

STANDARD

ISO 10121-3

THE FIRST ISO CLASSIFICATION SYSTEM FOR THE
GAS-PHASE AIR FILTRATION OF OUTDOOR AIR



purafil
Filtration Group®

WHAT IS ISO 10121-3?

The world has quickly become aware of the importance for gas phase air filtration in even general filtration applications, due to increased pollution and increased understanding of its impact. The need for **a standardized testing procedure to help non-technical end users understand gas phase filtration performance** has lead to the creation of ISO 10121-3.

*"ISO 10121-3 provides a classification system for the specific application of GPACDs [gas-phase air cleaning devices] in general, ventilation systems for cleaning of outdoor air polluted by local urban sources and/or long-range transboundary air pollution".**

This standard specifies four test gases (ozone, sulphur dioxide, nitrogen dioxide and toluene) to be used as representative of common pollutants in urban areas. It also uses four duty levels that are assigned based on the performance against each target gas.

WHO IS ISO 10121-3 FOR?

This standard is useful for any **building owner, facility management engineer, design engineers or maintenance personnel** for buildings bringing in outside air in urban environments who are looking to evaluate gas phase filtration options for removing common air pollutants from local urban sources and/or long-distance pollution in a single pass. This does not cover recirculation air, or common indoor pollutants.

WHAT ARE THE REFERENCE GASES AND WHY DO THEY MATTER?



Ozone, sulphur dioxide, nitrogen dioxide and toluene are typical pollutants in an urban area entering with the outdoor air. These gases are considered dangerous to health and the acceptable concentration levels are regulated globally.

OZONE[†]

Stratospheric ozone is “good”, but ground-level ozone can trigger a variety of health problems.

- Cause coughing and sore or scratchy throat.
- Inflammation and damage the airways.
- Make the lungs more susceptible to infection.
- Aggravate lung diseases such as asthma, emphysema, and chronic bronchitis.
- Increase the frequency of asthma attacks

SULPHUR DIOXIDE[†]

SO₂ results from the burning of materials containing sulfur.

- Even short-term exposures to SO₂ can harm the human respiratory system and make breathing difficult.
- Sulfur oxides can react with other compounds in the atmosphere to form small particles. Small particles may penetrate deeply into the lungs and in sufficient quantity can contribute to health problems.

NITROGEN DIOXIDE[†]

NO₂ primarily gets in the air from the burning of fuel.

- Continued exposure to NO₂ levels can contribute to the development of acute or chronic bronchitis.
- Low level NO₂ exposure may cause:
- Increased bronchial reactivity in some asthmatics
- Decreased lung function in patients with chronic obstructive pulmonary disease
- Increased risk of respiratory infections

TOLUENE[†]

A Volatile organic compound (VOC) used to represent a wide range of harmful VOCs. Health effects from exposure may include:

- Eye, nose and throat irritation
- Headaches, loss of coordination and nausea
- Damage to liver, kidney and central nervous system
- Some organics are suspected or known to cause cancer in humans.

WHAT DO THE DUTY LEVELS MEAN?

vLD: Very Light Duty is for applications with no specific performance requirement and does not meet the minimum threshold for light duty (LD).

LD: Light Duty signifies an entry level of performance for low concentrations or temporary issues such as haze from a forest fire.

MD: Medium Duty indicates acceptable removal efficiencies against medium concentrations of pollutants, like those commonly found in urban environments.

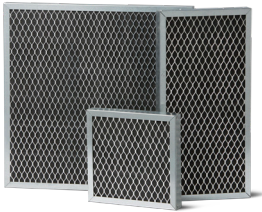
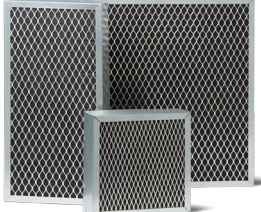
HD: Heavy Duty classified filters are capable of the performance required in heavily polluted or high purity environments. They will also offer better removal efficiency and longer service life in less harsh environments.

WHAT DOES THE NUMERICAL VALUE MEAN?

The number following the duty level is the integrated removal efficiency. This is not the initial removal capacity, but the average removal capacity over the length of the test, or until it reaches the highest (HD) classification in the standard. A test is run until it drops below 50% efficiency, or it reaches HD classification.

- An **MD 55** showed an average removal capacity of 55% for the duration of the test, or the typical service life of that filter.
- An **HD 80** result showed an average 80% removal capacity during the test, which ran until it achieved the highest rating.

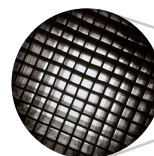
WHERE DOES THE PURAGRID FILTER FIT IN?

	PuraGrid 2"	PuraGrid 4"
		
Ozone	MD 55 (Medium Duty, Average 55% efficiency)	HD 80 (Heavy Duty, Average 80% efficiency)
Sulphur Dioxide	MD 55 (Medium Duty, Average 55% efficiency)	HD 80 (Heavy Duty, Average 80% efficiency)
Nitrogen Dioxide	MD 55 (Medium Duty, Average 55% efficiency)	HD 80 (Heavy Duty, Average 80% efficiency)
Toluene	MD 55 (Medium Duty, Average 55% efficiency)	HD 80 (Heavy Duty, Average 80% efficiency)

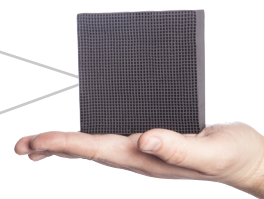
PuraGRID™ Filter with GridBLOK™ Technology

Made of extruded monolithic block consisting of a large number of small parallel cells or channels. The GridBLOK™ is composed of essentially 100% adsorbent materials allowing the entire composite structure to function as a gas filter within the PuraGRID. This filter features no bypass, low pressure drop and turbulent air flow with full utilization of the media. PuraGRID filters can be used inside Purafil's custom engineered equipment or installed into existing air handling systems.

Magnified view of the GridBLOK structure



GridBLOK Media



MAKING THE WORLD SAFER, HEALTHIER AND MORE PRODUCTIVE

Purafil, Inc. is the leading manufacturer of filtration media, scrubbers, and monitors that provide a safe and comfortable environment. Our products and solutions identify and remove harmful and unpleasant particles, gases, odors, bacteria, and viruses from the environment.

The results are increased comfort levels, reduced energy costs, and confidence that your building will provide the ideal tenant experience.

