

THE WORLD LEADER IN CLEAN AIR SOLUTIONS



Commercial Buildings Clean Air Solutions

PARTICULATE AND GASEOUS FILTRATION

AAF | Flanders®
Bringing clean air to life.®

AAF Flanders has an in-depth understanding of the challenges and opportunities for commercial facilities. This understanding and technical ability makes AAF Flanders the preferred partner for optimizing your environment.

Controlling Airborne Pollutants in Commercial Buildings

Clean Air Solutions for Commercial Facilities

Around the globe, AAF Flanders is meeting the need for clean air in commercial facilities, such as hospitals, schools, airports, museums, financial institutions, hotels, and shopping malls. From inexpensive panel filters to high-efficiency, extended-surface filters with antimicrobial and gas-phase filtration, we market the widest range of air filtration products available.

Critical Importance of Indoor Air Quality (IAQ)

In commercial facilities, controlling airborne pollutants is necessary to maintain a comfortable, healthy, and odor-free environment. In many commercial buildings, IAQ is a primary concern. The pollution levels in indoor air can be up to five times higher than outdoor air levels, and poor IAQ ranks as one of the top five environmental risks to public health. In addition to known cardiovascular threats, studies in recent years reveal that short- and long-term cognitive impairment can be traced back to poor air quality. The short-term effects include reduced ability to process information and arrive at solutions, while forms of dementia, such as Alzheimer's Disease, can be induced by prolonged exposure to air contaminants.

Higher-efficiency air filters also help protect against airborne pathogens, such as bacteria and viruses. ASHRAE and the CDC both suggest upgrading the particle efficiency of air filters and cycling more outdoor air into commercial buildings as a means of protecting occupants.

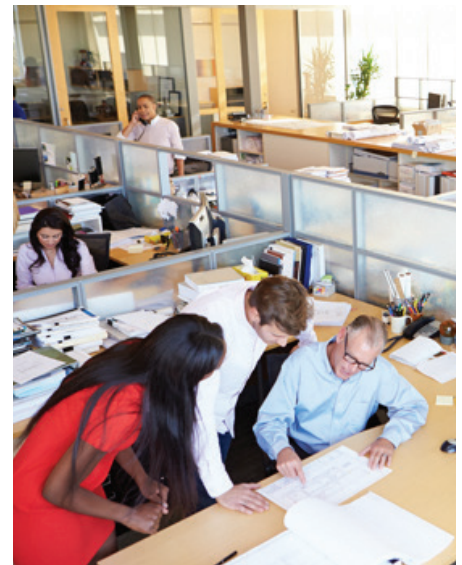
Specifically, air filters rated at least MERV 13 are recommended to reduce the presence of these disease- and infection-causing contaminants in occupied spaces.

While the majority of commercial facilities use basic particulate filters, these filters cannot resolve all problems related to poor air quality. In addition, gas-phase filtration must be used to control the harmful effects of gaseous contaminants. Common sources of these contaminants are located both outside and inside commercial facilities, ranging from automotive exhaust, weather-related conditions, and wildfires outside buildings to paint, carpet, and furniture inside facilities.

AAF Flanders can custom design commercial air filtration products to meet the most demanding airflow and efficiency requirements.



AAF Flanders filters are at work in Reliant Stadium in Houston, Texas, USA.



Our air filtration team understands that the requirements for commercial facilities differ for each application. Our experience in developing air filtration products for a variety of industries gives us the know-how to tackle any project.

Clean Air Technology



A member of the U.S. Green Building Council (USGBC), AAF Flanders has joined with leaders from every sector of the building industry to promote environmentally responsible, profitable, and healthy places to live and work.

See pages 6-7 of this brochure for information on how AAF Flanders can help you gain LEED Certification, and help meet your goals.

Optimize Your Environment

Air filtration systems in commercial facilities must handle relatively large volumes of air.

Approximately 50% of a building's energy consumption goes to the heating, cooling, and moving of air. Proper filter selection and maintenance is essential to keeping HVAC systems operating effectively and efficiently. There are multiple facets of the filter and the system in which it is installed that must be taken into consideration. These considerations include system airspeed, fan efficiency, filter resistance, service life, efficiency and cost.

