



ATEX-approved  
air filters  
For explosive  
atmospheres

**Danger**  
**Explosive**  
**atmosphere**

# ATEX-compliant air filters

## Safety for explosive atmospheres

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Facilities such as flour mills need air filtration that delivers a clean production environment while ensuring safety through ATEX compliance.

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Whether it's to ensure the safety and quality of your end product – as is the case in the pharmaceutical and food industries, or to stop contaminants from posing a threat to the inhabitants of your building, your air filtration system will be performing some kind of protection role in your building. In an ATEX environment, that purpose also extends to reducing the risk of explosion too.

This guide provides a brief overview of what you, as an employer and/or building operator, need to know about the ATEX directives in relation to air filtration.

### **WHAT ARE ATEX DIRECTIVES?**

ATEX directives are a set of measures that describe what equipment and products can be used in environments with a potentially explosive atmosphere. The directives, which first came into force across the European Union in 2003, were introduced to protect workers from the risk of working in potentially explosive atmospheres.

### **WHAT IS AN EXPLOSIVE ATMOSPHERE?**

An explosive atmosphere can arise when certain dusts (under 0.5 mm in diameter), gases, or combinations of the two come into contact with air and an ignition source – such as friction, electrical discharge or heat. Explosive atmospheres can occur deliberately as part and parcel of a process, such as where a company is working with a combustible material or generates such substances as a byproduct. Or explosive atmospheres can occur accidentally due to a fault or breakdown, such as a gas leak.



ATEX derives from the directive's French title, *Appareils destinés à être utilisés en ATmosphères EXplosives*.





Controlling dangerous substances and preventing sources of ignition are vital to reduce the risk of explosion. To do that, you will need the correct equipment.

#### **WHO IS RESPONSIBLE FOR MEETING ATEX DIRECTIVES?**

ATEX directives apply to two separate groups. Directive 2014/34/EU (which replaced ATEX 94/9/EU in 2014) is for manufacturers of products and equipment used in potentially-explosive environments. ATEX 99/92/EG is for the users of such equipment and sets out the minimum requirements for operating an explosive environment.

#### **WHAT DO I NEED TO DO?**

Employers and facility operators must identify areas in their buildings where explosive atmospheres may occur and classify these into predefined zones. The classification given to each zone depends on the likelihood of an explosive atmosphere forming, its expected frequency and its duration should one occur.

Equipment employed in explosive atmospheres is categorized (1, 2, or 3) according to the different zones in which it is suitable to be used. Any equipment that you use in each zone must be from the appropriate category in order to comply with the ATEX directive.

# ATEX zones

## Identifying appropriate equipment

### HOW ARE THE DIFFERENT ZONES DEFINED?

Atmospheres with hazardous gases, vapors and mists are categorized in zones 0, 1 or 2, where zone 0 represents the greatest risk of explosion.

**Zone 0** – A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapor or mist is present continuously, for long periods or frequently.

**Zone 1** – A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapor or mist is likely to occur in normal operation occasionally.

**Zone 2** – A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapor or mist is not likely to occur in normal operation but, if it does occur, will persist for a short period only.

Atmospheres with combustible dusts are classified into zones 20, 21 or 22, where zone 20 represents the greatest risk of explosion.

**Zone 20** – A place in which an explosive atmosphere in the form of a cloud of combustible dust in the air is present continuously, for long periods or frequently.

**Zone 21** – A place in which an explosive atmosphere in the form of a cloud of combustible dust in the air is likely to occur in normal operation occasionally.

**Zone 22** – A place in which an explosive atmosphere in the form of a cloud of combustible dust in the air is not likely to occur in normal operation but, if it does occur, will persist for a short period only.

### WHAT EQUIPMENT IS NEEDED FOR EACH TYPE OF ZONE?

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| Zone   | Equipment category |
|--------|--------------------|
| 0 & 20 | 1                  |
| 1 & 21 | 1, 2               |
| 2 & 22 | 1, 2, 3            |

# ATEX and air filters

## What you need to know

### WHY IS THE FILTRATION SYSTEM A PARTICULAR RISK?

The air handling unit (AHU) is a central component in any building with a controlled indoor environment, with all elements that make up the internal atmosphere – air, moisture, dust and gases – passing through the system.

