ENPUTECH
Providing Healthy Living Environment

Purelight

UV Wand

Purelight

Enputech Co., Ltd
www.enputech.com

Killing Germ, Viruses, Mites in 20 seconds

Purelight

Bacterial Virus Infection

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SARS → H1N1 → MERS → CORONA → ?

2003 2009 2012 2020

Product Description - Purelight AIR

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Purelight AIR

Separation type

It can separate Purelight and cradle, so you can use it by carrying sterilization product.

Eliminate Dust Mites

Eliminate dust mites from beddings and mattresses that cause rhinitis, respiratory problems and etc.

Sterilization Germs and virus, and air purification

By Purelight Air, we sterilize air 24 hours a day so that all of our family can live a healthy life.

Pet Products Germs & smell Removal

Eliminate the viruses from pet toys, feeding and water supplies, and urine and feces to help to keep them healthy.

Product Features

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Excellent Sterilizer

Sterilization of germs and viruses in the air

99.99% Complete sterilization and deodorization

(Have a Test Reports from Korea Research Institute of Chemical Technology (KRiCT) , Korea Conformity Laboratories (KCL), US QLAB)

Remove dust mites that causing allergies

99.9% sterilize a dust mite that cause atopic, rhinitis and asthma.

(Have a test report from FITI Testing & Research Institute)

Optimum Sterilizer

Various Uses

- You can sterilize dishes, clothes, kitchenware, and bathroom items, even shoes.
- It sterilizes airborne harmful bacteria to excels at preventing respiratory diseases, and is effective in eliminating odors.
- It is convenient to use in hospitals, nursing homes, nurseries, and offices where many people gather and are reared to be infected.

Easy to use

It is in the form of a bat, so easy to carry to sterilize wherever you want very quickly and easily. And it designed for sterilization only.

Product Features – Purelight AIR

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Sterilized Air by UV Lamp

Sterilized 99.9% of virus and bacteria in the air by Purelight

Negative Ionizer

A durable, **hight-strength fan** absorb the air

Can sterilized anywhere with Purelight, and when it's not needed, put in the cradle and used it as air sterilizer.

No Filter needed

No filter required for replacement,
Fan operating speeds air-sustaining circulation.

Product Features – Differences of Purelight XD · ED

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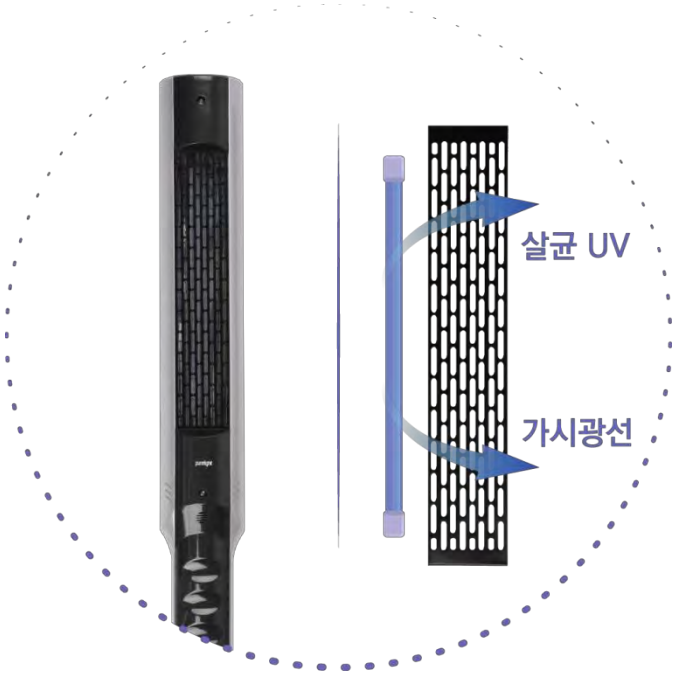

XD

- **UV Band Pass Filter**

  Enputech's special filter strengthen sterilization of UV lamp, also 100% block the visible light

- **Specialized to Dust Mites**

  Remove dust mites at beddings and bed mattresses that cause rhinitis, atopic, and etc.

ED

- **Aluminum Filter**

  Lighter than XD and reasonable price

- **Strong to eliminate virus and smell**

  Specialized in sterilizing multi-purpose, such as pet toys, feeders, pet toilet and remove a smell from air

Product Specifications and Contents

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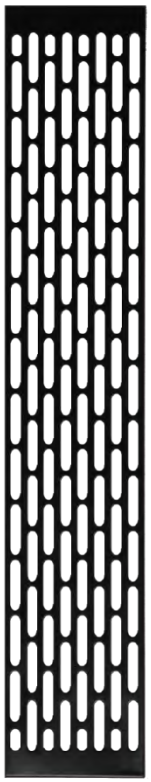
Purelight ED



Aluminum Filter

Product	Purelight ED
Model	ED-3000
Size	530(L) x 80(W) x 60(H) mm
Weight	388g
Rating	Voltage 12V /Current 1.0A /Power Consumption 9W
Charging	2 hours (Recommended to charge fully at first)
Usage	1 hour – 1 hour 30 min
Adaptor	Input : 100V – 240V / Output : 12V, 1.0A
Battery	12V, 1100mAh Li-ion (Can charge 500 times)
Lamp	[enputech] 8W UV LAMP
Lamp Life	8000 hours
Warranty	1 year [except consumables(filter, lamp, battery and etc.)]
Safety	Electricity : safety switch, timer, fuse Overcharge & overdischarge protection channel
Package	Purelight, Adaptor, Manual, Quick Guide, Tripod Head

Product Specifications and Contents

ENPUTECH
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Purelight AIR-ED

Purelight ED

Cradle (Stand)

Product	Purelight AIR
Model	AIR-ED
Size	175(L) x 130(W) x 580(H) mm
Weight	1300g
Rating	Voltage 12V /Current 1.0A /Power Consumption 9W
Charging	3 hours (Recommended to charge fully at first)
Usage	1 hour
Adaptor	Input : 100V - 240V
Battery	12V, 1100mAh Li-ion (Can charge 500 times)
Lamp	[enputech] 8W UV LAMP
Lamp Life	8000 hours
Coverage	100 – 280nm (Ozone free)
Safety	Electricity : safety switch, timer, fuse Overcharge & overdischarge protection channel
Package	Purelight, Cradle, Adaptor, Manual, Quick guide, Pouch

Various Uses

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Bath Supplies

Pet supplies

Baby products

Stroller, Car seats for children

Eradication of mites in livestock

Car Seats & Mats

Hospital supplies

Kindergarten

Purelight is a wireless product, so you can simply use it anywhere you want to sterilize.