In considering the Total Cost of Ownership (TCO), it is important to keep in mind that planning maintenance is an important step in maintaining energy efficiency, minimizing costly downtime, and extending the lifespan of your equipment, thereby ensuring a cost-effective building.

A More Cost-Effective, Energy-Efficient HVAC System as Easy as 1-2-3

Improve the lifetime affordability and efficiency of the air filtration system in your commercial facility to reduce spend, decrease risk, and save time.

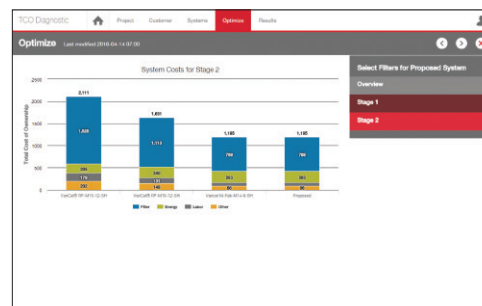
1. Air Filtration Audit
2. TCO Diagnostic® Analysis
3. Sensor360® Analysis & Maintenance

Air Filtration Audit

Through a complimentary **air filtration audit**, our air filtration experts analyze your system's current state and compare it against best practices identified in similar applications. By establishing these benchmarks, we are able to identify potential areas for improvement and recommend preventive maintenance schedules for the filters in each of your air handling units (AHUs).

TCO Diagnostic® Technology

Having established baseline data points with the air filtration audit, **TCO Diagnostic®** allows end users to compare their current state against two alternative air filtration solutions side-by-side. This unique software allows evaluations of the costs of energy, labor, and materials over time for visibility into the long-term impact of air filter selections and combinations.



Sensor360® Technology

By forwarding air filtration performance data to your smartphone, tablet, or computer at regular intervals, **Sensor360®** allows fine-tuning of your system as conditions change. This software also provides alerts on potential HVAC problems and the need to change individual air filters, maximizing filter life without compromising energy efficiency or requiring physical AHU checks.



Green Buildings Solutions

Proper Air Filtration Strategies Earn LEED® Credits

Today's building owners and operators look for sustainable designs and operating practices. Green building, or sustainable building, is the practice of increasing the efficiency with which buildings use resources through a building's life cycle from siting to design, construction, operation, maintenance, renovation, and deconstruction. This is achieved by efficiently using energy, water, and other resources, while reducing impact on human health and the environment.

The benefits of green buildings include the value-added perception of social responsibility, enhanced IAQ, and lower operating costs.

Many commercial buildings are seeking Leadership in Energy and Environmental Design (LEED®) certification. The LEED Green Building Rating System™, administered by the U.S. Green Building Council, is the nationally accepted benchmark for designing and sustaining green buildings.

Air filters can be a factor in the following rating systems:

- **LEED for Existing Buildings: Operations and Maintenance** provides a benchmark for building owners and operators to measure operations, improvements, and maintenance.
- **LEED for New Construction and Major Renovations** is designed to guide and distinguish high-performance commercial and institutional projects.
- **LEED for Schools** recognizes the unique nature of the design and construction of K–12 schools and addresses the specific needs of school spaces.
- **LEED for Healthcare** promotes sustainable planning, design, and construction for high-performance healthcare facilities.
- **LEED for Commercial Interiors** is a benchmark for the tenant improvement market that gives the power to make sustainable choices to tenants and designers.
- **LEED for Core and Shell** aids designers, builders, developers, and new building owners in implementing sustainable design for new core and shell construction.
- **LEED for Retail** recognizes the unique nature of retail design and construction projects and addresses the specific needs of retail spaces.



Credits are awarded towards certification in six categories. Proper air filtration strategies contribute to four of the six categories:

- Energy and Atmosphere (Efficiency)
- Indoor Environmental Quality
- Materials and Resources
- Innovation in Design/Operations

Energy and Atmosphere (Efficiency)

Demonstrating compliance with ASHRAE Standard 90.1-2019 is the first step for meeting these energy and atmosphere requirements. Whole-building energy simulation, following ASHRAE-approved procedures, establishes energy cost savings. The number of credits earned is relative to energy cost reduction.

