15	4.3	6.45	8.6	UV-Light.co.UK
	<i>Salmonella typhimurium</i>	2	3.5	5	9	Tosa and Hirata 1998
	<i>Sarcina lutea</i>	19.7	39.4	59.1	78.8	UV-Light.co.UK

萎垂桿菌/粘質沙雷氏菌	<i>Serratia marcescens</i>	2.42	4.84	7.26	9.68	UV-Light.co.UK
痢疾志賀氏桿菌 ATCC29027	<i>Shigella dysenteriae</i> ATCC29027	0.5	1.2	2	3	Wilson et al. 1992
	<i>Shigella dysenteriae</i> – Dysentery	2.2	4.4	6.6	8.8	UV-Light.co.UK
福氏志賀氏菌	<i>Shigella flexneri</i> – Dysentery	1.7	3.4	5.1	6.8	UV-Light.co.UK
	<i>Shigella</i> <i>paradysenteriae</i>	1.68	3.3	5.04	6.72	UV-Light.co.UK
宋內志賀菌	<i>Shigella sonnei</i> ATCC9290	3.2	4.9	6.5	8.2	Chang et al. 1985
赤色螺菌	<i>Spirillum rubrum</i>	4.4	8.8	13.2	17.6	UV-Light.co.UK
金黃色葡萄球菌 ATCC25923	<i>Staphylococcus aureus</i> ATCC25923	3.9	5.4	6.5	10.4	Chang et al. 1985
表皮葡萄球菌	<i>Staphylococcus albus</i>	1.84	3.68	5.52	7.36	UV-Light.co.UK
金黃色葡萄球菌	<i>Staphylococcus aureus</i>	2.6	5.2	7.8	10.4	UV-Light.co.UK
導致疾病: 噁心、噁吐、胃痙攣和腹瀉						
溶血葡萄球菌	<i>Staphylococcus</i> <i>haemolyticus</i>	2.16	4.32	6.48	8.64	UV-Light.co.UK
	<i>Staphylococcus lactis</i>	6.15	12.3	18.45	24.6	UV-Light.co.UK
草綠色鏈球菌	<i>Streptococcus viridans</i>	2.0	4.0	6.0	8.0	UV-Light.co.UK
糞鏈球菌	<i>Streptococcus faecalis</i>	5.5	6.5	8	9	Harris et al. 1987
糞鏈球菌 ATCC29212	<i>Streptococcus faecalis</i> ATCC29212	6.6	8.8	9.9	11.2	Chang et al. 1985
鰻弧菌	<i>Vibrio anguillarum</i>	0.5	1.2	1.5	2.0	Liltved and Landfald 1996

霍亂弧菌 ATCC25872	Vibrio cholerae ATCC25872	0.8	1.4	2.2	2.9	Wilson et al. 1992
霍亂弧菌	Vibrio cholerae	3.375	6.75	10.125	13.5	UV-Light.co.UK
小腸結腸耶氏菌 ATCC27729	Yersinia enterocolitica ATCC27729	1.7	2.8	3.7	4.6	Wilson et al. 1992
魯氏耶爾森氏菌	Yersinia ruckeri	1	2	3	5	Liltved and Landfald 1996
酵母菌	Yeast					
釀酒酵母菌	Saccharomyces cerevisiae	6.0	12	18	24	UV-Light.co.UK
橢圓酵母菌	Saccharomyces ellipsoideus	6.0	12.0	18.0	24.0	UV-Light.co.UK
霉菌	Molds					
黃麴黴菌	Aspergillus flavus	60	120	180	240	UV-Light.co.UK
灰帶藍麴黴菌	Aspergillus glaucus	44	88	132	176	UV-Light.co.UK
黑麴黴菌	Aspergillus niger	132.0	264.0	396.0	528.0	UV-Light.co.UK
總狀毛黴菌 A 型	Mucor racemosus A	17.0	34.0	51.0	68.0	UV-Light.co.UK
總狀毛黴菌 B 型	Mucor racemosus B	17.0	34.0	51.0	68.0	UV-Light.co.UK
乳卵孢子菌/白地 霉菌	Oospora lactis	5	10	15	20	UV-Light.co.UK
擴展青黴菌	Penicillium expansum	13.0	26.0	39.0	52.0	UV-Light.co.UK
指狀青黴菌	Penicillium digitatum	44.0	88.0	132.0	176.0	UV-Light.co.UK
羅克福爾青黴菌	Penicillium roqueforti	13	26	39	52	UV-Light.co.UK

