

# PHOTOTROPH

next generation air purification system



STERILIZATION  
DEODORIZATION in **ONE**

EFFECTIVELY REMOVES :

- /AIRBORNE BACTERIA /MOLD
- /VIRUS /TOXINS /ODOROUS GASES
- /VOLATILE ORGANIC COMPOUNDS

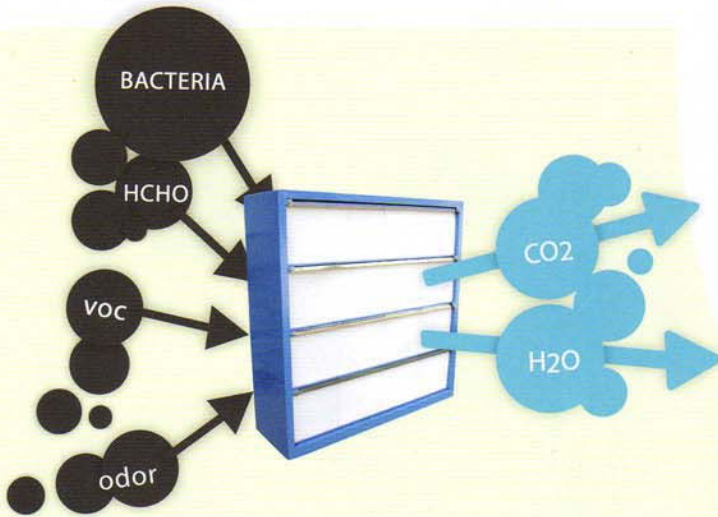




# INDOOR AIR QUALITY (IAQ) CAN AFFECT OUR COMFORT, HEALTH, AND WORK PERFORMANCE.

*Phototroph can provide protection against airborne pathogens, keep away the VOC and odorous gases and preventing the outdoor polluted gases to get into the HVAC system.*

**Phototroph  
improves IAQ !**

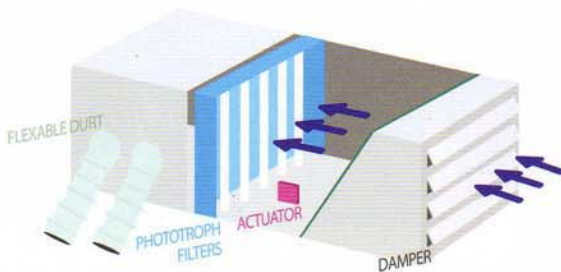


Phototroph air purification system with the latest photocatalytic oxidation (PCO) technology is used in the Heating, Ventilating, and Air Conditioning (HVAC) system.

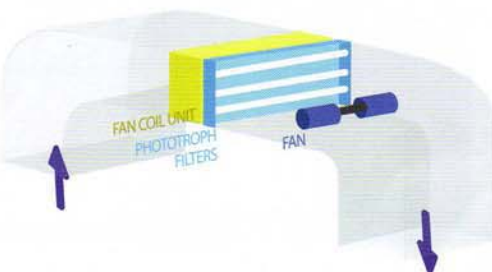
**AHU**



**VAV BOX**



**FAN COIL**



## MECHANISM OF PCO *remarkable purification capacity*

When photocatalyst Titanium Dioxide ( $TiO_2$ ) illuminated by UV, the electron of the valence band of titanium dioxide becomes excited. The excited electron promoted to the conduction band of titanium dioxide.

The positive-hole of Titanium Dioxide breaks apart the water molecule to form hydrogen gas and hydroxyl radical. The negative-electron reacts with oxygen molecule to form super oxide anion. The cycle continues when light is available.



## Three Dimensional Extruded Ceramic Filter

### 200 Cells per square inch

Titanium Dioxide has to be coated on a carrier before it can be used in the ventilation system. Choosing the right carrier for TiO<sub>2</sub> is a critical task in developing a world's class Photocatalytic Oxidation (PCO) system. Many PCO systems are still using perforated metal sheet as their carrier but they all have very small contact area. Phototroph uses a three dimensional extruded ceramic filter as the carrier.

because of its 'checker-like' nature it can provide a **40times** larger contact area than a flat surface carrier.

