

UVC Disinfection Box

Disclaimer

I have not personally tested any of the products mentioned in this article. All recommendations are being made under the assumption that manufacturers specifications are accurate. I have not personally tested the majority of these products. Also it is well documented that exposure to UVC light can cause skin cancer and Photokeratitis in the eye, so users should be very careful to only turn the lights on when no person is present in the vicinity.

Germicidal UV

Germicidal UV or UVC, UV light between 200-288nm of length, has long been known to be an effective disinfectant for surfaces especially within medical facilities. However, with the recent SARS-CoV-2 pandemic germicidal UV is a useful tool for virtually all types of disinfection.

UVC Box

One of the many uses of germicidal UV is in the disinfection of small items and accessories that may have had contact with Covid-19. This is most useful for items such as phones, masks, and keys which are often exposed in densely populated areas.

Creating a UVC disinfecting box for this reason is very simple, and requires an appropriately sized Styrofoam box that can be taken apart in the middle and a UVC light source. I would recommend a mounted light source with greater than 50 watts since the time required for proper disinfection should be inversely proportional to the power of the light source. The bulb I recommend is linked in the bottom of this article. The size of the box should be based on the boxes intended use, however a box with any edge being longer than 3 feet could potentially lead to disinfection times longer than 10 minutes. Also the box does not necessarily need to be Styrofoam. As long as it is an opaque closed material that will not let the UVC light out. For calculations regarding specific dosage times check out the article linked at the bottom.

The construction of the box requires two steps. The first is splitting the box in half to be able to move objects in and out of the box. If the box already has a seam in it then this is not required. After this the next step is to cut a whole in the bottom of the box with the same diameter of the wire to allow the wire to pass through the box to a power source. This should be on the seam of the box. Attached are some pictures to help clarify with the construction process.



Closed box with wire running inside for lamp.



Inside of UVC box before closed.



Hole at the bottom for wire access.

To use the box simply turn off the power supply to the UVC bulb open the two halves of the box and then place in your items. Then close the box and proceed to turn on the light and let run for 5-10 minutes. Then turn off the power supply once again before opening the box and remove items.

I would also recommend that a UVC bulb and mount with automatic timers like the one I linked are used, as to not risk accidental exposure to the UV light.

UVC Bulb and Mount: https://www.amazon.com/185nm-Remote-Control-Minutes-Covers/dp/B07RPVW5JV/ref=redir_mobile_desktop?ie=UTF8&aaxitk=LIZqfRxl1o.uRzZ0Hsjmg&hsa_cr_id=1193500020501&ref=sbx_be_s_sparkle_mcd_asin_1

Consumer Guide to UVC Devices: <https://www.bridgevc.org/articles>