黑根霉菌	Rhizopus nigricans/Rhizopus stolonifer	111	222	333	444	UV-Light.co.UK
原蟲/原生動物	Protozoan					
綠球藻	Chlorella Vulgaris	13	26	39	52	UV-Light.co.UK
人隱孢子蟲	Cryptosporidium hominis	3	5.8			Johnson et al. 2005
小球隱孢子蟲	Cryptosporidium parvum	2.4	<5	5.2	9.5	Craik et al. 2001
兔腦炎小孢子蟲 (微孢子蟲)	Encephalitozoon cuniculi, microsporidia	4	9	13		Marshall et al. 2003
海倫腦炎微孢子蟲 (微孢子蟲)	Encephalitozoon hellem, microsporidia	8	12	18		Marshall et al. 2003
	Encephalitozoon intestinalis, microsporidia	3	5	6		Marshall et al. 2003
鼠梨形鞭毛蟲	Giardia muris	<10	<10	<25	~60	Belosevic et al. 2001
蘭氏賈第鞭毛蟲	Giardia lamblia	<10	~10	<20		Campbell et al. 2002
線蟲動物門卵/圓蟲卵	Nematode Eggs	45	90	135	180	UV-Light.co.UK
草履蟲	Paramecium	11	22	33	44	UV-Light.co.UK
病毒	Virus					
腺病毒 15 型	Adenovirus type 15	40	80	122	165	Thompson et al. 2003
導致疾病: 普通感冒, 發燒, 咽喉炎, 急性支氣管炎, 肺炎, 結膜炎, 急性腸胃炎						
腺病毒 2 型	Adenovirus type 2	35	55	75	100	Ballester and Malley 2004

導致疾病: 普通感冒, 發燒, 咽喉炎, 急性支氣管炎, 肺炎, 結膜炎, 急性腸胃炎

噬菌體 B40-8	Phage B40-8	11	17	23	29	Sommer et al.
噬菌體 MS2	Phage MS2	16.3	35	57	83	Nieuwstad and Havelaar 1994
噬菌體 MS2 ATCC 15977-B1	Phage MS2 ATCC 15977-B1	15.9	34	52	71	Wilson et al. 1992
噬菌體 MS2 DSM 5694	Phage MS2 DSM 5694	4	16	38	68	Wiedenmann et al 1993
噬菌體 MS2 NCIMB 10108	Phage MS2 NCIMB 10108	12.1	30.1			Tree et al. 1997
噬菌體 Phi X 174 (ΦX174)	Phage PHI X 174 (ΦX174)	2.2	5.3	7.3	10.5	Sommer et al.
噬菌體 PRD-1	Phage PRD-1	9.9	17.2	23.5	30.1	Meng and Gerba 1996
犬杯狀病毒	Calicivirus canine	7	15	22	30	Husman et al. 2004
貓杯狀病毒	Calicivirus feline	5	15	23	30	Thurston- Enriquez et al. 2003
克沙奇病毒 B3	Coxsackievirus B3	8	16	24.5	32.5	Gerba et al. 2002
克沙奇病毒 B5	Coxsackievirus B5	9.5	18	27	36	Gerba et al. 2002
埃可病毒 I 型	Echovirus I	8	16.5	25	33	Gerba et al. 2002
埃可病毒 II 型	Echovirus II	7	14	20.5	28	Gerba et al. 2002
A 型肝炎病毒	Hepatitis A	5.5	9.8	15	21	Wiedenmann et al. 1993
A 型肝炎病毒 HM175	Hepatitis A HM175	5.1	13.7	22	29.6	Wilson et al. 1992

小兒麻痺病毒	Poliovirus Type 1	5	11	18	27	Tree et al. 2005
	Poliovirus Type 1: Strain Mahoney	3	7	14	40	Sommer et al. 1989
	Poliovirus Type 1 LSc2ab	5.6	11	16.5	21.5	Chang et al. 1985
呼腸孤病毒 I 型	Reovirus Type I: Strain Lang	16	36			Harris et al. 1987
呼腸孤病毒 III 型	Reovirus Type III	11.2	22.4			Rauth 1965
輪狀病毒	Rotavirus	20	80	40	200	Caballero et al. 2004
導致疾病: 嘔吐, 發燒, 腹瀉						
輪狀病毒 SA-11	Rotavirus SA-11	8	15	27	38	Sommer et al. 1989

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