The air filters are key to this – designed to capture and retain dust, gases and other contaminants. Of course, in a building with ATEX zones, these contaminants typically include the combustible material that poses a risk of explosion. That's why loaded filters must be protected from sources of ignition.

### WHAT MAKES AN ATEX-COMPLIANT AIR FILTER?

The main sources of ignition that an air filter will face are electrical sparks and charges. So, the standout feature of an ATEX-compliant air filter is its ability to dissipate such electrostatic charges safely.

Much of this comes down to the materials used in the filter's construction. Compliant filters are typically constructed of conductive materials, such as metallic frames and faceguards, which are interlinked, grounded and tested to meet the earthing requirements of the ATEX directives.

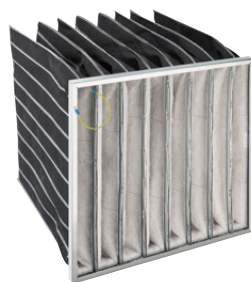
### THE MANN+HUMMEL RANGE OF ATEX AIR FILTERS

All products in the MANN+HUMMEL Pro ATEX range are designed specifically to be fully compliant with ATEX directive 2014/34/EU. Various designs and filter efficiencies are available, and all products are suitable for all ATEX zones in the atmospheres relevant to each filter type and efficiency.

Our ISO 16890 products are also independently tested by the Eurovent trade association to validate their filtration efficiency, pressure drop and energy consumption performance.



**AIRCURVE PRO ATEX**



**AIRPOCKET PRO ATEX**



**AIRCUBE/NANOCCLASS  
CUBE N PRO ATEX**



**AIRSQUARE/NANOCCLASS  
SQUARE PRO ATEX**

# Aircurve Pro

## ATEX

### Product Range



### Features

EX

### Applications



### Filter Class

Coarse



### KEY FACTS

- Filter series compliant with the European directive ATEX 2014/34/EU
- Synthetic filter media
- No fiber shedding
- Stable, lightweight design
- High dust holding capacity
- Top cost-benefit ratio
- M1-classed media according to NFP92-507

### DESIGN

Open-pleated synthetic filter media installed in a lightweight metal case. Supported by galvanized steel mesh on both sides to provide extra pleat stability.

### APPLICATIONS

For special air conditioning and ventilation systems in food, chemical and pharmaceutical industries, where demanding requirements for explosive atmospheres must be met.



The filters used in the application areas are electrically conductive and comply with the European ATEX directive 2014/34/EU for products used in explosive atmospheres.

# Aircurve Pro

## ATEX

### PERFORMANCE DATA

| Filter Class     | Dimensions     | Flow Rate              | Pressure Drop |
|------------------|----------------|------------------------|---------------|
| <b>ISO 16890</b> | <b>mm</b>      | <b>m<sup>3</sup>/h</b> | <b>Pa</b>     |
| Coarse 60%       | 287 x 592 x 48 | 1700                   | 105           |
| Coarse 60%       | 490 x 592 x 48 | 2900                   | 105           |
| Coarse 60%       | 592 x 592 x 48 | 3400                   | 105           |

### SPECIFICATION

|                             |                          |  |   |
|-----------------------------|--------------------------|--|---|
| <b>Recommended air flow</b> | < 3400 m <sup>3</sup> /h | <b>Rec. final pressure for efficient energy use acc. to EN 13053</b> | Lowest value of initial pressure drop + 50 Pa, or initial pressure drop x 3 |
| <b>Heat resistance</b>      | Max. 70 °C               | <b>Moisture resistance</b>   | 80 % rel. humidity  |
| <b>Regenerable</b>          | No                       | <b>Flammability</b>  | M1 according to NF P92-507  |

### OPTIONS

|              |                  |
|--------------|------------------|
| <b>Frame</b> | Galvanized steel |
|--------------|------------------|