### Advance coating technology for TiO<sub>2</sub> and ceramic filter binding

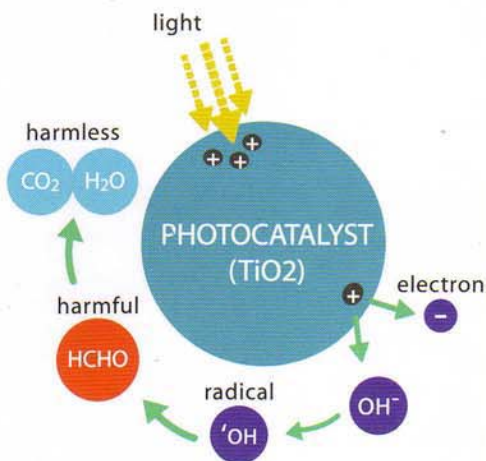
We use the progressive thermal dip-coating method to bind our TiO<sub>2</sub> sol-gel and the ceramic filter. An anatase Titanium Dioxide layer forms evenly on the ceramic filter surface under a temperature of 500°C. This washable and maintenance friendly ceramic filter has excellent decomposition and sterilization properties.

**High perforation**  
**High strength**  
**Large specific surface area**  
**Tailor mixed heat resistance material**

### Actinic Philips UVA

High UVA output  
Stable UVA intensity with peak at 370nm

**"Both hydroxyl radical and super oxide anion can effectively disinfect and deodorize indoor air."**



Improves indoor air quality



Breakdowns odorous gases



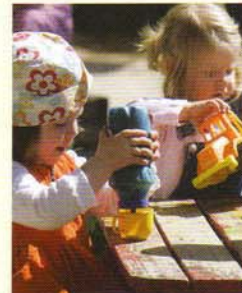
Decomposes pet smells



Kills bacteria, molds, viruses and germs



Controls kitchen smell exhausts



Reduces outbreak chance of hand, foot and mouth disease





### **PUVA100**

*Norminal Size (LxHxW)*  
*Norminal Surface Velocity*  
*Norminal Flow Rate*  
*Resistance*  
*Power consumption*  
*Sound Power Level*  
*Power Supply*  
*Number of UVA Tube*  
*Ceramic Filter Pore Density*  
*Ceramic Filter Porosity*  
*Acetaldehyde Removal Rate*  
*according to JIS R1701 Part 2*

620mm x 610mm x 350mm  
 2.5 m/s  
 3200m<sup>3</sup>/h  
 40 Pa (at 2.5m/s)  
 100w  
 <30dB(A) at 1m  
 220V / 50Hz  
 5  
 200 cells per square inch  
 >50%  
 360umol/m<sup>2</sup>/hr

### **PUVA60**

620mm x 310mm x 350mm  
 2.5 m/s  
 1600m<sup>3</sup>/h  
 40 Pa (at 2.5m/s)  
 60w  
 <30dB(A) at 1m  
 220V / 50Hz  
 3  
 200 cells per square inch  
 >50%  
 360umol/m<sup>2</sup>/hr



### **PECF200**

*Norminal Size*  
*Norminal Surface Velocity*  
*Resistance*  
*Ceramic Filter Pore Density*  
*Ceramic Filter Porosity*  
*Acetaldehyde Removal Rate*  
*according to JIS R1701 Part 2*

595mm x 295mm x 22mm  
 595mm x 595mm x 22mm  
 2.5 m/s  
 40 Pa (at 2.5m/s)  
 200 cells per square inch  
 >50%  
 360umol/m<sup>2</sup>/hr



### **PACF156**

*Norminal Size*  
*Norminal Surface Velocity*  
*Resistance*  
*Pore Density*  
*Porosity*  
 Options:

595mm x 295mm x 22mm  
 595mm x 595mm x 22mm  
 2.5 m/s  
 40 Pa (at 2.5m/s)  
 156 cells per square inch  
 >50%  
 45mm (Thickness)

