



WHITE PAPER

# HEPA Module

The Opentrons HEPA Module turns your OT-2 into a clean bench, enabling you to run sensitive contamination-prone applications

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## SECTION 1

# Product Description

## HEPA Module

The Opentrons HEPA Module removes 99.99% of 0.3 um DNA-containing particulates and biological contaminants like bacteria, fungi, and other microorganisms from the air, creating a clean work environment.

The Opentrons HEPA Module utilizes a replaceable H14 HEPA filter. It is manufactured to fit tightly to the top of your OT-2 and filter the room air, maintaining a clean bench environment for the samples on the deck. This fit, as well as its integration with the Opentrons platform, decreases risk of contamination by containing all aspects of the experiment within a clean bench environment.

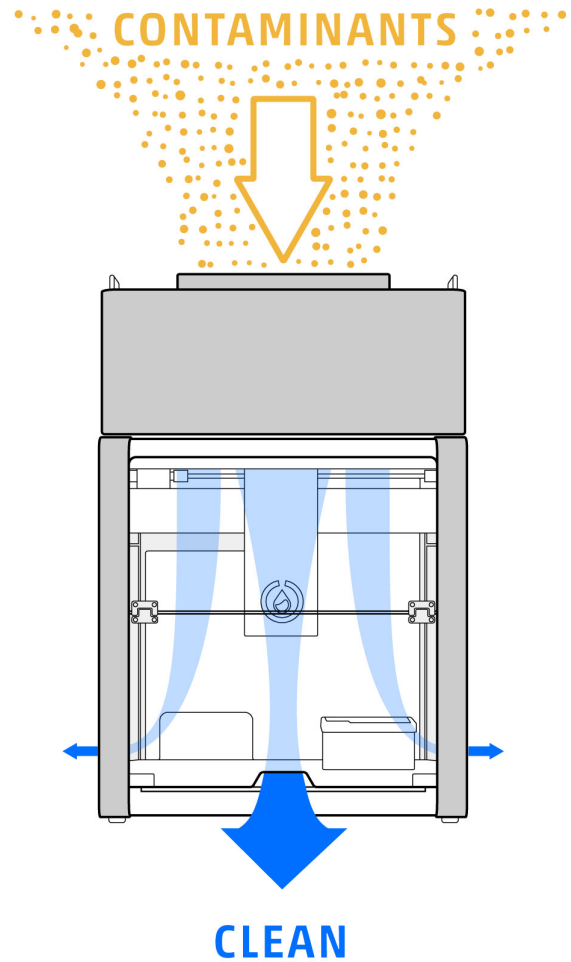


Illustration of contaminants filtered through the Opentrons HEPA Module into the OT-2

## SECTION 2

# Data

Evaporation testing at 5 µL, 10 µL and 25 µL. For each volume all wells in 2 NEST Full Skirted 96 well plates are manually filled, one is left outside the robot and one inside with the clean air flow bench. After 1 hour, the volume in each well is measured manually and the volume loss

is calculated. There is slightly more evaporation under the HEPA module compared to the plates on the bench top. As the volume increased, the average percentage of evaporation decreased for both the plate under the HEPA module and the plate on the open bench.

TABLE 1

### Evaporation Results for Various Volumes

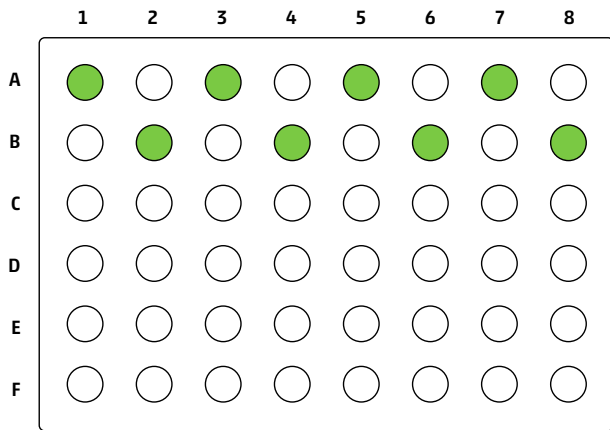
BENCH TOP EVAPORATION		HEPA EVAPORATION	
Average Evaporation of 5 µL	42.86%	Average Evaporation of 5 µL	52.06%
Average Evaporation of 10 µL	26.90%	Average Evaporation of 10 µL	34.7%
Average Evaporation of 25 µL	19.83%	Average Evaporation of 25 µL	25.13%

TABLE 2

### Adapt qPCR findings

	E. COLI TEST	WATER TEST	FINAL RESULT
Trial 1	Positive	Negative	Negative
Trial 2	Positive	Negative	Negative
Trial 3	Positive	Negative	Negative

View expanded results data table [here](#)



**Figure 1:** A1-DNA positive control, A3 Negative control (water), A5 Deck slot 1 extract, A7 Deck slot 3 extract, B2 Deck slot 5 extract, B4 Deck slot 6 extract, B6 Deck slot 7 extract, B8 Deck slot 9 extract. This was repeated in C1 and repeated again in E1 to generate results in triplicate. The positive control is loaded in the first column, the water (negative control) in the third column and the samples in columns 5, 7, 2, 4, 6 and 8. The plate is then sealed and spun down at 8000 rpm for 15 seconds and put in the Illumina Echo. The plate was run at the following temperatures; 95°C for 10 minutes, followed by 15 cycles at the following temperatures and times: 95°C for 15 seconds, 60°C for 60 seconds and a melting curve at 72°C for 42 seconds without ROX normalization.

Upon analyzing the results, the data shows that after extraction and amplification, there is no contamination after using the HEPA module. This is shown by only getting amplification in the positive control over the 3 trials. The lack of amplification post extraction and therefore success of the HEPA module is represented by the negative values in the wells for deck slots 1,3,5,6,7 and 9 after running the HEPA module for 1 hour.

**TABLE 3**

### Opentrons HEPA Module Specifications Chart

DETAIL	
Air flow	Vertical downflow; 0.4 m/s - 0.7 m/s
HEPA filter grade/ efficiency	99.99% efficiency for 0.3 um particles
Controls	On/off; Fan speed
Fan Lifetime	3 years of moderate use
Filter Lifetime	1 year of moderate use
Dimensions	651 x 590 x 290 mm (l/w/h)
Weight	36 lbs / 16 kg
Voltage	110V - 220V
VAC Current	TBD

SECTION 3

# Dimensional Drawings

DIMENSIONAL DRAWINGS

## HEPA Module