Indoor Environmental Quality

Maintaining the health and comfort of building occupants by enhancing IAQ is the basis of the Indoor Environmental Quality category. Credits can be obtained by documenting the impact of IAQ on occupant productivity, upgrading filter efficiency, establishing a schedule for filter maintenance, and eliminating conditions that might lead to poor IAQ.



AAF Flanders Strategies for Achieving LEED(R) v4.1 Certification*

Includes Building Design & Construction (BD&C), Operations & Management (O&M), and Interior Design & Construction (ID&C) (differences noted)

INTEGRATIVE PROCESS			
Type	Name	Value	How AAF Flanders Can Help
Credit	Integrative Process - (BD&C)	1* <i>*Up to 2pts for ID&C</i>	Ensure HVAC systems are designed to maximize energy efficiency. Include an energy assessment using TCO Diagnostic for standard HVAC systems and VisionAir Clean for buildings with cleanrooms (contact Foremarket Rep re: VisionAir Clean).
Prerequisite	Integrative project planning and design - (Healthcare BD&C Only)		Ensure HVAC systems are designed to accommodate high-efficiency filters that will protect human health and meet requirements.

SUSTAINABLE SITES			
Type	Name	Value	How AAF Flanders Can Help
Credit	Tenant Design and Construction Guidelines - (BD&C Core and Shell only)	1	Recommend sustainable strategies to future tenants that include energy-efficient filters, excellent air quality performance, and manageable filter life cycles to reduce waste.

ENERGY AND ATMOSPHERE			
0.1935 in	Name	Value	How AAF Flanders Can Help
Prerequisite	Fundamental Commissioning and Verification (BD&C)	Required	Create a Current Facilities Requirements and Operations and Maintenance Plan including setpoints for all HVAC equipment. Use TCO Diagnostic and expert analysis from your AAF rep to assist in creating appropriate setpoints, planning maintenance cycles, and ensuring the correct filters are used.
Prerequisite	Energy Efficiency Best Management Practices (O&M)	Required	
Prerequisite	Minimum Energy Performance	Required	Choose filters with low resistance to aid in compliance with ASHRAE Standard 90.1-2016 Section 4.2.1.1. Ensure filters selected are designed for chosen airflow levels and compatible with HVAC systems selected. Use TCO Diagnostic for a complete analysis of filter airflow resistance over time and its impact on HVAC system energy usage costs.
Credit	Optimize Energy Performance (BD&C)	1-20* <i>*Up to 24pts for ID&C</i>	Use AAF Flanders' TCO Diagnostic tool to determine optimal filter selection and changeout cycle for lowest energy use and greenhouse gas emissions.
Prerequisite	Energy Performance (O&M)	1-33	
Credit	Advanced Energy Metering	1* <i>*Up to 2pts for ID&C</i>	Use Sensor360 to monitor filter-related HVAC energy consumption and determine appropriate changeout cycles.

Materials and Resources			
0.1935 in	Name	Value	How AAF Flanders Can Help
Credit	Construction and Demolition Waste Management	2	Pursue waste-reduction strategies that include filters with longer lifecycles and lower weight, such as minipleat V-Bank filters, to reduce total waste generated. Note that these filters also aid in achieving other credits by reducing resistance to airflow.
Prerequisite	Purchasing Policy	Required	
Prerequisite	Facility Maintenance and Renovations Policy	Required	
Prerequisite	Waste Performance	8	
Credit	Purchasing	1	

