PHILIPS

UV-C disinfection luminaires

# Disinfection with the power of light

UV-C light is a proven and effective way to disinfect air, surfaces and objects

# **Absolute confidence,** in a world of uncertainty

We are living in unprecedented times. In the face of a global pandemic, the world is demanding a proven and effective way to protect people from harmful micro-organisms.

Bacteria and viruses can cause a wide range of common infections. They can live in air, on surfaces and on objects, even after normal cleaning routines. That means any contamination left behind in the air we breathe and on the surfaces we touch can have a profound effect on our day-to-day health and wellbeing.

**UV-C disinfection**
UV-C lighting disinfects radiated air and surfaces which contain bacteria and viruses and helps to reduce them from spreading further. All micro-organisms tested to date respond to UV-C lighting[1].

**Philips UV-C disinfection luminaires**
With 35 years of experience in UV-C lighting, we have built up strong application expertise. This has led us to develop a new range of UV-C disinfection luminaires and chambers, ideal for use in offices, retail outlets, factories; in hospitality areas, schools and public washrooms and even on modes of transport such as aircraft, buses and trains.

1 Fluence (UV Dose) Required to Achieve Incremental Log Inactivation of Bacteria, Protozoa, Viruses and Algae Revised, updated and expanded by Adel Haji Malayeri, Madjid Mohseni, Bill Cairns and James R. Bolton. With earlier contributions by Gabriel Chevrefils (2006) and Eric Caron (2006) With peer review by Benoit Barbeau, Harold Wright (1999) and Karl G. Linden.

“Our test results show that above a specific dose of UV-C radiation, viruses were completely inactivated: in a matter of seconds we could no longer detect any virus.”

Dr. Anthony Griffiths, Associate Professor of Microbiology at Boston University School of Medicine.



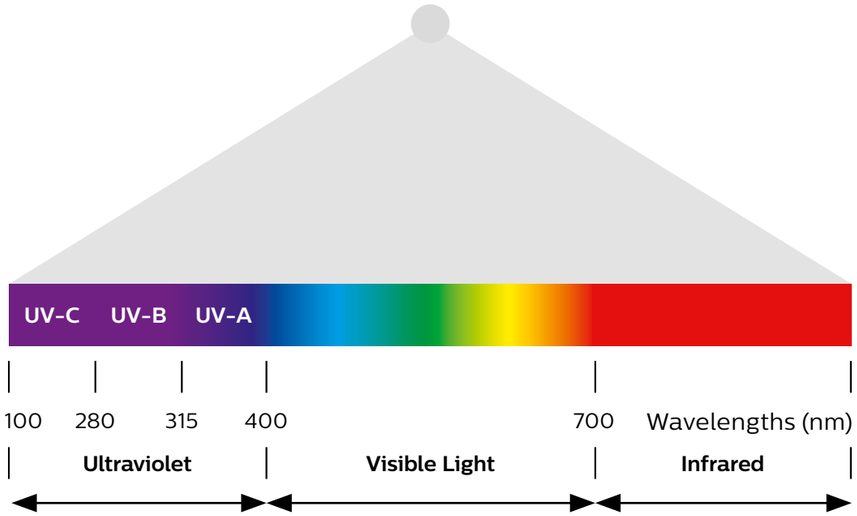
# Shining a light **on UV technology**

UV-C radiation is a known disinfectant for air, surfaces and objects that can help mitigate the risk of acquiring an infection.

**What is UV technology?**
Ultra-Violet (UV) light is invisible to the human eye and is divided into UV-A, UV-B and UV-C.

UV-C is found within 100-280 nm range. The germicidal action is maximized at 265 nm. Philips Low pressure UV-C lamps have their main emission at 254 nm where the action on DNA is 85% of the peak value. As a result, our germicidal lamps are extremely effective in breaking down the DNA and RNA of micro-organisms. This means that they cannot replicate and cause disease[2].

The technology has primarily been used in areas where there is a risk of microbiological contamination, and has been used safely and effectively for more than 40 years[3].




2 A comparison of pulsed and continuous ultraviolet light sources for the decontamination of surfaces. McDonald K.F., Curry R.D., Clevenger T.E., Unklesbay K., Eisenstark A., Golden J., Morgan R.D. IEEE Trans. Plasma Sci. 2000;28:1581–1587. doi: 10.1109/27.901237.

