

# Particulate Matter

(Smoke, Dust, Pollen)

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Particulate Matter (PM) is a type of air pollution defined as solid or gas particles suspended in the air. The primary sources of PM are combustion of fossil fuels for transportation, electricity generation, and industrial manufacturing. It is present in both indoor and outdoor environments. PM with a size less than a micron can easily be inhaled and transferred to the blood, so is particularly toxic to human health.

Exposure is correlated with many diseases including cancer, diabetes, respiratory damage, and dementia.

Ensuring a filter is capable of capturing these particles is important when gauging the efficacy of an air purifier.

# Molekule’s PECO Technology Successfully Removed Particles From the Air in a Rigorous, Scientifically Controlled Testing Environment

**PURPOSE**

This research tested the effectiveness of the Molekule Air and Molekule Air Mini on capturing a range of different-sized particles.

**SET-UP**

The devices were separately placed in sealed 30 cubic meter rooms for measuring performance testing according to the ANSI/AHAM standard. Three different size ranges of particles were examined according to this standard: smoke particles from 0.1 to 1.0 microns, dust from 0.5 to 3.0 microns, and pollen from 5 to 11 microns. Data on natural decay of these particle sizes was gathered before Molekule Air and Molekule Air Mini were tested on their ability to clean the air over a 25-minute period. Measurements were taken every minute with a laser aerosol spectrometer or an aerodynamic particle sizer.

**RESULT**

The devices were able to significantly reduce particles of all sizes when compared to the control.

CHALLENGE PARTICLE	INITIAL CONCENTRATION (particles per cubic meter)	REMOVAL EFFICIENCY	TIME
<b>MOLEKULE AIR</b>			
<b>Smoke 0.3 to 1 micron</b>	8,112 particles/m <sup>3</sup>	<b>85%</b>	<b>22 minutes</b>
<b>Dust 1 to 3 micron</b>	36,767 particles/m <sup>3</sup>	<b>84%</b>	<b>20 minutes</b>
<b>Pollen 3 to 10 micron</b>	4,287 particles/m <sup>3</sup>	<b>79%</b>	<b>10 minutes</b>
<b>MOLEKULE AIR MINI</b>			
<b>Smoke 0.3 to 1 micron</b>	9,059 particles/m <sup>3</sup>	<b>84%</b>	<b>22 minutes</b>
<b>Dust 1 to 3 micron</b>	36,022 particles/m <sup>3</sup>	<b>82%</b>	<b>20 minutes</b>
<b>Pollen 3 to 10 micron</b>	4,524 particles/m <sup>3</sup>	<b>79%</b>	<b>10 minutes</b>



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Intertek Report on Molekule’s Efficacy Against Particulate Matter