INDOOR ENVIRONMENTAL QUALITY			
Type	Name	Value	How AAF Flanders Can Help
Prerequisite	Minimum Indoor Air Quality Performance	Required	As per ASHRAE standard 62.1, install particulate matter filters with a minimum MERV rating of 8 upstream of all cooling coils.
Prerequisite	Minimum Indoor Air Quality	Required	Perform quarterly maintenance as per ASHRAE 62.1. Contact your local AAF service professional to ensure maintenance is performed correctly and in compliance with the standard, that no areas of dirty air bypass remain, and to determine energy-saving strategies.
Credit	Enhanced Indoor Air Quality Strategies	1-2	Install air filters with a minimum MERV 13 rating, as per ASHRAE 52.2-2017, in each ventilation system supplying outdoor air to occupied spaces. Other options to achieve this credit may include filters that can withstand increased ventilation/airflow rates and the removal of contaminants from exhaust air through gas-phase filters and/or containment systems.
Credit	Construction Indoor Air Quality Management Plan	1	If operating HVAC systems during construction, use filters with a minimum rating of MERV 8 on each return air grille. Ensure there is no bypass around the filter. Before occupancy, replace all filters with the final design filters, installing them according to manufacturer's recommendations and conducting a 2-week flush-out with new air filters and 100% outdoor air.
Credit	Indoor Air Quality Assessment	1-2	As part of pre-occupancy flush-out, install new air filters and perform system flush. Consider installing the same filters that will be specified for full occupancy to encourage occupants to continue using them.
Prerequisite	Indoor Environmental Quality Performance	1-20	Perform an air quality evaluation. Use AAF Flanders gas-phase filters to remove VOCs and particulate filters with high efficiency and airflow capacity to increase occupant satisfaction and reduce CO ₂ levels.

INNOVATION			
Type	Name	Value	How AAF Flanders Can Help
Credit	Innovation (BD&C)	1-5	Use TCO Diagnostic to find strategies for reducing overall energy usage and emissions. Use higher-efficiency filters (rated MERV 14 or higher) to improve occupant comfort and safety.
Credit	Innovation (O&M)	1	

Particulate Filtration Solutions

Pleated Panel Filters

The AAF Flanders pleated panel filter line provides the industry's broadest selection of high-performance, high-capacity filters, including specialty and standard-capacity options. This enhanced line of filters offers consistent air quality, improved process performance, social responsibility, and optimized Total Cost of Ownership (TCO).

Pleated filters can be used as prefilters to protect and extend the life of higher-efficiency, more expensive final filters. In many applications, they are the only filter used in an HVAC system.



The Pleated Panel Filter line features:

- MERV ratings from 8 to 13
- Strongest and longest-lasting pleated filter on the market
- Industry's lowest life cycle pressure drop and highest dust-holding capacity (DHC) reduces energy consumption and total operating costs
- Highest-performing self-supported pleated filter on the market
- High-efficiency MERV 13 pleated filter supports achievement of LEED credits by significantly improving indoor air quality (IAQ) and reducing energy consumption
- Economy-grade filter selections for medium- to light-duty applications
- Filter options for high-temperature and high-velocity environments
- Antimicrobial options available on certain pleated filters



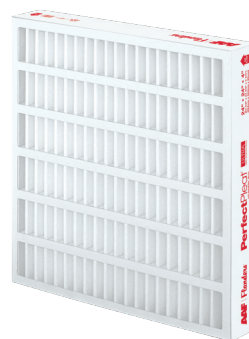
MEGApleat® M9



PREpleat® MERV 11



PREpleat® MERV 13



PerfectPleat® Ultra

High-Efficiency Extended-Surface Filters

Also known as box filters, these rigid, extended-surface filters are ideal for use in all high-efficiency applications. The supported pleat filters provide strength and integrity in high-flow, turbulent, and variable-airflow conditions.

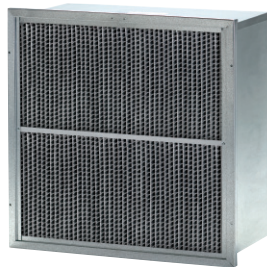
These filters are designed for enhanced airflow and removal of fine airborne contaminants in a multitude of commercial applications. Typically pleated or panel air filters would be used as prefilters for these filters in a multiple-stage air filtration system.



The High-Efficiency Extended-Surface Filter line features:

- MERV ratings from 11 to 16
- Filter with best-in-class combination of service life, energy savings, and particle efficiency
- Heavy-duty, durable construction
- Available with dual-density fiberglass media, which increases dust-holding capacity/service life and reduces operating costs
- Inline space-saving designs for high efficiency without requiring upgrades to existing frames
- Most energy efficient 4" filter available with low initial resistance and best performance in difficult operating conditions

VariCel® VXL



VariCel®



VariCel® 2+

Extended-Surface Non-Supported Pocket Filters

Sometimes referred to as bag filters, these non-supported pocket filters are the most economical, high-efficiency filters available, and an excellent choice for numerous commercial facilities and applications. Designed for high performance in demanding operating conditions, AAF Flanders extended-surface pocket filters are perfect as both prefilters and final filters for particulate removal where clean air is required.