3 EPA Report, “Building Retrofits for Increased Protection Against Airborne Chemical and Biological Releases” Pg. 56.


# Designed with **safety in mind**

**Correct usage**

Our UV-C products are either provided with physically integrated equipment or time safeguards (such as presence or motion detection sensors or timers) or are to be installed together with the adequate containment safeguards to ensure that our UV-C products can be operated in line with the relevant safety standards. UV-C disinfection luminaires that we provide without physically integrated equipment or time safeguards are meant to be used only as components in disinfection systems that contain the adequate safety safeguards such as, but not limited to, those indicated in the mounting instructions and/or user manuals of such luminaires.



# UV-C Services **End-to-end Services Offer**

The effectiveness and safe application of a UV-C solution starts with the right application design. We can help with how UV-C lighting can work both for you and your business to:

## Plan and design

Our team will assess your facility to identify potential areas for UV-C, customizing a solution with the right light output, optimum installation position, mounting height, angle and system functionality.

## Build

For total peace of mind we provide end-to-end project management. We supply, deliver, install and commission your UV-C system, so you enjoy a smooth, seamless experience.

## Operate

We'll check your UV-C system is operating correctly on a regular basis, performing irradiation measurements, checking for faults and carrying out preventative checks.

## Maintain and optimize

We can also carry out maintenance and repairs, optimizing your installation, verifying performance and providing fast replacements at the end of your UV-C light's useful life.

Direct exposure to UV-C is dangerous. Philips UV-C disinfection luminaires must only be sold through qualified partners and installed by professionals according to our stringent safety and legal requirements.

# Professional air, surfaces and objects disinfection

## Everywhere it's needed

Philips UV-C disinfection luminaires can be used to disinfect air, surfaces and objects in a wide range of applications. These include hospitality areas, schools and public washrooms. In offices, retail outlets and factories. Even on modes of transport such as aircraft, buses and trains.

**For more information on the benefits of Philips UV-C disinfection luminaires in your chosen application, please contact your local Signify representative.**

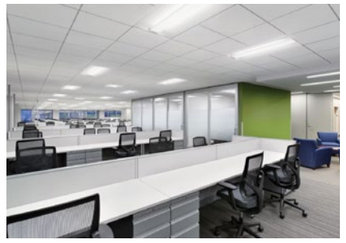


## The power to protect in real-world applications

### Retail
Disinfecting shopping carts, shelves and counters

### Hair and beauty salons
Disinfect client rooms, floor, mirror, chair, counter surfaces and other sensitive areas

### Schools
Disinfect classroom walls, floors, desks and surfaces



### Offices
Disinfect work rooms, meeting spaces and corridors

### Banking
Disinfect counters, cash machines and work surfaces

### Hospitality
Disinfect guest rooms, reception areas and health club facilities

### Food outlets
Disinfect preparation surfaces and equipment

### Washrooms
Disinfect vanity units, basins and mirrors

### Transport
Disinfect interior and exterior surfaces of different vehicles and passengers' waiting spaces

# Philips UV-C disinfection luminaires
# **The power to protect**

We have more than 35 years of experience and expertise in developing and manufacturing UV-C products. Our Philips UV-C disinfection luminaires portfolio with UV-C lamps deliver on all the promises of UV technology.

## Designed for efficacy

All viruses and bacteria tested to date effectively respond to UV-C disinfection.[1]

## A lifetime of reliability

Made from durable, UV-C resistant materials, our UV-C solutions are designed to provide reliable disinfection over the useful long lifetime of the lamp and luminaire. This is supported by our stringent manufacturing and testing processes to guarantee the highest quality.

## Environmentally friendly

For added peace of mind, all our UV-C solutions are also environmentally friendly. We guarantee that no ozone gases will be emitted during or after use.

## Safety in mind

Philips UV-C products are delivered with a range of safeguards and instructions. They come with physically integrated equipment or time safeguards, such as presence or motion detection sensors or timers, or otherwise they are to be installed with containment safeguards to enable correct operation. In addition, we provide extensive training and certification programs to help ensure correct installation, usage and maintenance of our UV-C products.