Product Certification

EnpuTECH
Providing Healthy Living Environment

Certification & Test Reports

특 허 증

특허청장
제 0488307 호
Patent

실용신안등록증

등 록 제 0287251 호

고안의 명칭 휴대용 자외선 살균기

실용신안권자 이화용(650522-1466429)
서울특별시 강동구 명일2동 245-5

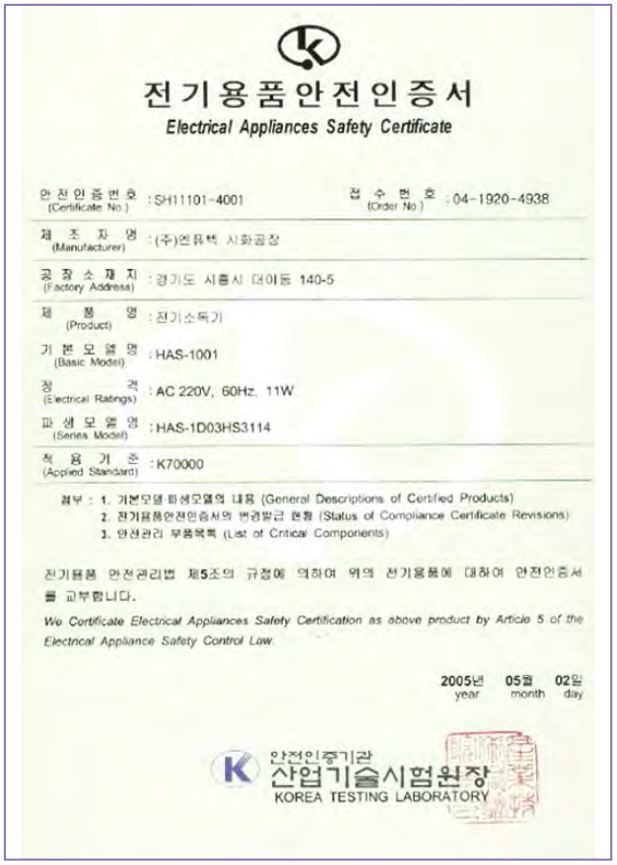
고 안 자 이화용(650522-1466429)
서울특별시 강동구 명일2동 245-5

위의 고안은 실용신안법에 의하여 실용신안등록원부에 등록되었음을 증명합니다.

2002년 08월 14일

특 허 청 장

특허청장
제 028751호
Utility Model Registration



전기용품안전인증서
Electrical Appliances Safety Certificate

안전인증번호 (Certificate No.)	: SH11101-4001
접수번호 (Order No.)	: 04-1920-4938
제조자명 (Manufacturer)	: (주)엔퓨텍 시화공장
공장소재지 (Factory Address)	: 경기도 시흥시 대야동 140-5
제품명 (Product)	: 전기소독기
기본모델명 (Basic Model)	: HAS-1001
정격 (Electrical Ratings)	: AC 220V, 60Hz, 11W
파생모델명 (Series Model)	: HAS-1D03HS3114
적용기준 (Applied Standard)	: K70000

첨부 : 1. 기본모델 및 파생모델의 내용 (General Descriptions of Certified Products)
2. 전기용품안전인증서의 변경발급 현황 (Status of Compliance Certificate Revisions)
3. 안전관리 부품목록 (List of Critical Components)

전기용품 안전관리법 제5조의 규정에 의하여 위의 전기용품에 대하여 안전인증서를 교부합니다.

We Certificate Electrical Appliances Safety Certification as above product by Article 5 of the Electrical Appliance Safety Control Law.

2005년 05월 02일
year month day

안전인증기관
산업기술시험원장
KOREA TESTING LABORATORY

산업기술시험원장
Electrical Supplies Safety Certificate

Leatherhead Food Research

Company Name: Purelight Europe

Project name: Technology Validation Testing

Project No: 123982

Attention of: Andrew Felton

Prepared by: Tom Dolphin

Date: 02nd October 2009

Leatherhead Food Research is a trading name of Leatherhead Food International Limited. Registered in England 3420548.
Randalls Road, Leatherhead, Surrey, KT22 7RY, UK
T: +44 (0)1372 376761 | F: +44 (0)1372 386228 | www.leatherheadfood.com

Introduction

Purelight approached Leatherhead Food Research to carry out some validation testing on their Original UV Hand Wand Germinator.

Method

Experiment 1

E. coli NCTC 9001 was cultured overnight in Nutrient Broth (NB, Oxoid Ltd.) at 37°C. Cultures were centrifuged at 5,000 rpm for 10 minutes, and then washed three times in 10 ml of Maximum Recovery Diluent (MRD, Oxoid Ltd). The final pellet was resuspended in 10 ml of MRD.

Seven metal tools were autoclaved to ensure they were sterile and free from any background micro flora. These were then individually swabbed with the resuspended *E. coli* culture. A swab was taken from each tool to determine the initial level of *E. coli* on the item. This was then re-suspended in 10 ml of MRD, from which a series of dilutions were made. Appropriate dilutions were plated using 1ml spread plates on TBX agar (Oxoid Ltd) and 1ml pour plates using Plate Count Agar (Oxoid Ltd). The items were then exposed to the Original UV Hand Wand Germinator. Using a calibrated timer and after 20, 30, 40 and 50 seconds swabs were taken from different areas and plated as previously stated.

TBX plates were incubated at 44°C for 24 hours and Plate Count Agar plates were incubated at 30°C for 48 hours.

All work was carried out in accordance with our UKAS accreditation.

Experiment 2

Overnight cultures of *Listeria monocytogenes*, *Bacillus cereus*, *Salmonella carmel*, *Escherichia coli* and *Staphylococcus aureus* were grown up in appropriate broths. 0.5ml spread plates were prepared on Nutrient Agar (Oxoid Ltd) in duplicate from serial dilutions of the overnight cultures. One set of the plates were treated using the Original UV Hand Wand Germinator for twenty seconds. The other set were left untreated to act as controls. Both sets of plates were incubated at appropriate temperatures for 24 hours.

Results

A summary of the results is shown in the tables below.

