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In-air pathogen surveillance solution
AerosolSense Sampler

Frequently asked questions

Sampler Set-up

What is the Thermo Scientific™ AerosolSense™ Sampler?

The AerosolSense Sampler is an in-air pathogen surveillance solution. It is designed to deliver timely and highly reliable insight into the safety of a facility by identifying the presence of in-air pathogens, including Flu A/B, SARS-CoV-2 and/or RSV through indoor air sampling that is sent to a laboratory for PCR testing.

Where do I place the sampler(s)? How many samplers do I need?

It is recommended to place the AerosolSense Sampler on an unobstructed flat surface like a table that is two to five feet from the ground. Place the sampler in spaces that are high traffic (waiting rooms, employee break rooms) and/or outside containment areas. Since facility spaces vary in size, layout and function, multiple samplers may be needed. Sampler performance has been tested in areas between 150 ft2 - 2,000 ft2.

How long should I sample?

A 2 hour minimum is recommended for adequate sample collection. Sample collection is flexible to fit a facility's needs. It is recommended to collect more air samples in high traffic spaces. For further details, visit the support page.

Performance

What is the performance of the in-air pathogen surveillance solution?

In room-scale aerosol experiments, consistent detection of aerosol SARS-CoV-2 was achieved at a concentration equal to or greater than 0.089 genome copies per liter of room air (gc/L) when air was sampled for eight hours or more.

What is the sound level of the sampler?

The loudness of the sampler is between 62-64 decibels, which is equivalent to background music or a normal conversation.

What is the size range of particles that can be collected using the sampler?

The sampler has been demonstrated to capture particles from 0.1 – 15 um in diameter.

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Does dust interfere with the results?

Dust (ranging from ambient dust to high dust load) does not impact the identification or the intensity of identification of aerosolized SARS-CoV-2. This is demonstrated in an evaluation research paper.

Sampler Operation

How does the sampler collect pathogens?

The sampler collects representative samples of ambient air that may contain aerosol pathogens through an omnidirectional inlet. A sample cartridge installed into the sampler contains the collection substrate. The air is directed toward the collection substrate through an accelerating slit impactor. Particles are trapped on the collection substrate as the air is drawn through the sampler. The air is then directed out of the device through the exhaust.

Does sample collection involve air filtration?

The sampler does not use filtration. Particles are trapped on the collection substrate as the air is drawn through the sampler. There is not a degradation of sample performance as the sample gets loaded. Filtration requires more power to ensure the flow of air through the sample and can clog when particles build-up, which limits the amount of sampled air.

How do I know the sampler is working properly?

A green LED indicates that the sampler is in process of collecting an air sample. A yellow LED indicates that the sample cartridge was installed correctly and is ready for sampling. If the door is closed and there is a red LED, that indicates a fault, and also indicates that the sampler is unable to collect a sample. Review the LED chart on the support page.

Who should operate the sampler?

With an easy to use design, any delegated person can operate the sampler with minimal training.

Does the sampler need routine cleaning or maintenance?

The sampler does not require routine cleaning. The user can clean the external areas of the sampler with 70% ethanol wipes.

Does the sampler have a timer?

The sampler is designed to operate continuously and provide flexibility on test duration based on users' application.

Does the sampler need calibration?

The sampler is pre-calibrated at the manufacturing site. No additional calibration is needed before using the sampler.

Do you need to wait between consecutive sampling if using the same sampler?

The sampler is designed to operate continuously; therefore, you do not need to wait between consecutive sampling.

Sample Cartridges

What is the maximum time that a sampler cartridge can be used?

We recommend using a sample cartridge for no more than 24 hours to ensure users can take timely action after obtaining results.

What is the sample cartridge shelf-life?

We recommend the sample cartridge be used within two years of purchase.

Has sequencing been performed with the sample substrate?

Sequencing of the virus captured by the sampler for research purposes has been performed by our collaborators. At present, we don't offer the service.

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Can an additional barcode or sample ID label be applied to the sample cartridge?

Yes, if needed an additional label can be added to the sample cartridge. The added label cannot cover the factory barcode; otherwise, sampler operation will be impacted.

PCR Testing and Testing Service

Do I need a PCR lab?

Air samples collected on the substrate within the sample cartridge must be sent to a laboratory for PCR testing to determine the presence of RNA from SARS-CoV-2. There are two testing options: Self-testing utilizing an onsite laboratory for ≤ 4h report availability or the Thermo Fisher Scientific testing service for ≤ 24h report availability.

Can any PCR device be used?

The AerosolSense Sampler has been validated using the multiplex diagnostic solution Applied Biosystems™ TaqPath™ COVID-19 Combo Kit, Applied Biosystems™ TaqMan™ SARS-CoV-2, FluA, FluB RT-PCR Assay Kit and Applied Biosystems™ TaqMan™ SARS-CoV-2, Flu A/B, RSV RT-PCR Assay Kit.

Do you provide a guideline on how to analyze and validate PCR results?

We provide a sample preparation procedure to elute the sample off of the substrate before starting the PCR workflow. Result interpretation are based on the TaqPath kit Ct cutoff values to determine if sample is Positive, Negative or Inconclusive.

Does the in-air pathogen surveillance solution detect the new SARS-CoV-2 variants?

The sampler is agnostic to SARS-CoV-2 variants as its capture mechanism relies on aerodynamic separation mechanics that are not influenced by the SARS-CoV-2 genomic makeup. In terms of PCR testing, identification of the presence/absence of SARS-CoV-2 RNA has been validated with the TaqPath Covid-19 Combo Kit. For variant identification, users need to perform additional analysis such as TaqMan SARS-CoV-2 Mutation Panel.

What packaging is included in the testing service?

The box we use for shipping the sample to the partner laboratory (testing service) is identified as UN3373. The biohazard bags for this testing service are 95kpa, which is needed for the UN3373. The sample is isolated within the cartridge (primary), 95kpa biohazard bag (secondary) and then the outer UN3373 box.

Why continue to surveil for SARS-CoV-2 as populations get vaccinated?

In-air surveillance of SARS-CoV-2 is critical to monitor and improve facility safety protocols, especially considering that a significant percentage of the population worldwide remain unvaccinated. In addition, vaccinations are not 100% effective at preventing infection and research is still underway to determine if vaccines are effective against emerging and potentially more virulent variants, as well as how long immunity lasts after vaccination.

Results Management

How do I match a positive result with the specific sampler and sample time/date?

The sampler scans the cartridge barcode once inserted. Only one cartridge at a time can be inserted into the sampler. The scan links the cartridge with the sampler ID as well as the sampling start and end time and date. The laboratory will link the test results to the cartridge barcode that is ultimately linked to the specific sampler.

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What actions should I take after a positive test result from the AerosolSense Sampler?

Generally, a positive test result from a sample collected with the AerosolSense Sampler implies that SARS-CoV-2 particles were present in the ambient air surrounding the AerosolSense Sampler during the time of sampling. The sampler has been tested with a 0.34 genome copies per liter of air limit of detection. As such you should follow your established OSHA, EHS, local, facility, and/or SARS-CoV-2 safety protocols to ensure you limit the risk of exposure and transmission within your facility.

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