

WHY AERO SHIELD

Aerosol clouds carry airborne particles including SARS-CoV-2, the virus that causes COVID-19. As droplet can stay airborne for a long time after a procedure, sufficient time gap (~60 min.) between each procedure is recommended. This makes the dental practices' operations economically unviable. Aero Shield is a new design for a barrier to increase protection measures for dental clinicians. By redirecting and trapping the aerosol cloud into a more concentrated area, this Aero Shield enables a targeted suction, and reduces time required for the airborne particles to land on a surface.

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AERO SHIELD

One-piece, see-through, hemisphere protective barrier, with rolling legs



The Aero Shield, designed by our team, increases protection measures for clinicians by shielding them from a direct contact with aerosol thick cloud. Then by redirecting the aerosol flow to a more concentrated area, enables clinicians to have a targeted suction. Also, as particles are now trapped inside the hemisphere, the time required for them to land on specific surfaces is much shorter. The measures that reduces the time gap between procedures.

Technical Features

- The see-through barrier is made from cast acrylic sheet (PMMA) which is the same material already used and approved for the manufacture of baby incubation housings.
- The process of forming the barrier results in a variable thickness over the barrier starting with 5mm flange and reduces to the top (the thinnest part) to approximately around 3mm.
- Cast acrylic is a hard surface material with low absorbency and hence is suitable for treatment with any anti-COVID antibacterial surface treatment.
- Chromed powder coated mild steel or polished stainless-steel legs
- All fixings are stainless steel
- Weight is approx. 8 Kg
- Any flexible disposable cover can be used



Maintenance

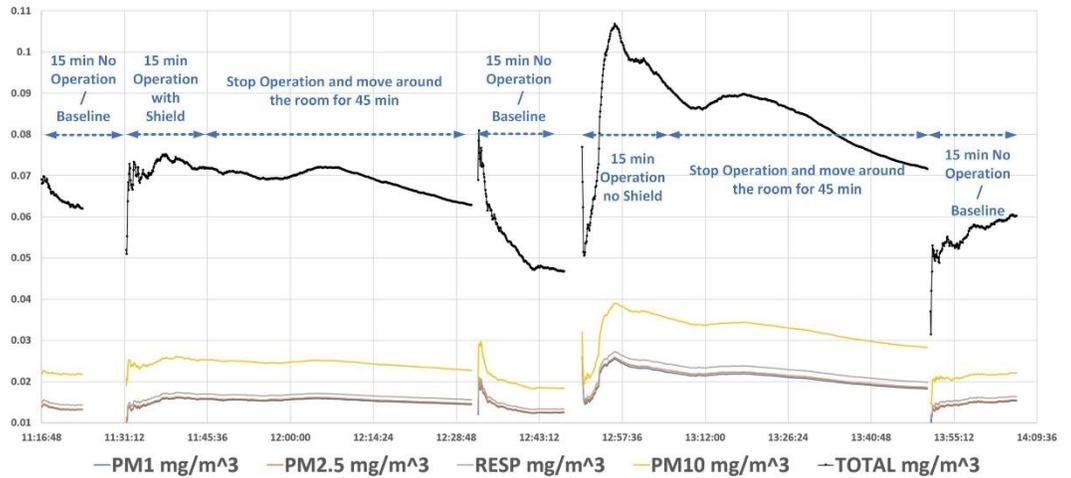
- To clean the shield, alcohol free surface disinfectant is recommended to be used. Contact with high concentrations of alcohol or strong concentration alkalis will eventually cause minute fatiguing of the acrylic seen by casual inspection a sinter of light on the surface of the material. Using alcohol free surface disinfectant or soap and water, chemical attack can be avoided.
- Infrequently methylated spirits can be used but please never use any abrasive cleaner except T cut or similar certainly not vim or similar
- Avoid using cleaning cloths that have abrasive qualities and abrasive cleaners



Aero Shield
Keep the distance

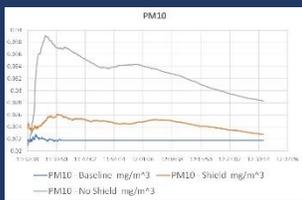
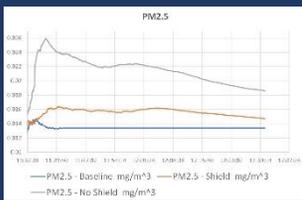
Test Results

180 Minutes Room Trend



RESULTS

For a direct comparison, we overlapped the results of the 60-minutes operations of two scenarios. Figures below respectively present results of the size-segregated mass fraction concentrations corresponding to PM1, PM2.5, PM10 and Total.



The results illustrate two distinctive conclusions for the use of Aero-Shield in a dental practice:

1. Aero-Shield reduces the level of aerosol particle concentration (floating airborne particles), protecting clinicians from direct exposure. This could potentially result in a review on the necessity of the use of level 3 protective PPE in a long run.
2. Aero-Shield redirects airborne particles to within the hemisphere. Using the protective cover as well as suction inside the hemisphere, resulted in a much shorter time for particles to reach a surface. The results show a 45-min time difference between the two scenarios until they reach the same level of floating particles. This could potentially result in a review on the necessity of 60-min time gap between procedures.



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