Table 1 Microanalysis results from Experiment 1 (cfu/swab)

Item Tested	Time Exposed to UV light									
	0 seconds		20 Seconds		30 Seconds		40 Seconds		50 Seconds	
	TBX	PCA	TBX	PCA	TBX	PCA	TBX	PCA	TBX	PCA
Key 1	2.10E+05	4.20E+05	8.60E+04	8.40E+04	3.50E+04	3.80E+04	2.90E+03	6.30E+03	7.00E+02	1.20E+03
Key 2	7.10E+04	2.20E+05	6.20E+02	9.10E+02	<10	1.00E+01	<10	2.00E+01	<10	1.00E+01
Gridded Tool	1.70E+05	4.60E+05	5.20E+04	8.00E+04	6.00E+03	1.40E+04	5.00E+03	1.50E+04	1.40E+05	3.80E+05
Screw Driver	6.30E+05	1.10E+06	6.70E+03	1.50E+04	9.50E+03	1.50E+04	7.10E+03	8.30E+03	1.40E+02	4.00E+02
Spanner	3.70E+06	3.80E+06	7.00E+01	3.90E+02	1.10E+02	1.40E+02	1.00E+02	1.40E+02	3.00E+01	1.20E+02
Allen Key 1	9.10E+05	8.40E+05	1.60E+02	2.30E+02	<10	1.00E+02	1.70E+02	8.70E+02	<10	1.00E+01
Allen Key 2	2.90E+05	3.80E+05	2.60E+02	7.70E+02	1.50E+03	3.20E+03	3.00E+02	8.00E+01	3.00E+01	1.00E+02

***Table 2 Microanalysis results from Experiment 2*: UV Treated Plates (colonies/plate)**

Organisms	Dilutions							
	Neat	**-1**	**-2**	**-3**	**-4**	**-5**	**-6**	**-7**
L. monocytogenes	>300	10	0	0	0	0	0	0
B. cereus	>300	0	1	0	0	0	0	0
S. carmel	>300	13	6	0	0	0	0	0
E. coli	>300	2	0	0	0	0	0	0
S. aureus	>300	45	20	0	0	0	0	0

***Table 3 Microanalysis results from Experiment 2*: Non-UV Treated Plates (colonies/plate)**

Organisms	Dilutions							
	Neat	**-1**	**-2**	**-3**	**-4**	**-5**	**-6**	**-7**
L. monocytogenes	>300	>300	>300	>300	>300	31	1	0
B. cereus	>300	>300	>300	>300	>300	56	4	0
S. carmel	>300	>300	>300	>300	>300	>300	154	8
E. coli	>300	>300	>300	>300	>300	192	7	0
S. aureus	>300	>300	>300	>300	>300	304	48	3

Sterilizing activity was expressed as a percentage according to the following equation (Table 4):

Sterilizing ability (%) =

[(Number of viable bacteria of control-Number of viable bacteria of trial) / Number of viable bacteria of control] X100

Table 4 Sterilizing ability (%)

Test Micro-organisms	Groups	No of bacteria (CFU/plate)	Sterilizing ability (%)
L. monocytogenes	Control	6.2×10^6	-
	UV-treated	2.0×10^2	99.99
B. cereus	Control	1.12×10^7	-
	UV-treated	2.0×10^2	99.99
S. carmel	Control	1.6×10^8	
	UV-treated	2.6×10^2	99.99
E. coli	Control	1.4×10^7	-
	UV-treated	4.0×10^1	99.99
S. aureus	Control	9.6×10^7	-
	UV-treated	4.0×10^3	99.99

Conclusion

From the results of the first experiment it can be seen that overall the counts are higher on the Plate Count Agar (PCA) than they are on the TBX. This can be attributed to the fact that the cells are stressed or damaged and so find it harder to grow on the very selective TBX agar.

Overall, the results from Experiment 1 indicate that the technology can afford a 2-4 log reduction in numbers of *E. coli* present on the surfaces of the different tools, with the exception of the Gridded Tool after 50 seconds.

The results from the second experiment indicated a sterilizing ability of 99.99% against all five micro-organisms.

QLAB, 5 Allison Drive, Cherry Hill, NJ 08003
856.489.0011 www.QLABusa.com
AIHA EMPAT Lab ID: 178794

Analysis: Equipment Bactericidal Rate Analysis
Client: Enputech USA
120 Sylvan Avenue, Suite 301, Englewood Cliffs, NJ 07632
Contact: Mike Um
Equipment: Purelight

Date Analyzed: 10/11/2006
Date Reported: 10/31/2006

Reviewed by: WT

Authorized by: Wei-Chih Tang, Ph.D., Lab Director

Test Microorganisms	Bactericidal Rate
Staphylococcus aureus (ATCC 25923)	>99.999%
Escherichia coli (ATCC 25922)	>99.999%
Pseudomonas aeruginosa (ATCC 10145)	>99.999%
Klebsiella pneumoniae (ATCC 31488)	>99.942%
Shigella flexneri (ATCC 9199)	>99.999%
Salmonella enterica (ATCC 13314)	>99.971%

Exposure: 10 seconds at 10 cm

Inoculum:		
	Staphylococcus aureus (ATCC 25923)	1.4×10^6 CFU
	Escherichia coli (ATCC 25922)	4.3×10^5 CFU
	Pseudomonas aeruginosa (ATCC 10145)	4.1×10^5 CFU
	Klebsiella pneumoniae (ATCC 31488)	7.3×10^5 CFU
	Shigella flexneri (ATCC 9199)	5.8×10^5 CFU
	Salmonella enterica (ATCC 13314)	4.7×10^5 CFU

Method: The test microorganisms were cultured on Tryptic Soy Agar (TSA, Difco) for 24 hours at 35ºC. They were then suspended and diluted in distilled water with 0.05% Tween 80 solution. Microorganisms in the amount specified above were inoculated onto TSA plates and exposed to UV light generated by the test equipment at the duration and distance specified above. Colonies formed by survived organisms were counted after 24 hours of incubation at 35ºC.

*** This report applies only to the test equipment submitted to the laboratory and is not indicative of the qualities of all identical or similar products manufactured by the client.

한국화학연구원
바이러스시험연구그룹
Virus Research and Testing Group

Virus Research and
Testing Group

대전시 유성구 가정로 141, 8동 바이러스시험연구그룹
FAX:042)860-7400
TEL:042)860-7404
:042)860-7544

Report to: Enputech Co., Ltd.
Date: 2013.09.09 ~ 11.14

Test Equipment : Purelight — Total 1
Compare Equipment: Fluorescent Light — Total 1

Test Goal: Virus inactivation test of Purelight
Viruses: Influenza A virus Hong Kong (H3N2)
Rhinovirus type 14
Adenovirus type 5

Experiment No. : Influenza virus –13DI09
Rhinovirus - 13ID10
Adenovirus – 13DI11 (Primary Test), 13ID12 (Second Test)

Expose the UV Light: Put 120ul of the viruses in each well of 48w plate and exposed by Purelight UV lamp at 15cm, and fluorescent lamp, which is comparative equipment. After each irradiation time, continuously take the 35ul of viral fluid and diluted it to measure the viral titer.