### ZONE AUTHORIZATION

Filters are authorized, depending on their filtration classes, for use in the following zones with the listed flammable substances.

| Substance    | Zone                      | Explosion Group  |
|--------------|---------------------------|--|
| <b>Gases</b> | Zone 0, Zone 1, Zone 2    | IIA - Diesel, petrol, ethane, etc<br>IIB - Town gas, ethylene, etc               |
| <b>Dust</b>  | Zone 20, Zone 21, Zone 22 | IIIA - Flammable lints and flocculation<br>IIIB - Isolating, non-conductive dust |



# Airpocket Pro

## ATEX

### Product Range



### Features



EX

### Applications



### Filter Class

ePM1

ePM10

Coarse



### KEY FACTS

- Filter series compliant with the European directive ATEX 2014/34/EU
- Particle filtration and gas adsorption in one filter element
- Removes odors and harmful gases

### DESIGN

Multi-layered media, tailored-sewn into pockets with sealed, conical spacer seams for an optimal V-shape. A galvanized steel frame provides rigidity.

### APPLICATIONS

For special air conditioning and ventilation systems in food, chemical and pharmaceutical industries, where demanding requirements for explosive atmospheres need to be met.



The filters used in the application areas are electrically conductive and comply with the European ATEX directive 2014/34/EU for products used in explosive atmospheres.

### OPTIONS

|                     |                  |
|---------------------|------------------|
| <b>Header depth</b> | 25 or 20 mm      |
| <b>Gasket</b>       | EPDM flat gasket |

### SPECIFICATION

|                             |                      |  |  |
|-----------------------------|----------------------|--|--|
| <b>Recommended air flow</b> | Flow rate ± 15 %     | <b>Rec. final pressure for efficient energy use acc. to EN 13053</b> | Lowest value of initial pressure drop + 100 Pa, or initial pressure drop x 3 |
| <b>Heat resistance</b>      | < 30 °C (Peak 50 °C) | <b>Moisture resistance</b>   | < 60 % (max. < 90 %)   |
| <b>Regenerable</b>          | No                   | <b>Incinerable</b>   | No   |



# Airpocket Pro

## ATEX

### PERFORMANCE DATA

| Filter Class      | Dimensions      | Pockets | Flow Rate         | Pressure Drop* |
|-------------------|-----------------|---------|-------------------|----------------|
| ISO 16890         | mm              |         | m <sup>3</sup> /h | Pa             |
| <b>Coarse 80%</b> | 592 x 592 x 600 | 6       | 3400              | 70             |
| Coarse 80%        | 490 x 592 x 600 | 5       | 2800              | 70             |
| Coarse 80%        | 287 x 592 x 600 | 3       | 1700              | 70             |
| Coarse 80%        | 287 x 287 x 600 | 3       | 850               | 70             |
| <b>ePM10 75%</b>  | 592 x 592 x 635 | 8       | 3400              | 90             |
| ePM10 75%         | 490 x 592 x 635 | 6       | 2800              | 90             |
| ePM10 75%         | 287 x 592 x 635 | 4       | 1700              | 90             |
| ePM10 75%         | 287 x 287 x 635 | 4       | 850               | 90             |
| <b>ePM1 60%</b>   | 592 x 592 x 635 | 8       | 3400              | 140            |
| ePM1 60%          | 490 x 592 x 635 | 6       | 2800              | 140            |
| ePM1 60%          | 287 x 592 x 635 | 4       | 1700              | 140            |
| ePM1 60%          | 287 x 287 x 635 | 4       | 850               | 140            |
| <b>ePM1 80%</b>   | 592 x 592 x 635 | 8       | 3400              | 215            |
| ePM1 80%          | 490 x 592 x 635 | 6       | 2800              | 215            |
| ePM1 80%          | 287 x 592 x 635 | 4       | 1700              | 215            |
| ePM1 80%          | 287 x 287 x 635 | 4       | 850               | 215            |