Tested by Japan accredited laboratory :



Distributed by :

Hong Kong Air Purifier Center  
 Tel: 852-34210167 Fax: 852-30054302  
 www.hkcapc.org info@hkcapc.org

# PHOTOTROPH

next generation air purification system

## PUVA - Specification

- Power Supply: 220V/50Hz, 100W per modular
- Max. Recommended Face Velocity: 2.5m/s
- Resistance of PCO Unit: <40Pa (@2.5m/s)
- Removal Efficiency:

According to GB/T 18801-2002 with reports/ certificate issued by a Laboratory registered under Hong Kong Laboratory Accreditation Scheme (HOKLAS) or Mutual Recognition Agreement (MRA) partner

- ◆ TBC removal >90% in 4 hours
- ◆ TVOC removal >90% in 7 hours
- ◆ HCHO removal >90% in 10 hours

According to JIS 1701-Part 2 with reports/ certificate issued by a Laboratory registered under Hong Kong Laboratory Accreditation Scheme (HOKLAS) or Mutual Recognition Agreement (MRA) partner

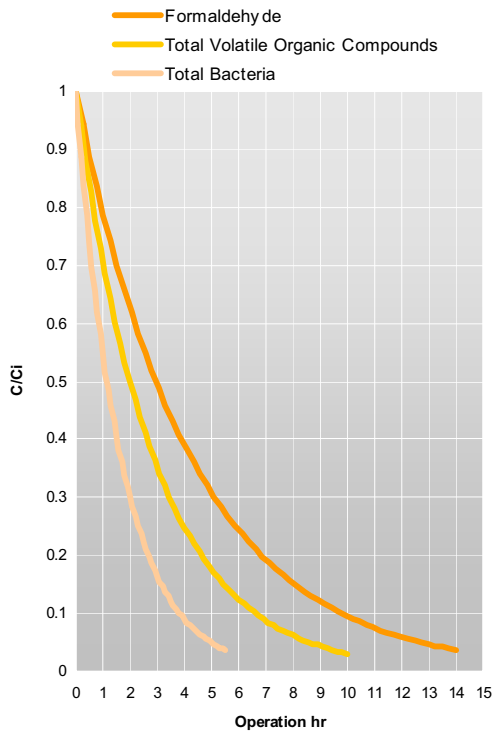
- ◆ Acetaldehyde removal >360umol/m<sup>2</sup>/hr

- Non-combustibility:

According to BS 476:Part 4 and approved by Fire Service Department in the List of Accepted Material (Ventilation System)

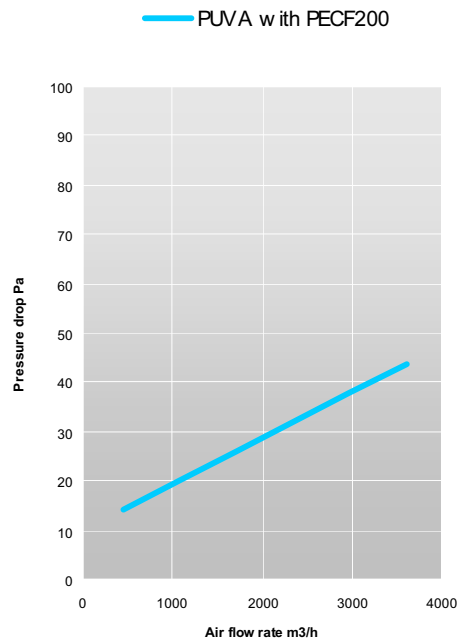
- Photocatalyst carrier: Ceramic

- Light source: UVA



**Removal Efficiency Curve**

The chart is based on the test result from a CNAS accredited laboratory which is a MRA partner of HOKLAS according to GB/T 18801-2002