Measurement of virus titer: Influenza – Plaque count method/ MDCK cells
Rhinovirus- CPE Assay/HeLa cells
Adenovirus - CPE Assay/A549 cells

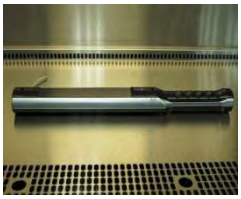
Tested by: Jong Gyo Lee, Kyung Jin Lee, Hae Soo Kim

Reviewed by: Jong Gyo Lee 2013. 11. 26

Remark: The influenza virus not detected in 5 minutes and the rhinovirus not detected in 10 minutes to lowest dilution. Adenovirus observed to increase the inactivity of viruses over time, but the virus did not die even in 30 minutes.

㈜엔퓨텍 "퓨라이트"의 바이러스불활화시험 결과

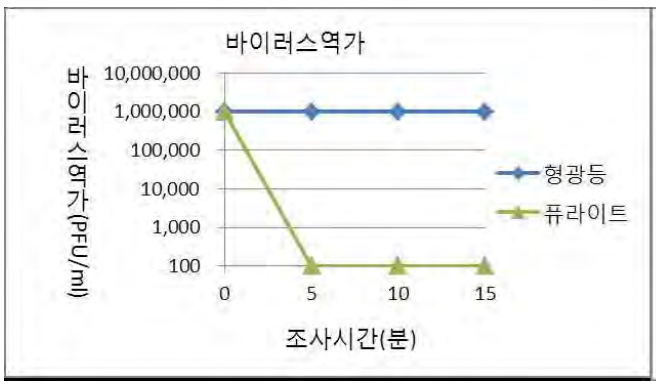
Influenza virus inactivity test

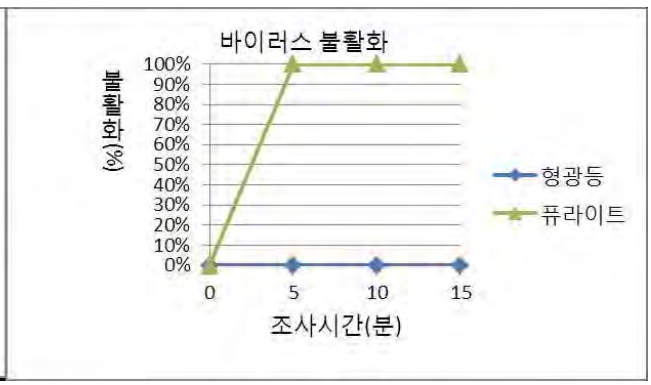
Test #: 13DI09		Virus: Influenza A virus Hong Kong (H3N2)
Equipment**: Purelight**		Culture Period: 13.09.30 - 10.04 (3 days)
Test Requesting Company: Enputech Co.,Ltd.		Test cell: MDCK
Assay: CPE/MTT		Incubation temperature: 33C

Test result

Virus titer and inactivity

Time (min)	Virus titer (CCID50/ml)				Virus Inactivity (%)			
	0	5	10	15	0	5	10	15
Fluorescent light	1,000,000	1,000,000	1,000,000	1,000,000	0%	0%	0%	0%
Purelight	1,000,000	<100	<100	<100	0%	>99.99	>99.99	>99.99





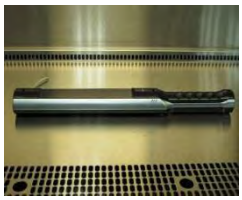
Conclusion: Strong disinfection against influenza virus.

Exposed UV at 15cm above the Rhinovirus, and after 10 minutes, the virus not detected.

바이러스역가 소독력

㈜엔퓨텍 "퓨라이트"의 바이러스불활화시험 결과

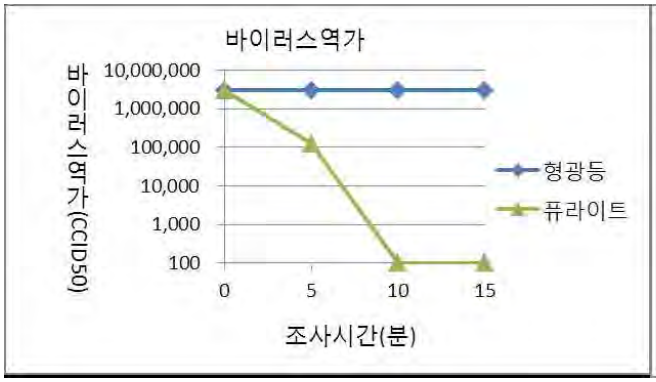
Rhinovirus inactivity test

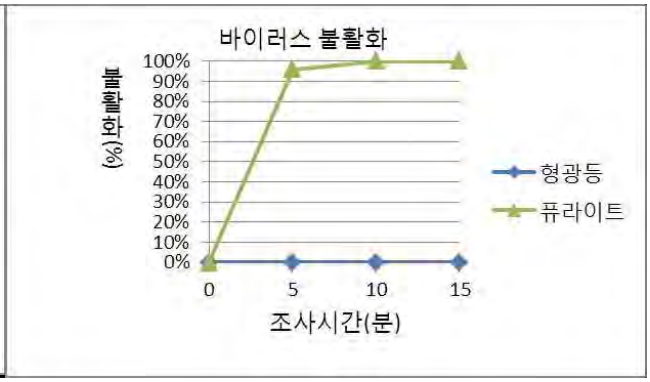
Test #: 13DI10		Virus: Rhinovirus type 14
Equipment**: Purelight**		Culture Period: 13.09.30 - 10.04 (3 dyas)
Test Requesting Company: Enputech Co.,Ltd.		Test cell: HeLa
Assay: CPE/MTT		Incubation temperature: 33C

Test result

Virus titer and inactivity

Time (min)	Virus titer (CCID50/ml)				Virus Inactivity (%)			
	0	5	10	15	0	5	10	15
Fluorescent light	3,000,000	3,000,000	3,000,000	3,000,000	0%	0%	0%	0%
Purelight	3,000,000	123,300	<100	<100	0%	95.890%	>99.997%	>99.997%





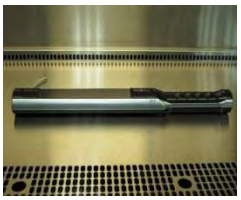
Conclusion: Strong disinfection against Rhinovirus.

Exposed UV at 15cm above the Rhinovirus, and after 10 minutes, there was no virus detected.