\* Pressure drop tolerance  $\pm$  10%

### ZONE AUTHORIZATION

Filters are authorized, depending on their filtration classes, for use in the following zones with the listed flammable substances.

| Substance    | Zone                      | Explosion Group  |
|--------------|---------------------------|--|
| <b>Gases</b> | Zone 0, Zone 1, Zone 2    | IIA – Diesel, petrol, ethane, etc<br>IIB – Town gas, ethylene, etc               |
| <b>Dust</b>  | Zone 20, Zone 21, Zone 22 | IIIA – Flammable lints and flocculation<br>IIIB – Isolating, non-conductive dust |

# Aircube / Nanoclass Cube N Pro ATEX

## Product Range



## Features



EX

## Applications



## Filter Class



## KEY FACTS

- Suitable for high flow rates up to 4,000 m<sup>3</sup>/h
- Compact, space-saving design
- Large active media area
- Ideal for robust industrial applications
- High temperature stability up to 120 °C
- Filter series tested according to EN 13501-1:2010 as E d0

## DESIGN

V-shaped pleated cells with special thread separators to ensure even spacing of the pleats. Metal casing with an integrated handle for ease of installation.

## APPLICATIONS

Fine dust and HEPA filtration for process applications in HVAC and clean room systems with high air flow rates.

## OPTIONS

|                   |   |
|-------------------|---|
| <b>Frame</b>      | Galvanized steel, stainless steel                               |
| <b>Gasket</b>     | EPDM flat gasket 1 or 2 sides;<br>U-profile gasket 1 or 2 sides |
| <b>Dimensions</b> | 305 x 610; 290 x 595; 595 x 595;<br>610 x 610; 610 x 762 mm     |



The filters used in the application areas are electrically conductive and comply with the European ATEX directive 2014/34/EU for products used in explosive atmospheres.

Aircube & Nanoclass Cube N Pro ATEX are certified according to EN 13501-1:2010 in flammability class E and droplet formation class d0.

# Aircube / Nanoclass Cube N Pro ATEX

## PERFORMANCE DATA

|                           | Filter Class |         | Dimensions      | Flow Rate         | Pressure Drop** |
|---------------------------|--------------|---------|-----------------|-------------------|-----------------|
|                           | ISO 16890    | EN 1822 | mm              | m <sup>3</sup> /h | Pa              |
| Aircube N Pro ATEX        | ePM1 55%     | -       | 610 x 610 x 292 | 4,000             | 160             |
| Aircube N Pro ATEX        | ePM1 80%     | -       | 610 x 610 x 292 | 4,000             | 170             |
| Nanoclass Cube N Pro ATEX | -            | E11     | 610 x 610 x 292 | 3,400             | 190             |
| Nanoclass Cube N Pro ATEX | -            | H13     | 610 x 610 x 292 | 4,000             | 290             |
| Nanoclass Cube N Pro ATEX | -            | H14     | 610 x 610 x 292 | 3,400             | 270             |

\* Catalogue items are constructed with stainless steel frames and feature a gasket on the dirty side.

\*\* Pressure drop tolerance  $\pm$  10%

## SPECIFICATION

|                             |                                |   |  |
|-----------------------------|--------------------------------|---|--|
| <b>Recommended air flow</b> | Flow rate $\pm$ 10 %           | <b>Rec. final pressure for efficient energy use acc. to EN 13053</b><br>(Aircube) | Lowest value of initial pressure drop + 100 Pa, or initial pressure drop x 3 |
| <b>Heat resistance</b>      | Max. 120 °C                    | <b>Recommended final pressure drop</b><br>(Nanoclass Cube)                        | 600 Pa   |
| <b>Regenerable</b>          | No                             | <b>Moisture resistance</b>  | 100 % rel. humidity  |
| <b>Fire classification</b>  | E d0 according EN 13501-1:2010 | <b>Incinerable</b>  | No   |

## ZONE AUTHORIZATION

Filters are authorized, depending on their filtration classes, for use in the following zones with the listed flammable substances.