**Resistance Curve**



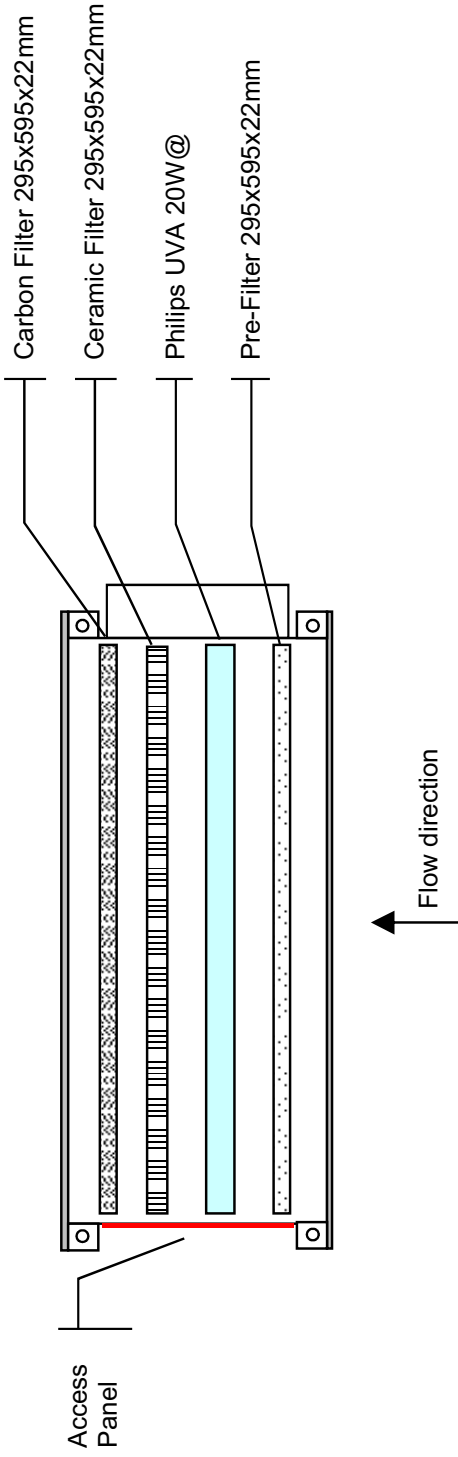
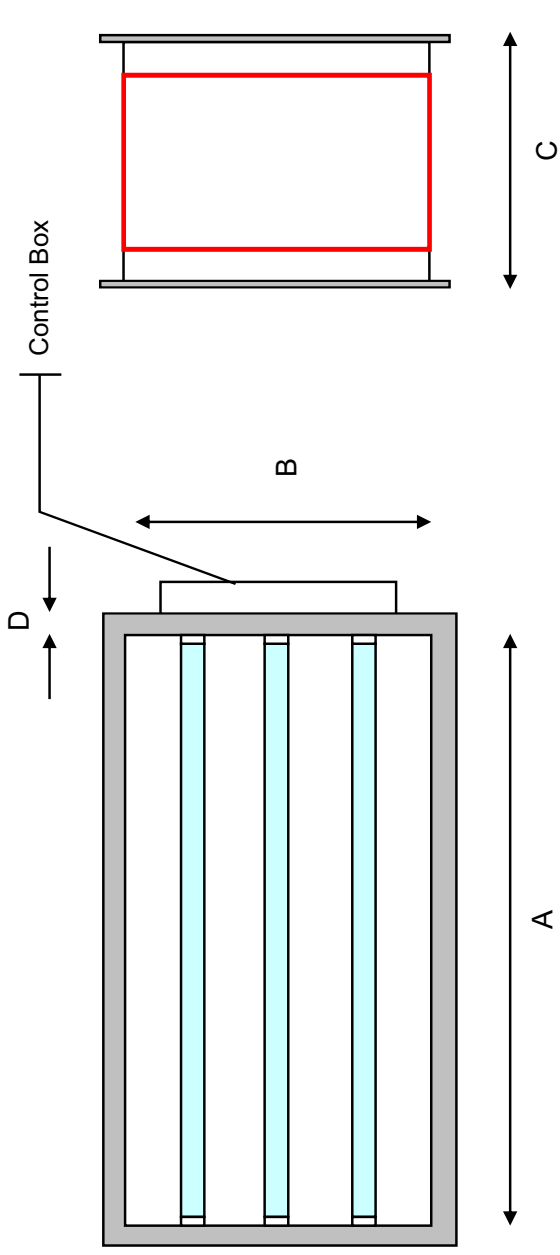
**PHOTOTROPH**

Phototroph reserves the right to change design and specification without notice.