## A wide range of applications

The Philips UV-C disinfection luminaires and components are innovative, high-quality solutions that are suitable for a wide range of applications. This includes upper air systems that disinfect passing air, as well as cabinets that are used to disinfect specific objects.

1 Fluence (UV Dose) Required to Achieve Incremental Log Inactivation of Bacteria, Protozoa, Viruses and Algae Revised, updated and expanded by Adel Haji Malayeri, Madjid Mohseni, Bill Cairns and James R. Bolton. With earlier contributions by Gabriel Chevrefils (2006) and Eric Caron (2006) With peer review by Benoit Barbeau, Harold Wright (1999) and Karl G. Linden.

# UV-C lighting **for commercial applications**

Bacteria and viruses are transmitted through the air and via surfaces. We recommend to consider 3 main types of Ultraviolet Germicidal Irradiation (UVGI) using UV-C lighting for:

## Air applications

Viruses, bacteria, or fungi can be airborne, spreading through breathing, talking, coughing, sneezing, raising of dust or any activities which generate aerosol particles or bacteria and viruses. Heating, cooling and air circulation in your spaces can further distribute airborne bacteria and viruses.

## Surface applications

When someone coughs or exhales, they release droplets of fluid. Most of these droplets fall on nearby surfaces and objects - such as desks, tables or telephones. If they are carrying a virus, staff could become infected by touching contaminated surfaces or objects, then touching their eyes, nose or mouth.

## Object applications

Viruses can live on surfaces for up to 5 days[1], so devices which come into regular contact or are shared between people can provide a higher risk. Introducing a disinfection process to your daily cycle of item reuse or recharging helps ensure that viruses and bacteria are destroyed.

1 Source: World Health Organization



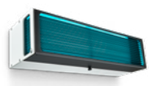
# **Overview** Philips professional UV-C disinfection luminaires

Philips offers a range of luminaires with compatible reflectors, lamps and drivers that are suitable for use in commercial applications.

## Air
**Disinfection solutions**

**Philips UV-C disinfection upper air luminaires**

Ceiling



Wall

## Surface
**Disinfection solutions**

**Philips UV-C disinfection batten**

Bare

Reflector

**Philips Dynalite UV-C control systems**

## Object
**Disinfection solutions**

**Philips BioShift UV-C disinfection chamber**

Tabletop

Extra large

Air
Disinfection solutions

# Philips UV-C disinfection upper air

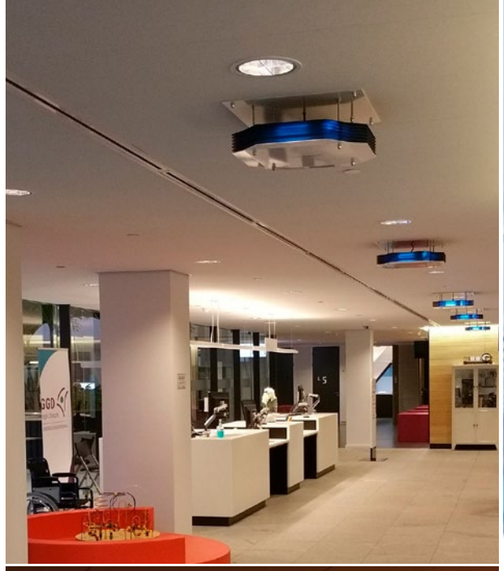
Airborne viruses and bacteria contaminate the air trapped indoors and can pose a real health threat. Upper air UV-C systems are powerful instruments to disinfect the upper air layers within rooms.

