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https://rbdinstruments.com/products/uvb-100.html

UVB-100 FAQ

Can the UVB-100 controller operate more than one emitter simultaneously?

Yes, the UVB-100 can operate two emitters simultaneously.

How does the UV impact the wiring and polymeric materials in our chamber?

The UVC energy from the emitter is low power and does not affect typical vacuum materials such as Teflon and Viton.

What is the wave-length or the wave spectrum?

The primary wavelengths are 254 nM (70%) and 185 nM (30%). The 185 nM wavelength is what desorbs water vapor.

Will the emitter stay mounted on the chamber after bake-out?

Yes, the emitter stays in the chamber at all times, unless you have it mounted on a bellows.

What is the maximum temperature that I can bake out my system to?

The maximum radiant bake out temperature for the standard emitter is 200° C. The limitation is the electrical feed-through.

Since there is mercury in the emitter, what happens if I drop a sample mount on the emitter and break it?

The mercury will form an amalgam with the chamber wall. If there is still mercury in some glass parts of the emitter, there are a wide range of mercury spill kits available, and also Indium foil acts as a getter for mercury vapor. However, if care is used on the placement of the emitter then the emitter would not be in danger of breaking. It is also possible to place a shield between the emitter and specimen stage to protect the emitter with minimal reduction on performance.

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What are the primary differences between using IR and UV to desorb water vapor in a vacuum chamber?

The primary difference between using UV or IR to desorb water are

1. Heat. The UVB-100 does not significantly heat up the chamber or mechanical parts,
2. IR requires a direct line of site whereas UV can reflect off the inner surfaces of the vacuum chamber.

How much UVC power do I need for my chamber?

The typical rule of thumb is 0.4 mW of UV power (254 nm) / cm2 of surface area, or 2.5 mW per square inch. The chart below gives some helpful values for common sizes (in inches) to determine a chamber's surface area.

Cylinder Diameter (Inches)	Area/in. of Length (Sq. Inches)	Area of 2 Flat Cylinder Ends (Sq. Inches)
6.0	18.85	56.55
8.0	25.13	100.53
9.0	31.42	157.80
12.0	37.70	226.20
18.0	56.55	508.94
24.0	75.40	904.78
30.0	94.25	1,413.70
36.0	113.10	2,035.80
48.0	150.80	3,619.20
60.0	188.50	5,654.80
72.0	226.20	8,143.00
84.0	263.90	11,084.00
96.0	301.50	14,476.00

Example:
12 in. ID Chamber x 10 in. long
12 in. ID Chamber = 37.70 sq. in. per inch of length
37.70 x 10 = 377 sq. in.
Two 12 in. diameter flat cylinder ends = 226.20 sq. in.
Surface area of chamber = 377 sq. in + 226.2 sq. in = 603.2 sq. in.