바이러스역가 소독력

㈜엔퓨텍 "퓨라이트"의 바이러스불활화시험 결과

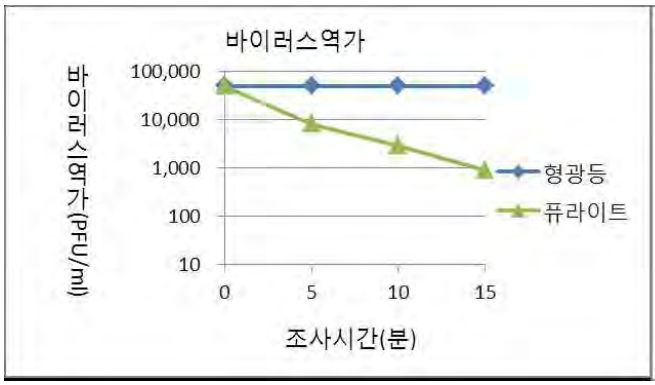
Adenovirus inactivity test (Primary test)

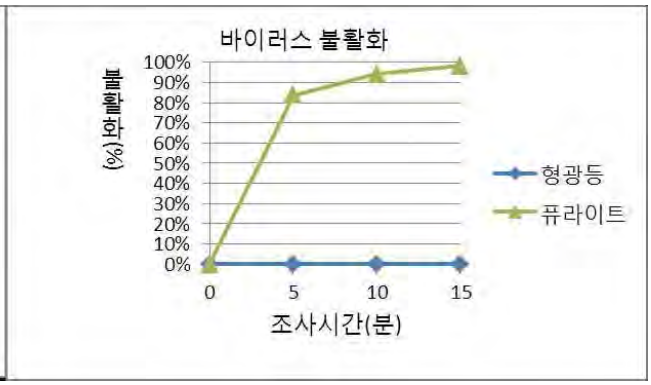
Test #: 13DI11		Virus: Adenovirus type 5
Equipment**: Purelight**		Culture Period: 13.11.07 - 11.11 (4 days)
Test Requesting Company: Enputech Co.,Ltd.		Test cell: A549
Assay: CPE/MTT		Incubation temperature: 33C

Test result

Virus titer and inactivity

Time (min)	Virus titer (CCID50/ml)				Virus Inactivity (%)			
	0	5	10	15	0	5	10	15
Fluorescent light	50,000	50,000	50,000	50,000	0%	0%	0%	0%
Purelight	50,000	8,200	2,920	900	0%	83.60%	94.16%	98.20%





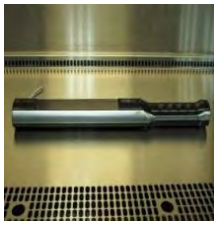
Conclusion: Disinfection against Adenovirus, but viruses not completely inactivated after 15 minutes.

Exposed UV at 15cm above the Adenovirus, no complete inactivity was detected.

바이러스역가 소독력

㈜엔퓨텍 "퓨라이트"의 바이러스불활화시험 결과

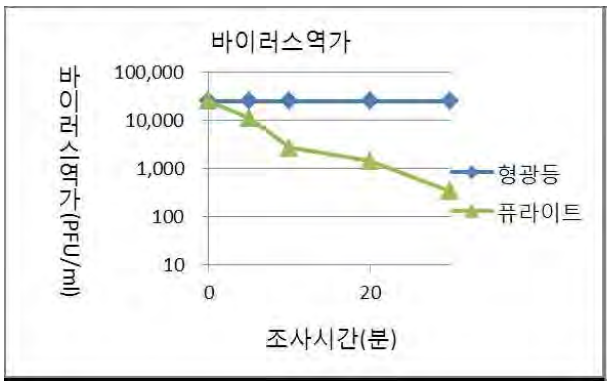
Adenovirus inactivity test (Second test)

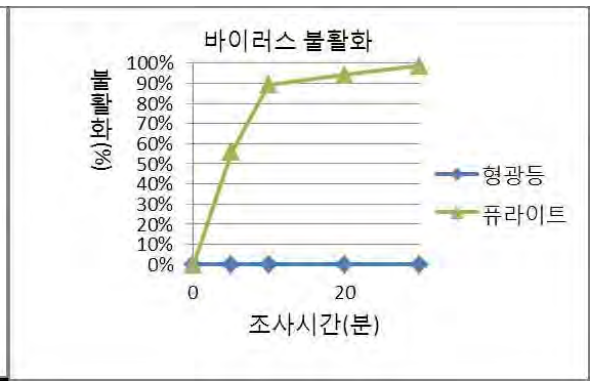
Test #: 13DI12		Virus: Adenovirus type 5
Equipment**: Purelight**		Culture Period: 13.11.14 - 11.18 (4 days)
Test Requesting Company: Enputech Co.,Ltd.		Test cell: A549
Assay: CPE/MTT		Incubation temperature: 33C

Test result

Virus titer and inactivity

Time (min)	Virus titer (CCID50/ml)					Virus Inactivity (%)				
	0	5	10	20	30	0	5	10	20	30
Fluorescent light	25,000	25,000	25,000	25,000	25,000	0%	0%	0%	0%	0%
Purelight	25,000	11,100	2,690	1,447	336	0%	55.6%	89.240%	94.212%	98.656%





Conclusion: Disinfection against Adenovirus, but viruses not completely inactivated after 30 minutes.

바이러스역가 소독력

Test Report for virus inactivation of Enputech's UV lamp

Testing agency : Virus Research and Testing Group

Test Participant : Jong Gyo Lee
Chun sang Kim
Jin Soo Shine
Hae Soo Kim
Test director : Jong Gyo Lee

July, 31, 2015

Test Report for virus inactivation of Enputech's UV lamp

Human rhinovirus Type 14 (HRV14)/HeLa cells

14DI19

Virus titer and reduction rate (%)

Temperature	Lamp	Irradiation distance	Virus	Level of cytotoxicity ($CCID_{50}$/well)				Vrisu titer ($CCID_{50}$/well)				Virus reduction factor (%)			
				0 min	5 min	10 min	15 min	0 min	5 min	10 min	15 min	0 min	5 min	10 min	15 min
Room temperature	Fluorescence lamp	15cm	HRV14					250,000	250,000	250,000	250,000	0	0.00	0.00	0.00
			Mock	<3.2	<3.2	<3.2	<3.2								
	Fluorescence lamp	20cm	HRV14					250000	250000	250000	250000	0	0.00	0.00	0.00
			Mock	<3.2	<3.2	<3.2	<3.2								
Room temperature	UV lamp	15cm	HRV14					250,000	23	<3.2	<3.2	0	99.9908%	>99.9987%	>99.9987%
			Mock	<3.2	<3.2	<3.2	<3.2								
	UV lamp	20cm	HRV14					250000	56.0	217	<6.6	0	99.9776%	99.9132%	>99.9974%
			Mock	<3.2	<3.2	<3.2	<3.2								
Room temperature	Purelight	15cm	HRV14					250,000	<4.1	<3.2	<3.2	0	>99.9984%	>99.9987%	>99.9987%
			Mock	<3.2	<3.2	<3.2	<3.2								
	Purelight	20cm	HRV14					250000	687.0	445	111	0	99.7252%	99.8220%	99.9556%
			Mock	<3.2	<3.2	<3.2	<3.2								