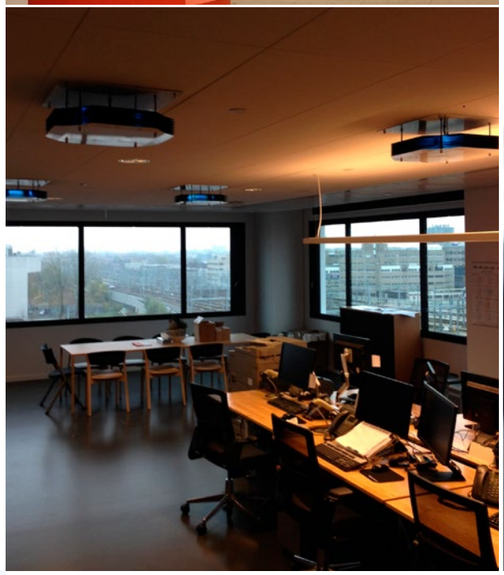
**Benefits:**

- Optimized for low ceiling heights, the UV-C rays are distributed at device level and above.
- The beam of UV-C rays is controlled by specific reflectors and the louvre design. This allows for the disinfection of the air in a space, while ensuring that day-to-day business activities can continue underneath the area where the device is active.
- Allows disinfection of a large volume of air while business activity continues.
- Radiates UV-C in the upper part of rooms, where it does not reach people directly.
- Quietly and effectively deactivates airborne viruses and bacteria with Philips UV-C (253.7 nm) lamps.
- Effective disinfection over the useful long lifetime of lamp and luminaire.
- Environmentally friendly - no ozone emissions during or after use.

**Features:**

- Shortwave UV radiation peak at 253.7 nm (UVC).
- Louvres and reflector control the distribution of UV-C at the device level and above, where people are not usually present.
- Complies with IEC 62471 standard for photobiological safety.

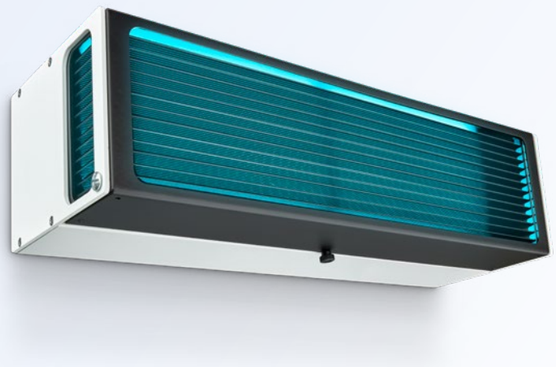




## Philips UV-C disinfection upper air wall mounted

Designed for the disinfection of air in a lot of applications, with installation on walls.

- Wall mounted installation.
- Philips T5 TUV lamp included: 25W.



## Philips UV-C disinfection upper air ceiling mounted

Designed to be installed on false ceilings for the disinfection of air in a wide range of applications.

- Surface mounted on false ceilings.
- Philips PL-S TUV lamp included: 4x9W.

