

# Gaseous removal

Gaseous pollutants include organic and inorganic compounds. Organic chemicals known as Volatile organic compounds (VOCs) are emitted as gases from certain solids or liquids. Concentrations of many VOCs are consistently higher indoors than outdoors. VOCs are emitted by a long list of products and include a variety of chemicals, some of which may have short- and long-term adverse health effects. Inorganic compounds are common in gaseous pollutants and can be found indoors and outdoors. They may come from natural or man-made sources.

## VOCs

Volatile organic compounds (VOCs) include thousands of different compounds. VOCs are organic chemicals found in both outdoor and indoor air. "Volatile" means that a compound is easily evaporated at normal temperatures and pressures.

VOC sources are widely used as ingredients in household products. Paints, varnishes and wax all contain organic solvents, as do many cleaning, disinfecting, cosmetic, degreasing and hobby products.

The irritating gases may play a role in a large number of illnesses, from respiratory disease to chemical sensitivity.

A quick reduction of gaseous pollutants is best achieved by SmokeStop™ or Particle and Carbon filters equipped with activated carbon.

## Inorganic compounds

Inorganic compounds are any compounds that are not organic, i.e. does not contain hydrocarbon groups. Some inorganic compounds are carbon monoxide, carbon dioxide, Nitrogen oxide (NO<sub>x</sub>) and Sulphur Dioxide (SO<sub>x</sub>). NO<sub>x</sub> is most common in air pollution. SO<sub>x</sub> is a toxic gaseous compound that results from fossil fuel combustion. Once inhaled, it can spread deep into lung tissue, causing breathing difficulties and other health problems.

## Clean Air Delivery Rate

The concept of Clean Air Delivery Rate is not limited to particles. The CADR value can also be used to indicate how well an air purifier will remove gaseous pollutants from the air. In the same way as for particles, the CADR for gaseous pollutants is determined by the unit's filtration efficiency and its airflow. The higher the CADR value, the more clean air is produced by the air purifier and the better it will be at cleaning the air in a room. CADR has also been described earlier in this document.

## Testing and results

Blueair has done numerous tests in order to measure the CADR values for gaseous pollutants. In July and December 2017, Blueair tested the CADR values on the models in the Blue and Classic families. The CADR values were measured on different types of gases such as formaldehyde, VOC combinations and toluene in order to test the filters' removal capabilities. The tests were performed on units with SmokeStop filters or particle and carbon filters according to the methods described in the Chinese standard GB/T18801-2015. CADR data for gases can be found in the CADR chapter.

## Removal rate

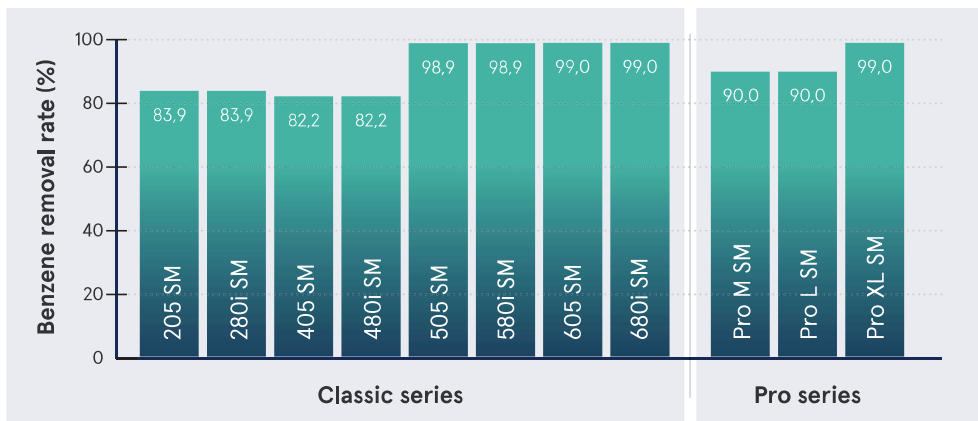
The Clean Air Delivery Rate indicates how much filtered air is delivered by the air purifier, but is also a measurement of how fast the unit is able to remove pollutants from the air. A unit with a high CADR will be able to clean the air in a room of a specific size faster than a unit with a lower CADR. The amount of pollutants that the unit removes during a specified period time is referred to as the unit's removal rate (%). The removal rate is calculated by comparing the initial amount of pollutants with the amount of pollutants remaining after the specified period of time has passed. The higher removal rate, the less gaseous pollutants remain.

## Testing and results

In July and December 2017, Blueair conducted extensive tests on the models in the Blue and Classic families. The removal rate of a wide range of indoor and outdoor gases such as sulphur dioxide, benzene and styrene was tested. Tests were done by Guangzhou Testing Center of Industrial Microbiology, China and The Guangzhou CAS Test Technical Services Co., Ltd, China. They were done on SmokeStop filters or particle and carbon filters according to the methods described in the Chinese standard GB/T18801-2015. More information and the results from these tests can be found in the test summary later in this document.