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# Sample Drawing

Standard parts: Ceramic Filter,  
UV Lamp, Metal Casing and  
Control Box  
Options: Carbon Filter and Pre-  
filter



## Dimension

- A Length 620mm
- B Height 310mm
- C Width 350mm
- D Flange 30mm

 <i>next generation air purification system</i>	Client:	Power:	220V/50Hz
	Project:	Date:	3/23/2009
	Model no:	Scale:	NTS
	P.O. no:	Revision no:	3



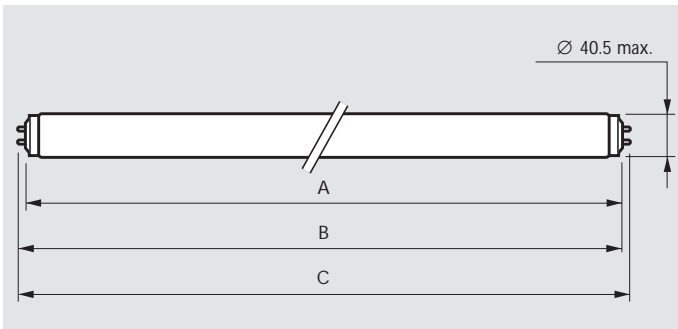
# Fluorescent lamps

# TL Standard colours



Fluorescent lighting is efficient and economical. The efficacy (lumen/watt) of all fluorescent lamps is high compared to most other light sources. Different luminaires are available for various purposes. TL lamps are low-pressure mercury discharge lamps with a clear tubular 38 mm envelope. The tube wall is internally covered with a mixture of fluorescent powders. TL Standard colours have a moderate colour rendering index (CRI 50-70). Especially the red part of the spectral power distribution is moderately covered by Standard colours.

TL Standard colours are mostly used in applications where colour rendering is not an important factor. The colour designation of TL lamps creates a certain atmosphere. It varies from warm white to cool daylight. The colour designation is determined by the colour temperature of the lamp.



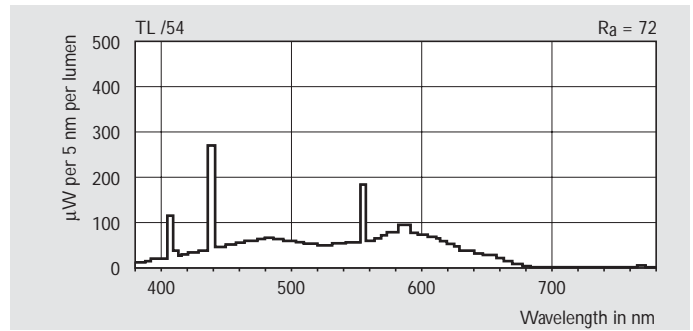
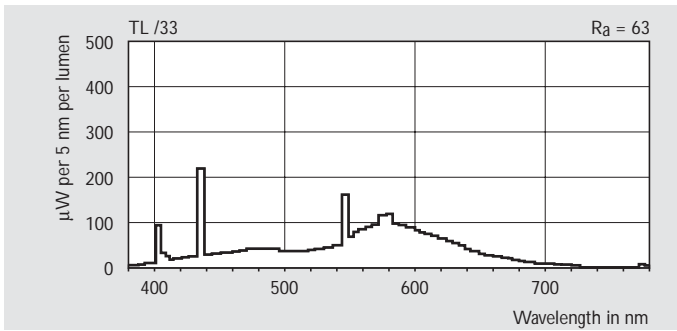
Dimensions in mm

Type	A max	B min	B max	C max
TL 20W	589.8	594.5	596.9	604.0
TL 40W	1199.4	1204.1	1206.5	1213.6
TL 65W	1500.0	1504.7	1507.1	1514.2