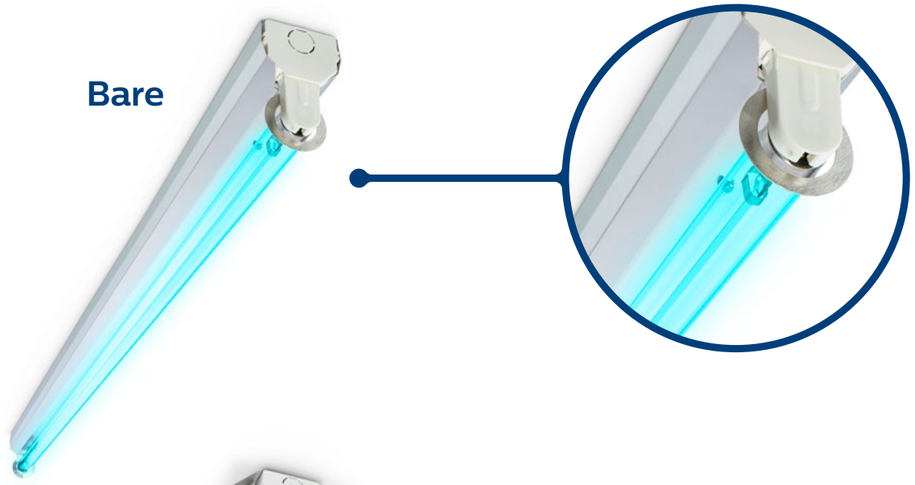
Surface
Disinfection solutions

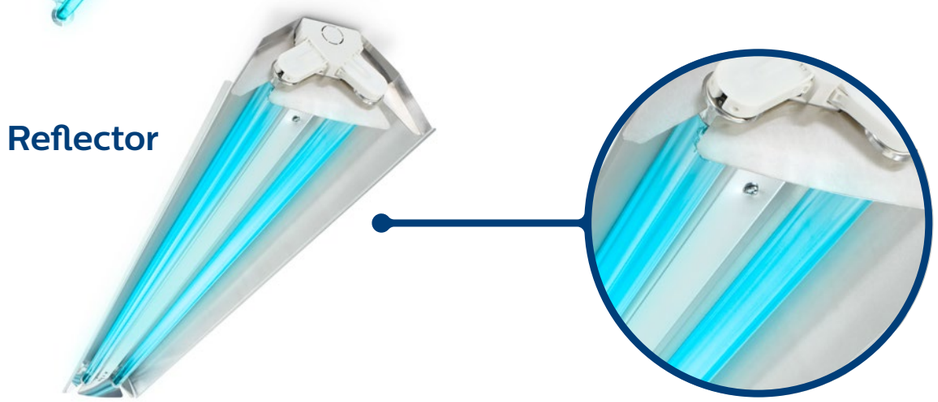
# Philips UV-C disinfection batten

A fixed installation of luminaires on the ceiling is used at controlled times to fill a room or enclosed space with disinfecting UV-C radiation. Philips UV-C batten provides disinfection for high contact areas, such as meeting rooms, restaurants, supermarkets, washrooms and public buildings.

**Benefits:**
- In laboratory testing, Signify's UV-C light sources inactivated 99% of SARS-CoV-2 virus on a surface with an exposure time of 6 seconds.[1]
- Proven, effective disinfection over the useful long lifetime of lamp and luminaire.
- Environmentally friendly - no ozone emissions during or after use.

**Features:**
- Lamp configurations possible: 1-lamp or 2-lamps version.
- Available: bare batten or with reflectors.
- Philips T8 TUV lamp included: 18W or 36W.
- Shortwave UV radiation peak at 253.7 nm (UVC).
- High reflective aluminum housing for better reflectivity and performance.
- All plastic components are protected by dedicated UV-C shielding.




1 Tests performed in a lab setting by Boston University using a Signify UV-C light source revealed that a dose of 5mJ/cm² reduced 99% of SARS-CoV-2, the virus causing COVID-19, in just 6 seconds. Based on the data, it was determined that a dose of 22mJ/cm² will result in a reduction of 99.9999% in 25 seconds. Research variables available upon request.

## Philips Dynalite control system

When using UV-C lighting, the safety of people is always the priority. That's why the Philips Dynalite UV-C automated control system is designed to enable the use and/or operation of a properly designed and installed UV-C lighting system in a safer way than without an equivalent control system in place.

**Safety first - why controls**
The Philips Dynalite UV-C disinfection control system's multiple mechanical and network safeguards help prevent exposure to harmful UV rays while at the same time applying the appropriate UV-C dosage.

The control system includes safety mechanisms such as authorized activation, UV-C cycle about-to-start warning, movement sensors and emergency stop switches to deactivate in case of potential hazards.

Object
Disinfection solutions

# Philips BioShift UV-C disinfection chamber

For disinfection of objects such as handheld devices, headsets, parcels and protective equipment.

**Benefits:**

- inactivates SARS-CoV-2 to Log6 level within 1 minute[1] cycle time providing a disinfection dose of 80 mJ/cm$^2$.
- Mechanical safety and germicidal effectiveness validated by independent scientific research agency TNO*.
- Comes with advanced features to provide secure disinfection, including door sensors, magnetic locks to prevent accidental door opening and inspection windows.
- To ensure sufficient UV-C dose is provided, the controller can frequently sample the UV dose, for this the UV dosimeter card is placed in the center of the unit, and the 'dose test' is run via the maintenance screen.

**Features:**

- 2 versions, Tabletop:
  (600 mm H x 585 mm L x 750 mm W)
  and Xtra Large:
  (1828 mm H x 1180 mm L x 762 mm W).
- Lamp life monitoring system indicating end of life of UV-C lamps
- Rugged shelving supports heavy items.
- Emergency button & door lock.
- Heavy-duty stainless-steel chamber.
- Chemical-free disinfection.

* TNO report available on request


1 Recent study performed by Boston University, in collaboration with Signify Research, shows the vulnerability of SARS-CoV-2 to UV-C radiation. The study shows a required dose of around 22 mJ/cm$^2$ to inactivate SARS-CoV-2 to a Log6 level. (https://www.researchsquare.com/article/rs-65742/v1.)



www.philips.com/uv-c