## Gas removal rate

Gas removal rate after 60 minutes for Blueair products



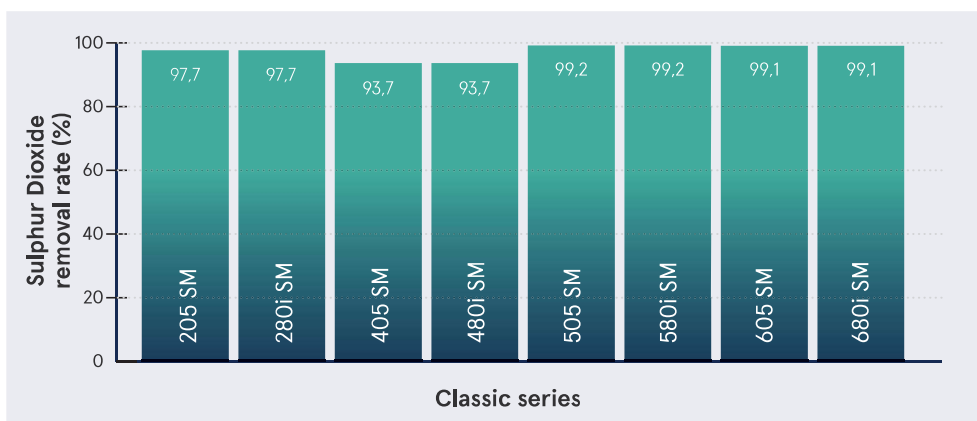
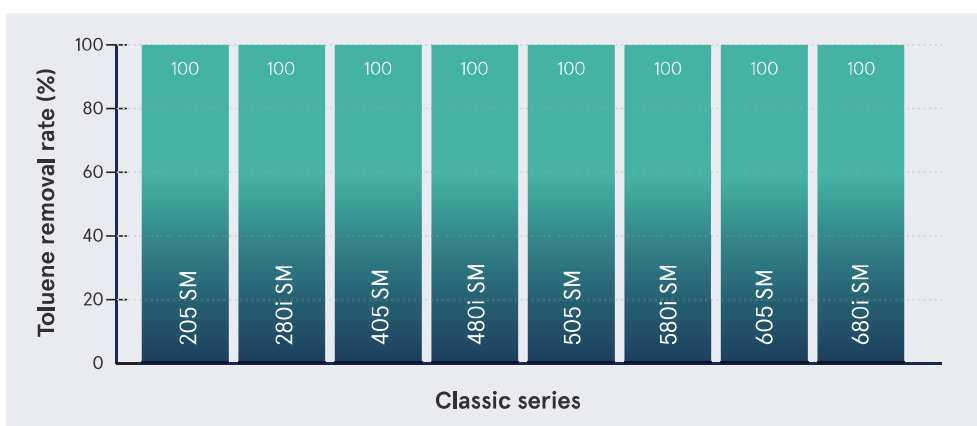
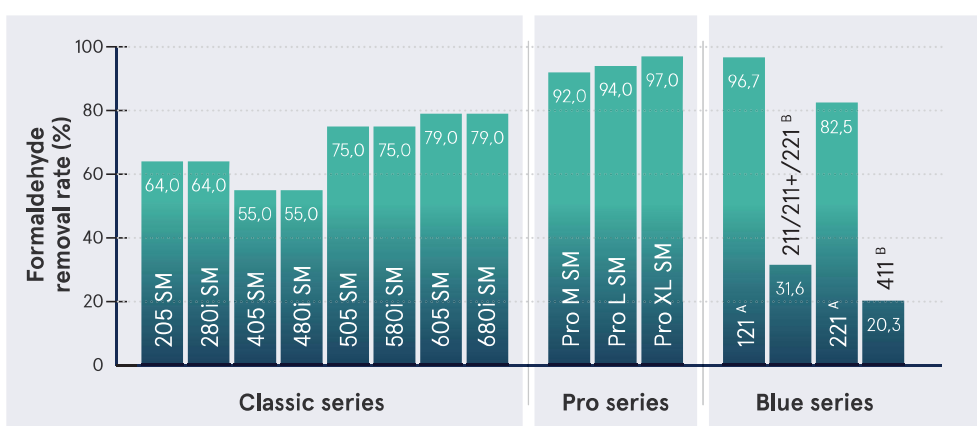
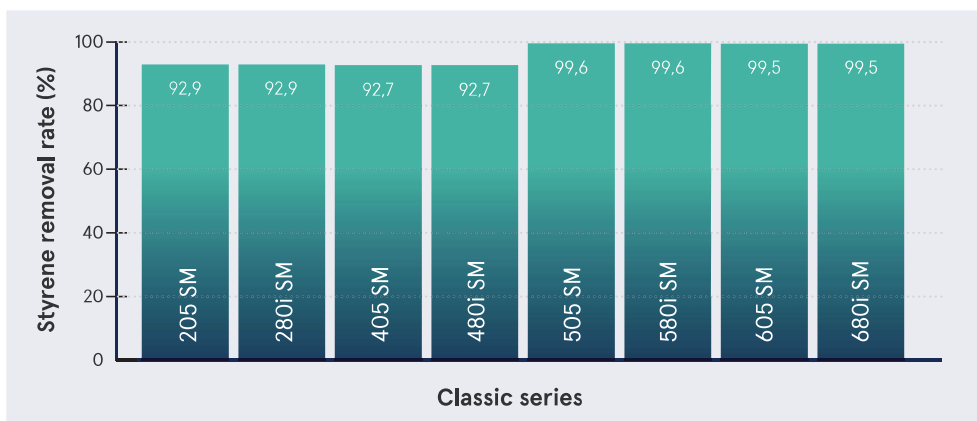
**Benzene** is a clear petroleum-based chemical that is widely used in the production of plastics, resins, detergents, pesticides, pharmaceuticals and synthetic fibers. It can cause dizziness, anemia, nausea, leukemia and cancer.