Virus titer and reduction rate (Logarithms)

Temperature	Lamp	Irradiation	Virus	Virus titer (log_{10} $CCID_{50}$/well)				Virus reduction factor (log_{10})			
				0 min	5 min	10 min	15 min	0 min	5 min	10 min	15 min
Room temperature	Fluorescence lamp	15cm	HRV14	5.40	5.40	5.40	5.40	0.0	0.0	0.0	0.0
			Mock	<0.00	<0.00	<0.00	<0.00				
	Fluorescence lamp	20cm	HRV14	5.40	5.40	5.40	5.40	0.0	0.0	0.0	0.0
			Mock	<0.00	<0.00	<0.00	<0.00				
Room temperature	UV lamp	15cm	HRV14	5.40	1.36	<0.51	<0.51	0.0	4.04	>4.89	>4.89
			Mock	<0.00	<0.00	<0.00	<0.82				
	UV lamp	20cm	HRV14	5.40	1.75	2.34	<0.82	0.0	3.65	3.06	>4.58
			Mock	<0.00	<0.00	<0.00	<0.00				
Room temperature	Purelight	15cm	HRV14	5.40	<0.61	<0.51	<0.51	0.0	>4.79	>4.89	>4.89
			Mock	<0.00	<0.00	<0.00	<0.00				
	Purelight	20cm	HRV14	5.40	2.84	2.65	2.05	0.0	2.56	2.75	3.35
			Mock	<0.00	<0.00	<0.00	<0.00				

- Conclusion -

Over 99% of viruses have been deactivated if UV lamp and Purelight are examined at distances between 15cm and 20cm

한국화학연구원 KRICT 바이러스시험연구센터

Test Report for virus inactivation of Enputech's UV lamp

Influenza A virus (H1N1) sstrain PR8/MDCK cells

14DI21

Virus titer and reduction rate (%)

Temperature	Lamp	Irradiation distance	Virus	Level of cytotoxicity ($CCID_{50}$/well)				Vrisu titer ($CCID_{50}$/well)				Virus reduction factor (%)			
				0 min	5 min	10 min	15 min	0 min	5 min	10 min	15 min	0 min	5 min	10 min	15 min
Room temperature	Fluorescence lamp	15cm	FluA					450,000	450,000	450,000	450,000	0	0.00	0.00	0.00
			Mock	<3.2	<3.2	<3.2	<3.2								
	Fluorescence lamp	20cm	FluA					450000	450000	450000	450000	0	0.00	0.00	0.00
			Mock	<1	<1	<1	<1								
Room temperature	UV lamp	15cm	FluA					450,000	<3.2	<3.2	<3.2	0	>99.9993%	>99.9993%	>99.9993%
			Mock	<1	<1	<1	<1								
	UV lamp	20cm	FluA					450000	<3.2	<3.2	<3.2	0	>99.9993%	>99.9993%	>99.9993%
			Mock	<1	<1	<1	<1								
Room temperature	Purelight	15cm	FluA					450,000	<3.2	<3.2	<3.2	0	>99.9993%	>99.9993%	>99.9993%
			Mock	<1	<1	<1	<1								
	Purelight	20cm	FluA					450000	<3.2	<3.2	<3.2	0	>99.9993%	>99.9993%	>99.9993%
			Mock	<1	<1	<1	<1								

Virus titer and reduction rate (Logarithms)

Temperature	Lamp	Irradiation distance	Virus	Virus titer (log_{10} $CCID_{50}$/well)				Virus reduction factor (log_{10})			
				0 min	5 min	10 min	15 min	0 min	5 min	10 min	15 min
Room temperature	Fluorescence lamp	15cm	HRV14	5.65	5.65	5.65	5.65	0.0	0.0	0.0	0.0
			Mock	<0.51	<0.51	<0.51	<0.51				
	Fluorescence lamp	20cm	HRV14	5.65	5.65	5.65	5.65	0.0	0.0	0.0	0.0
			Mock	<0.51	<0.51	<0.51	<0.51				
Room temperature	UV lamp	15cm	HRV14	5.65	<0.51	<0.51	<0.51	0.0	>5.14	>5.14	>5.14
			Mock	<0.51	<0.51	<0.51	<0.51				
	UV lamp	20cm	HRV14	5.65	<0.51	<0.51	<0.51	0.0	>5.14	>5.14	>5.14
			Mock	<0.51	<0.51	<0.51	<0.51				
Room temperature	Purelight	15cm	HRV14	5.65	<0.51	<0.51	<0.51	0.0	>5.14	>5.14	>5.14
			Mock	<0.51	<0.51	<0.51	<0.51				
	Purelight	20cm	HRV14	5.65	<0.51	<0.51	<0.51	0.0	>5.14	>5.14	>5.14
			Mock	<0.00	<0.00	<0.00	<0.00				

- **Conclusion** –

Exposed UV lamps and Purelight at distances of 15cm and 20cm, the virus is deactivated to the extent that it can detect after 5 minutes.

한국화학연구원 KRICT 바이러스시험연구센터

Test Report for virus inactivation of Enputech's UV lamp
Feline coronavirus/CRFK cells

14DI22

Virus titer and reduction rate (%)

Temperature	Lamp	Irradiation distance	Virus	Level of cytotoxicity ($CCID_{50}$/well)				Vrisu titer ($CCID_{50}$/well)				Virus reduction factor (%)			
				0 min	5 min	10 min	15 min	0 min	5 min	10 min	15 min	0 min	5 min	10 min	15 min
Room temperature	Fluorescence lamp	15cm	FCV					5,000	5,000	5,000	5,000	0	0.00	0.00	0.00
			Mock	<3.2	<3.2	<3.2	<3.2								
	Fluorescence lamp	20cm	FCV					5,000	5,000	5,000	5,000	0	0.00	0.00	0.00
			Mock	<3.2	<3.2	<3.2	<3.2								
Room temperature	UV lamp	15cm	FCV					5,000	16	<3.2	<3.2	0	99.6800%	>99.9360%	>99.9360%
			Mock	<3.2	<3.2	<3.2	<3.2								
	UV lamp	20cm	FCV					5000	40.0	<3.2	<3.2	0	99.2000%	>99.9360%	>99.9360%
			Mock	<3.2	<3.2	<3.2	<3.2								
Room temperature	Purelight	15cm	FCV					5,000	<3.2	<3.2	<3.2	0	>99.9360%	>99.9360%	>99.9360%
			Mock	<3.2	<3.2	<3.2	<3.2								
	Purelight	20cm	FCV					5,000	<3.2	<3.2	<3.2	0	>99.9360%	>99.9360%	>99.9360%
			Mock	<3.2	<3.2	<3.2	<3.2								

