

UV-Vortex-1L for R&D for UV-C sanitation of Powders, Shreds or Spices



The system was tested on various spice and powders. It has shown 1 to 3 logs reduction (in Total Plate Count, TPC) in shred teas, spices and some powders at 100-450 wh/kg (5-20c/kg).

Energy costs are proportional to the specific surface of shreds and powders, decreasing with a UV transparency of treated products.

Example: the specific surface of 1cm³ is 6 cm².

To reach 4 log reduction of e.g. Salmonella (also in TPC) on full surface of this cube requires UVC dose of 50-70 mJ.

The full surface of 1000 x 0.1mm³ cubes filled in the same 1cm³ cube is 600cm². Then a required UVC dose is 5000 to 7000 mJ!

It can be even more if some micro-organisms are inside powder grains. The dose will be far less, if these 0.1 cm cubes are 30 to 50% UVC transparent: only 500 to 800 mJ.

Since most of shred or powdered products vastly differ, *detailed tests are absolutely necessary* to find optimal UV parameters and circulation parameters.

It can be used for the vitamin D2 enrichment in mushroom powders, with about tens times as much in the efficiency and uniformity as to mixing powders under UVB lamp on a conveyor (or in a drum).

UV chamber:

- diameter-30 cm, height is 50 cm, V- ca. 10 l, material- polished stainless steel, has a removable product collector at its bottom,
- U-type 40 cm long Mercury Amalgam lamp, with a forced air cooling, output: 33% in UV-C and ca. 20% in UV-B.
- the lamp well from a clear UVC quartz,
- a manually driven quartz cleaner.

Paid Options:

- A: UVC (or UVB) flash lamp module to replace UV-C lamp.
- B: a flow-through 100-1000 kg/h **pilot-production systems** with UV-C or with PUV lamps.

Controls:

- an adjustable speed of powder circulation by changing the input voltage to the blower, with Volt- and Amp- controls.
- viewing the flow through the top window (on the photo above).
- Ni or air atmosphere in the process chamber with T° indicator.
- Process Timer 1-9 min on the Ultrasonic generator, which helps to clean the quartz enclosure for the UVC lamp.

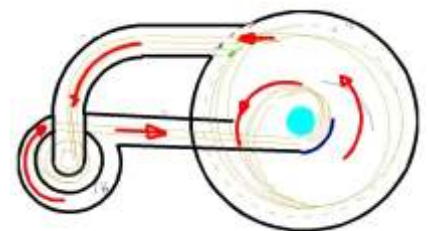


EI connection:

220-230 VAC, 1 phase 50-60 Hz, full power is 150-500 w.

Full size, weight:

45 cm wide x 70 cm high x 45 cm deep, food-grade stainless-steel frame and front panel, Side panels from stainless steel food grade, and the UV screening cup over the UV lamp
Weight 17 kg..



Easy maintenance:

Major parts (top, blower, collector etc) can be easily de-assembled for cleaning.