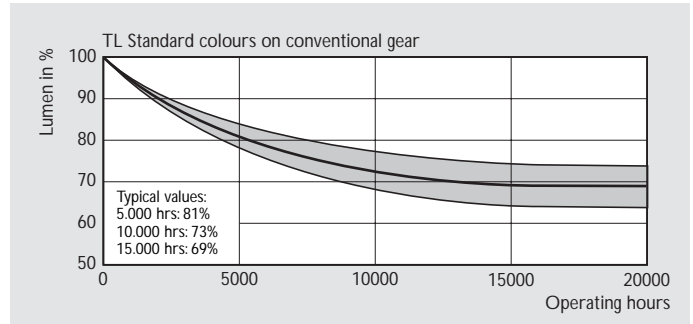
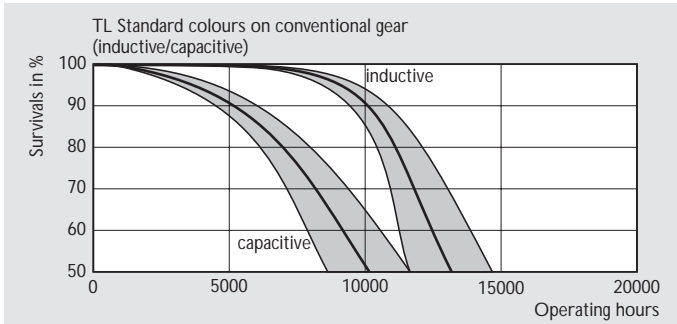
Commercial name	Type	Cap/base	Lamp voltage V	Lamp current A	Colour designation	Correlated colour temperature K	Lumen output lm	Average luminance cd/cm <sup>2</sup>	Nett weight g	EOC
<b>/33</b>										
TL	TL 20W /33	G13	57	0.37	COOL WHITE	4100	1100	0.59	156	717207
TL	TL 40W /33	G13	107	0.43	COOL WHITE	4100	2850	0.73	292	717870
TL	TL 65W /33	G13	110	0.67	COOL WHITE	4100	4650	0.94	360	719119
<b>/54</b>										
TL	TL 20W /54	G13	57	0.37	COOL DAYLIGHT	6200	1000	0.53	156	717382
TL	TL 40W /54	G13	107	0.43	COOL DAYLIGHT	6200	2500	0.64	292	718594
TL	TL 65W /54	G13	110	0.67	COOL DAYLIGHT	6200	4100	0.83	360	719201

# Fluorescent lamps

# TL Standard colours

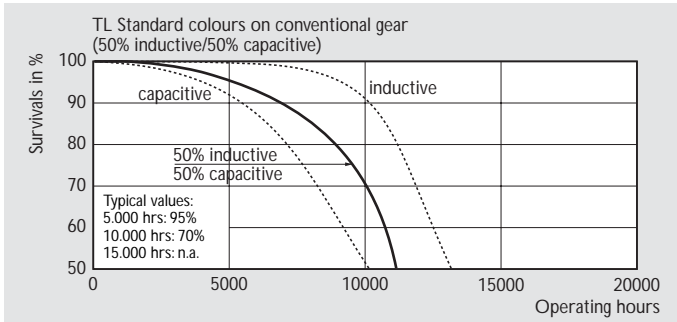


Spectral power distributions

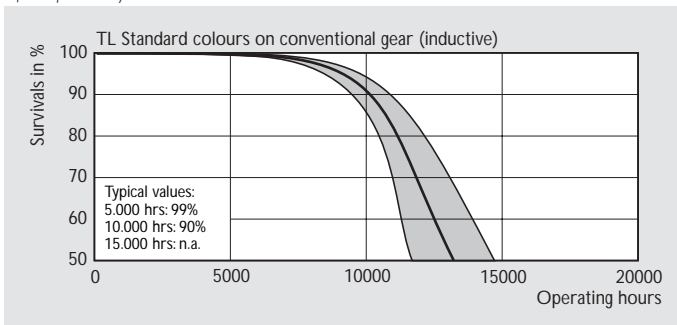


Life expectancy

Lumen maintenance



Life expectancy



Life expectancy





# Creating a cleaner environment

**Philips Actinic BL lamps** - the safe, efficient way to eliminate insects

Today the most efficient and hygienic way to overcome the presence of insects, in particular flies, is to attract them and then eliminate them in an insect trap. The key to successful fly trapping lies in understanding the colors and wavelengths that attracts them.