Virus titer and reduction rate (Logarithms)

Temperature	Lamp	Irradiation distance	Virus	Virus titer (log_{10} $CCID_{50}$/well)				Virus reduction factor (log_{10})			
				0 min	5 min	10 min	15 min	0 min	5 min	10 min	15 min
Room temperature	Fluorescence lamp	15cm	FCV	3.70	3.70	3.70	3.70	0.0	0.0	0.0	0.0
			Mock	<0.51	<0.51	<0.51	<0.51				
	Fluorescence lamp	20cm	FCV	3.70	3.70	3.70	3.70	0.0	0.0	0.0	0.0
			Mock	<0.51	<0.51	<0.51	<0.51				
Room temperature	UV lamp	15cm	FCV	3.70	1.20	<0.51	<0.51	0.0	2.49	>3.19	>3.19
			Mock	<0.51	<0.51	<0.51	<0.51				
	UV lamp	20cm	FCV	3.70	1.60	<0.51	<0.82	0.0	2.10	>3.19	>3.19
			Mock	<0.51	<0.51	<0.51	<0.51				
Room temperature	Purelight	15cm	FCV	3.70	<0.51	<0.51	<0.51	0.0	>3.19	>3.19	>3.19
			Mock	<0.51	<0.51	<0.51	<0.51				
	Purelight	20cm	FCV	3.70	<0.51	<0.51	<0.51	0.0	>3.19	>3.19	>3.19
			Mock	<0.51	<0.51	<0.51	<0.51				

– Conclusion –

Exposed UV lamps and Purelight at distances of 15cm and 20cm, the virus is deactivated to the extent that it can detect after 10 minutes.

한국화학연구원 KRICT 바이러스시험연구센터

Test Report for virus inactivation of Enputech's UV lamp

Porcine epidemic diarrhea virus/ cells

14DI11

Virus titer and reduction rate (%)

Temperature	Lamp	Irradiation distance	Virus	Level of cytotoxicity ($CCID_{50}$/well)					Virus titer ($CCID_{50}$/well)					Virus reduction factor (%)				
				0 min	2.5 min	5 min	10 min	15 min	0 min	2.5 min	5 min	10 min	15 min	0 min	2.5 min	5 min	10 min	15 min
Room temperature	Fluorescence lamp	20 cm	PEDV						3,200	3,200	3,200	3,200	3,200	0.00	0.00	0.00	0.00	0.00
			Mock	<1	<1	<1	<1	<1										
	Fluorescence lamp	25 cm	PEDV						3,200	3,200	3,200	3,200	3,200	0.00	0.00	0.00	0.00	0.00
			Mock	<1	<1	<1	<1	<1										
Room temperature	UV module	20 cm	PEDV						3,200	<3.2	<3.2	<3.2	<3.2	0.00	>99.90%	>99.90%	>99.90%	>99.90%
			Mock	<1	<1	<1	<1	<1										
	UV module	25 cm	PEDV						3,200	<3.2	<3.2	<3.2	<3.2	0.00	>99.90%	>99.90%	>99.90%	>99.90%
			Mock	<1	<1	<1	<1	<1										
Room temperature	Purelight	20 cm	PEDV						3,200	<3.2	<3.2	<3.2	<3.2	0.00	>99.90%	>99.90%	>99.90%	>99.90%
			Mock	<1	<1	<1	<1	<1										
	Purelight	25 cm	PEDV						3,200	<3.2	<3.2	<3.2	<3.2	0.00	>99.90%	>99.90%	>99.90%	>99.90%
			Mock	<1	<1	<1	<1	<1										

Virus titer and reduction rate (Logarithms)

Temperature	Lamp	Irradiation distance	Virus	Virus titer (log_{10} $CCID_{50}$/well)					Virus reduction factor (log_{10})				
				0 min	2.5 min	5 min	10 min	15 min	0 min	2.5 min	5 min	10 min	15 min
Room temperature	Fluorescence lamp	20 cm	PEDV	3.51	3.51	3.51	3.51	3.51	<0.00	<0.00	<0.00	<0.00	<0.00
			Mock	<0.51	<0.51	<0.51	<0.51	<0.51					
	Fluorescence lamp	25 cm	PEDV	3.51	3.51	3.51	3.51	3.51	<0.00	<0.00	<0.00	<0.00	<0.00
			Mock	<0.51	<0.51	<0.51	<0.51	<0.51					
Room temperature	UV module	20 cm	PEDV	3.51	<0.51	<0.51	<0.51	<0.51	<0.00	>3.00	>3.00	>3.00	>3.00
			Mock	<0.51	<0.51	<0.51	<0.51	<0.51					
	UV module	25 cm	PEDV	3.51	<0.51	<0.51	<0.51	<0.51	<0.00	>3.00	>3.00	>3.00	>3.00
			Mock	<0.51	<0.51	<0.51	<0.51	<0.51					
Room temperature	Purelight	20 cm	PEDV	3.51	<0.51	<0.51	<0.51	<0.51	<0.00	>3.00	>3.00	>3.00	>3.00
			Mock	<0.51	<0.51	<0.51	<0.51	<0.51					
	Purelight	25 cm	PEDV	3.51	<0.51	<0.51	<0.51	<0.51	<0.00	>3.00	>3.00	>3.00	>3.00
			Mock	<0.51	<0.51	<0.51	<0.51	<0.51					

– Conclution –

Exposed UV lamps and Purelight at distances of 20cm and 25cm, the virus is deactivated to the extent that it can detect after 2.5 minutes.