| Substance    | Zone                      | Explosion Group  |
|--------------|---------------------------|--|
| <b>Gases</b> | Zone 0, Zone 1, Zone 2    | IIA – Diesel, petrol, ethane, etc<br>IIB – Town gas, ethylene, etc<br>IIC – Hydrogen, acetylene, etc |
| <b>Dust</b>  | Zone 20, Zone 21, Zone 22 | IIIA – Flammable lints and flocculation<br>IIIB – Isolating, non-conductive dust                     |

# Airsquare / Nanoclass Square Pro ATEX

## Product Range



## Features



EX

## Applications



## Filter Class



## KEY FACTS

- Various dimensions and extrusion types
- High-quality, anodized aluminum frame with stainless steel grid protection
- Filter series tested according to EN 13501-1:2010 as E d0

## DESIGN

Pleated cells with state-of-the-art hotmelt spacing technology to ensure even spacing of the pleats. Stainless steel grid protection with dry sealing.

## APPLICATIONS

Fine dust and HEPA filtration for process applications in HVAC and clean room systems.

## OPTIONS

|                   |                                   |
|-------------------|-----------------------------------|
| <b>Extrusions</b> | Various extrusion types available |
| <b>Gasket</b>     | 1 or 2 sides                      |



The filters used in the application areas are electrically conductive and comply with the European ATEX directive 2014/34/EU for products used in explosive atmospheres.

Airsquare & Nanoclass Square N Pro ATEX are certified according to EN 13501-1:2010 in flammability class E and droplet formation class d0.



# Airsquare / Nanoclass Square Pro ATEX

## PERFORMANCE DATA

|                              | Filter Class |         | Dimensions     | Flow Rate         | Pressure Drop* |
|------------------------------|--------------|---------|----------------|-------------------|----------------|
|                              | ISO 16890    | EN 1822 | mm             | m <sup>3</sup> /h | Pa             |
| Airsquare Pro ATEX FC        | ePM1 55%     | -       | 610 x 610 x 70 | 2,000             | 90             |
| Airsquare Pro ATEX FC        | ePM1 80%     | -       | 610 x 610 x 70 | 2,000             | 140            |
| Nanoclass Square Pro ATEX FC | -            | E11     | 610 x 610 x 70 | 600               | 80             |
| Nanoclass Square Pro ATEX FC | -            | H13     | 610 x 610 x 70 | 600               | 95             |
| Nanoclass Square Pro ATEX FC | -            | H14     | 610 x 610 x 70 | 600               | 105            |

\* Pressure drop tolerance  $\pm$  10%

## SPECIFICATION

|                             |                                |   |  |
|-----------------------------|--------------------------------|---|--|
| <b>Recommended air flow</b> | Flow rate $\pm$ 20 %           | <b>Rec. final pressure for efficient energy use acc. to EN 13053</b><br>(Airsquare) | Lowest value of initial pressure drop + 100 Pa, or initial pressure drop x 3 |
| <b>Heat resistance</b>      | Max. 70 °C                     | <b>Recommended final pressure drop</b><br>(Nanoclass Square)                        | 600 Pa   |
| <b>Regenerable</b>          | No                             | <b>Moisture resistance</b>  | 100 % rel. humidity  |
| <b>Fire classification</b>  | E d0 according EN 13501-1:2010 | <b>Incinerable</b>  | No   |

## ZONE AUTHORIZATION

Filters are authorized, depending on their filtration classes, for use in the following zones with the listed flammable substances.

| Substance    | Zone                      | Explosion Group  |
|--------------|---------------------------|--|
| <b>Gases</b> | Zone 0, Zone 1, Zone 2    | IIA – Diesel, petrol, ethane, etc<br>IIB – Town gas, ethylene, etc<br>IIC – Hydrogen, acetylene, etc |
| <b>Dust</b>  | Zone 20, Zone 21, Zone 22 | IIIA – Flammable lints and flocculation<br>IIIB – Isolating, non-conductive dust                     |



**Danger  
Explosive**

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