**Styrene** is a colorless oily liquid used in plastics, piping, insulation, fiberglass, packaging material and food containers. It can cause eye, skin and respiratory tract irritation as well as impact kidney, nervous system and gastrointestinal tract function.

**Formaldehyde** is a colorless, strong-smelling chemical used in building materials, pressed-wood products, and home and personal care products. It can cause eye, nose, throat and skin irritation as well as birth defects, lung disease and cancer.

**Toluene** is clear, colorless liquid found in paints, solvents, disinfectants, sealants and fuels. It can cause headache, dizziness and eye, skin and respiratory tract irritation and impact the nervous and cardiovascular systems.

**Sulphur dioxide** is a toxic gaseous compound that results from fossil fuel combustion. Once inhaled, it can spread deep into lung tissue, it can cause breathing difficulties and other health problems.



Classic series – According to GB/T 18801-2015 with 230V model.

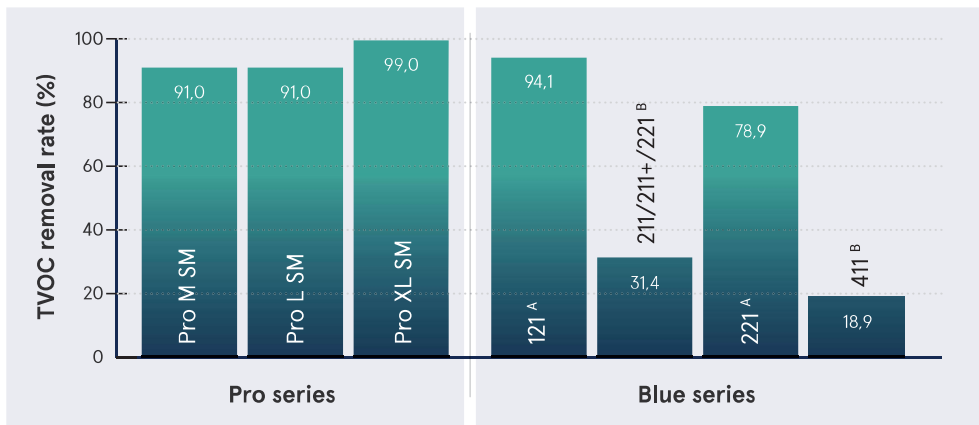
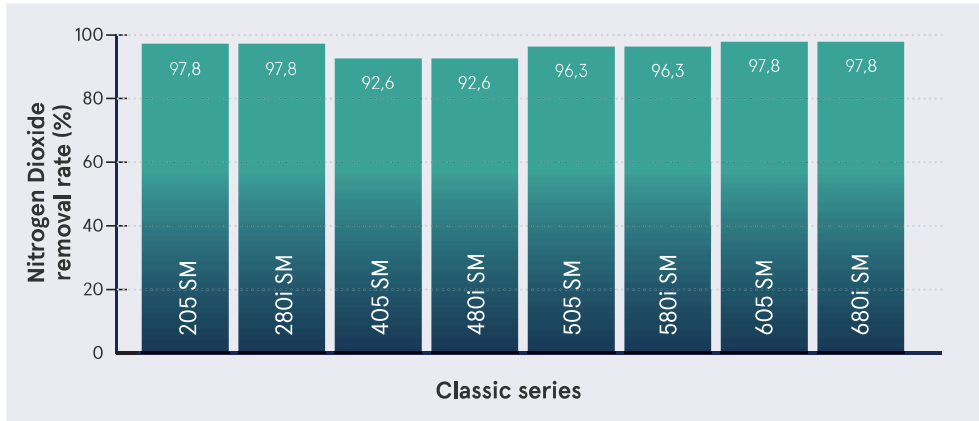
Pro series – According to GB/T 18883-2008 on 230V model with SmokeStop filter.

Blue series – According to GB/T 18801-2015 on 230V model - Highest speed.

SM – Blueair SmokeStop Filter  
 PA – Blueair Particle Filter  
 PAC – Blueair Carbon Sheet

<sup>A</sup> With Particle and Honeycomb filter.

<sup>B</sup> With Particle and Carbon mesh filter.



**Nitrogen dioxide** is one of a group of gases known as nitrogen oxides (NO<sub>x</sub>) that results from fossil fuel combustion. It can cause breathing difficulties, respiratory tract irritation and respiratory disease, such as asthma.

**TVOC (Total Volatile Organic Compounds)** is a measurement of the total concentration of VOC's in the air.

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