UVC BOX: Tested by independent institutes

The UVC BOX has been tested and approved by the Danish Technological Institute, the Dr. Brill Institute for Hygiene and Microbiology, and Odense University Hospital.

This report lists and explains the bacteria and viruses that were tested.

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Bacteria

Salmonella

Salmonella bacteria can cause diarrhea, nausea, vomiting, headaches, and fever. Transmission most often occurs via contaminated food or poor hand hygiene.

Result from the Danish Technological Institute: More than 99.99% inactivated.

Pseudomonas aeruginosa

These bacteria can cause infections in the respiratory tract and urinary tract. They are particularly dangerous for individuals with cystic fibrosis. Treatment can be difficult as they are resistant to several types of antibiotics. Commonly found in soil.

Result from the Danish Technological Institute: More than 99.99% inactivated.

Staphylococcus aureus

Can cause skin and soft tissue infections, pneumonia, meningitis, impetigo, toxic shock syndrome, and food poisoning.

Also occurs as MRSA, which is difficult to eradicate due to multi-resistant strains.

Transmission can occur through direct contact, touching shared objects, or droplets from coughs or sneezes.

Result from the Danish Technological Institute: More than 99.99% inactivated.

Enterococcus hirae

Enterococci can cause serious infections such as endocarditis (heart valve infection) and bloodstream infections. They are very difficult to treat with antibiotics.

Transmission can occur via contact or hands.

Result from the Danish Technological Institute: More than 99.99% inactivated.

Acinetobacter baumannii

Can cause infections in the bloodstream, urinary tract, lungs, and open wounds. Known for resistance to many types of antibiotics.

Spreads via handshakes or touching contaminated objects.

Result from the Danish Technological Institute: More than 99.99% inactivated.

Escherichia coli (E. coli)

E. coli bacteria occur in various forms, including faecal strains.

Inactivated in the UVC BOX at around 5 mJ/cm² UV-C light.

Vira

COVID-19

COVID-19 is a coronavirus in the same family as SARS and MERS, known to cause respiratory infections in humans and animals.

The virus has a lipid envelope (“enveloped virus”), allowing it to survive for several days on surfaces.

Result from Odense University Hospital: No viable coronavirus after 2 minutes of light treatment.

Murine norovirus

Noroviruses can cause gastroenteritis with diarrhea, dehydration, nausea, and vomiting.

Result from the Dr. Brill Institute for Hygiene and Microbiology: More than 99.99% inactivated.

Vaccinia Ankara-virus (MVA)

This virus is used as a standard test organism for disinfectants and belongs to the poxvirus family, which includes viruses that cause smallpox.

Result from the Dr. Brill Institute for Hygiene and Microbiology: More than 99.99% inactivated.

Andenovirus

Adenoviruses can cause respiratory infections, are highly contagious, and often spread via contact from hands or instruments. They are common in large gatherings.

Symptoms may include fever, sore throat, nasal congestion, and cough; gastrointestinal infections can also cause fever, diarrhea, and vomiting.

Result from the Dr. Brill Institute for Hygiene and Microbiology: More than 99.99% inactivated.

How effective is UV-C light for disinfection?

Hvordan virker det?

UV-C light has been known for over 100 years to inactivate and neutralise bacteria and viruses.

The light contains a high level of energy, and when microorganisms are exposed to UV-C light, their genetic material is destroyed, preventing them from reproducing. This occurs through the breakdown of their DNA and RNA.

When using UV-C light for disinfection, it is important that the object is fully exposed to the light and receives a sufficient amount of light energy on its surface.

How much light energy is required?

This depends on the type of bacteria or virus to be inactivated. Some viruses and bacteria are highly sensitive to UV-C light, while others have a protective coating that requires significantly more light to break down and neutralize them.

In professional terminology, this is measured in log reductions:

- 1 log means a 90% reduction
- 2 log means a 99% reduction
- 3 log means a 99.9% reduction
- 4 log means a 99.99% reduction

For effective disinfection, a log reduction of 3–4 is desirable.

Typically, 1 to 10 million bacteria or virus particles are exposed to the light, and afterwards the number of survivors is measured.

For comparison: a single sneeze can contain up to 200 million virus particles.