Test Report for virus inactivation of Enputech's UV lamp
Feline coronavirus/CRFK cells

14DI20

Virus titer and reduction rate (%)

Temperature	Lamp	Irradiation distance	Virus	Level of cytotoxicity ($CCID_{50}$/well)				Vrisu titer ($CCID_{50}$/well)				Virus reduction factor (%)			
				0 min	5 min	10 min	15 min	0 min	5 min	10 min	15 min	0 min	5 min	10 min	15 min
Room temperature	Fluorescence lamp	15cm	PEDV					50,000	50,000	50,000	50,000	0	0.00	0.00	0.00
			Mock	<3.2	<3.2	<3.2	<3.2								
	Fluorescence lamp	20cm	PEDV					50,000	50,000	50,000	50,000	0	0.00	0.00	0.00
			Mock	<3.2	<3.2	<3.2	<3.2								
Room temperature	UV lamp	15cm	PEDV					50,000	<3.2	<3.2	<3.2	0	>99.9936%	>99.9936%	>99.9936%
			Mock	<3.2	<3.2	<3.2	<3.2								
	UV lamp	20cm	PEDV					50,000	<3.2	<3.2	<3.2	0	>99.9936%	>99.9936%	>99.9936%
			Mock	<3.2	<3.2	<3.2	<3.2								
Room temperature	Purelight	15cm	PEDV					50,000	<3.2	<3.2	<3.2	0	>99.9936%	>99.9936%	>99.9936%
			Mock	<3.2	<3.2	<3.2	<3.2								
	Purelight	20cm	PEDV					50,000	<3.2	<3.2	<3.2	0	>99.9936%	>99.9936%	>99.9936%
			Mock	<3.2	<3.2	<3.2	<3.2								

Virus titer and reduction rate (Logarithms)

Temperature	Lamp	Irradiation distance	Virus	Virus titer (log_{10} $CCID_{50}$/well)				Virus reduction factor (log_{10})			
				0 min	5 min	10 min	15 min	0 min	5 min	10 min	15 min
Room temperature	Fluorescence lamp	15cm	PEDV	4.70	4.70	4.70	4.70	0.0	0.0	0.0	0.0
			Mock	<0.00	<0.00	<0.00	<0.00				
	Fluorescence lamp	20cm	PEDV	4.70	4.70	4.70	4.70	0.0	0.0	0.0	0.0
			Mock	<0.00	<0.00	<0.00	<0.00				
Room temperature	UV lamp	15cm	PEDV	4.70	<0.51	<0.51	<0.51	0.0	>4.19	>4.19	>4.19
			Mock	<0.00	<0.00	<0.00	<0.82				
	UV lamp	20cm	PEDV	4.70	<0.51	<0.51	<0.82	0.0	>4.19	>4.19	>4.19
			Mock	<0.00	<0.00	<0.00	<0.00				
Room temperature	Purelight	15cm	PEDV	4.70	<0.61	<0.51	<0.51	0.0	>4.19	>4.19	>4.19
			Mock	<0.00	<0.00	<0.00	<0.00				
	Purelight	20cm	PEDV	4.70	<0.51	<0.51	<0.51	0.0	>4.19	>4.19	>4.19
			Mock	<0.00	<0.00	<0.00	<0.00				

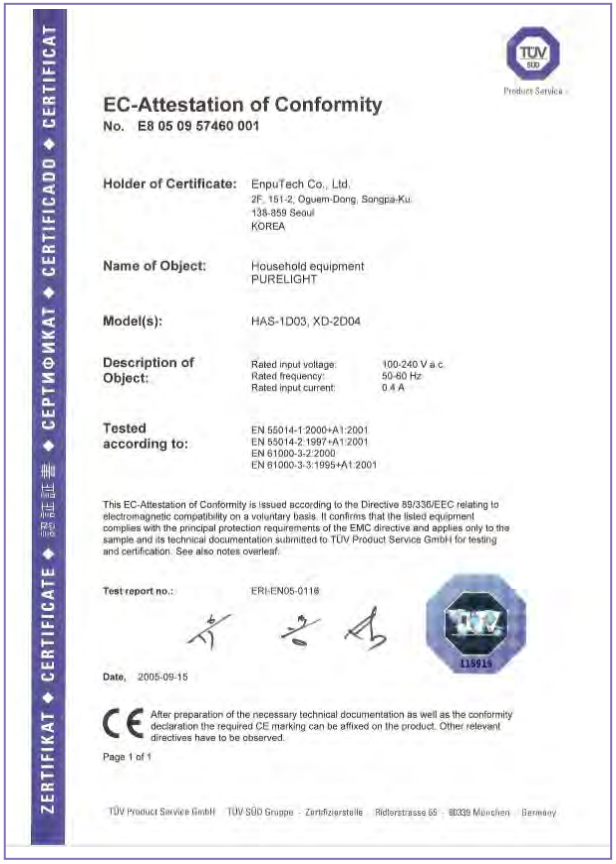
– Conclusion –

Exposed UV lamps and Purelight at distances of 15cm and 20cm, the virus is deactivated to the extent that it can detect after 5 minutes.

Product Certification

EnpuTECH
Providing Healthy Living Environment

Certification



ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

TÜV SÜD Product Service

EC-Attestation of Conformity
No. E8 05 09 57460 001

Holder of Certificate:	EnpuTech Co., Ltd. 2F, 151-2, Oguem-Dong, Songpa-Ku 138-859 Seoul KOREA
Name of Object:	Household equipment PURELIGHT
Model(s):	HAS-1D03, XD-2D04
Description of Object:	Rated input voltage: 100-240 V a.c. Rated frequency: 50-60 Hz Rated input current: 0.4 A
Tested according to:	EN 55014-1:2000+A1:2001 EN 55014-2:1997+A1:2001 EN 61000-3-2:2000 EN 61000-3-3:1995+A1:2001

This EC-Attestation of Conformity is issued according to the Directive 89/336/EEC relating to electromagnetic compatibility on a voluntary basis. It confirms that the listed equipment complies with the principal protection requirements of the EMC directive and applies only to the sample and its technical documentation submitted to TÜV Product Service GmbH for testing and certification. See also notes overleaf.

Test report no.: ERI-EN05-0116

TÜV SÜD 115919

Date, 2005-09-15

CE After preparation of the necessary technical documentation as well as the conformity declaration the required CE marking can be affixed on the product. Other relevant directives have to be observed.

Page 1 of 1

TÜV Product Service GmbH · TÜV SÜD Gruppe · Zertifizierstelle · Ridlerstrasse 65 · 80339 München · Germany

[CE]

The United States of America

The Director of the United States Patent and Trademark Office

Has received an application for a new, original, and ornamental design for an article of manufacture. The title and description of the design are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the design shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the design throughout the United States of America, or importing the design into the United States of America for the term of fourteen years from the date of grant of this patent.

Jon W. Dudas

Acting Director of the United States Patent and Trademark Office

Patent No.: US D485,364 S
Date of Patent: ** Jan. 13, 2004

[US patent]

实用新型专利证书

证书号 第657336号

实用新型名称：便携式紫外线消毒仪

设计人：姜文胜 丁斌 丁丹 胡克海

专利号：ZL 03 2 [illegible].6

专利申请日：2003年9月8日

专利权人：[illegible]有限公司

授权公告日：2004年11月17日

局长

[China paten]

ENPUTECH
Providing Healthy Living Environment

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경기도 광주시 초월읍 독고개길 30

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