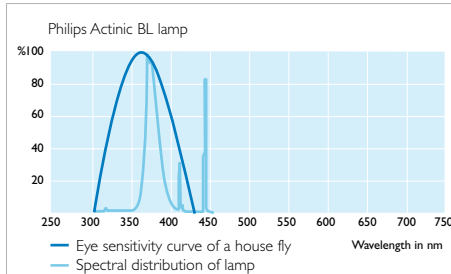
Philips Actinic BL lamps are the result of our massive research resources and the lighting knowledge we have gained throughout our one hundred year history

of lamp development. That means all our lamps are developed to ensure the UV radiation is optimized to attract most insects resulting in high levels of food hygiene in all professional applications.

Philips Actinic BL lamps are available in a wide range of lamp types, providing maximum choice and flexibility. They can be used on both new and existing equipment. Lamps with the same wattage and dimensions are interchangeable. Our range also includes compact lamps for new designs and smaller equipment.

**PHILIPS**  
sense and simplicity

The eyes of a housefly are sensitive to certain colors and to certain wavelengths of the light spectrum. With extensive research Philips developed a lamp that perfectly matches to the eye sensitivity of an insect.



### The safe choice

In the demanding catering environment you have the choice of PTFE sleeved versions, which retain all the glass if the lamp is shattered. This gives further protection against contamination from accidental breakage.

When choosing Philips Actinic BL lamps you know you can expect high quality performance with proven and tested technology.

### Better for the environment

As the world becomes more environmentally aware you can be assured that all Philips UV lamps carry the lowest mercury level in the industry.

### Benefits of Philips technology are:

- Lowest mercury level in the industry
- Wide range of lamps for existing and new insect trap units
- UV radiation optimized to attract most insects
- Compact lamps for new designs and smaller equipment
- Very long useful life
- PTFE sleeved versions retaining all glass if the lamp is shattered
- Proven and consistent quality and reliability

### Philips Actinic BL lamps for insect traps

Type	Cap/Base	Lamp Voltage V	Lamp Current A	UV-A Radiation (W)	Ordering number 871 1500
Philips TL 4W	G5	29	0.17	0.6	95142727
Philips TL 6W	G5	42	0.16	1.3	26039027
Philips TL 8W	G5	56	0.15	1.7	26042027
Philips TL 11W	G5	33	0.41	2.0	95145827
Philips TL 15W	G5	49	0.39	3.3	95148927
Philips TL-D 15W	G13	54	0.34	3.8	71093240
Philips TL-D 18W	G13	59	0.36	5.2	26325440
Philips TL-DK 30W	G13	45	0.81	6.5	89346840
Philips TL 20W	G13	57	0.37	4.9	26024640
Philips TL-K 40W	G13	50	0.86	8.6	71089540
Philips TL 40W	G13	104	0.43	12.0	26026040
Philips TL-K 40W R	G13	50	0.86	7.8	61223640
Philips TL-D 15W Secura	G13	51	0.34	3.2	89858640
Philips TL 20W Secura	G13	57	0.37	4.3	89851740
Philips TL-K 40W Secura	G13	50	0.86	7.5	89860940
Philips TL-E 22W	G10Q	62	0.40	3.9	28513305
Philips PL-S 9W	G23	60	0.17	1.8	95194680
Philips PL-S 11W	G23	89	0.16	2.8	95201180
Philips PL-L 18W	2G11	58	0.37	3.5	26018540
Philips PL-L 24W	2G11	87	0.35	4.9	95206640



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Data subject to change  
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