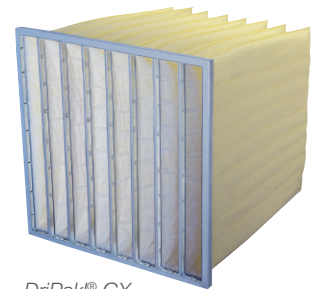


The Extended-Surface Non-Supported Pocket Filter line features:

- MERV ratings from 12 to 15
- Patented pocket design for minimum resistance, maximum dust-holding capacity, and significantly longer filter life
- Usable without prefilters in certain applications for additional labor and energy savings
- Best-in-class combination of longevity, energy efficiency, and ease of installation



DriPak® NX



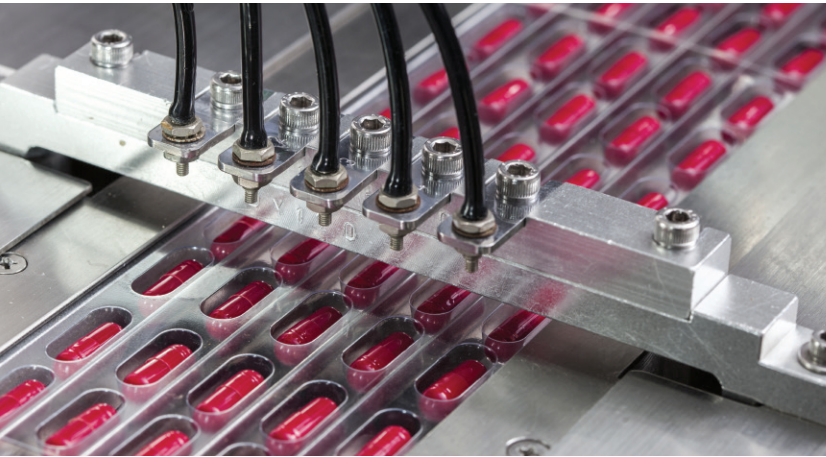
DriPak® GX

Particulate Filtration Solutions

HEPA/ULPA Filters

HEPA filters are the most efficient air filters commercially available. While frequently found in applications requiring ultra-clean air, such as semiconductor, microelectronics, pharmaceutical manufacturing, food processing, hospitals, and labs, HEPA filters are increasingly common in other commercial applications as concerns about IAQ intensify. For those applications not suited to retrofitting for HEPA filters, AAF Flanders offers self-contained HEPA filtration units. These units offer ultra-clean air in high-traffic or heavily occupied spaces, such as lobbies, waiting areas, atriums, meeting rooms, and dining areas.

AAF Flanders HEPA filters are individually tested before shipment to ensure they meet rated efficiency and resistance. AAF Flanders HEPA and ULPA filters are available in a variety of efficiencies—from 99.97% tested on $.3 \mu\text{m}$ particles to 99.9995% and higher tested on $.1$ to $.2 \mu\text{m}$ particles. All filters are available scan-tested.



The HEPA/ULPA Filter line features:

- Efficiencies from 99.97% on $0.3 \mu\text{m}$ particles to 99.99999% on $0.10\text{-}0.20 \mu\text{m}$ particles
- Designed to meet the demanding airflow and efficiency requirements of the most critical applications
- Patent-pending, high-performing, and incredibly robust eFRM and ePTFE membrane media filtration technologies—designed specifically for the unique challenges of operating and maintaining ultra-clean environments
- Chemical-resistant capabilities for highly corrosive environments
- Available as a separator-less media filter with a self-supporting media pack
- Filters designed to meet all performance classes per the Institute of Environmental Sciences and Technology IEST-RP-CC-001
- High-capacity, space-saving designs
- Filters designed specifically for high-airflow applications requiring HEPA efficiency at an ultra-low pressure drop



MEGAcel® I eFRM



AstroCel® III



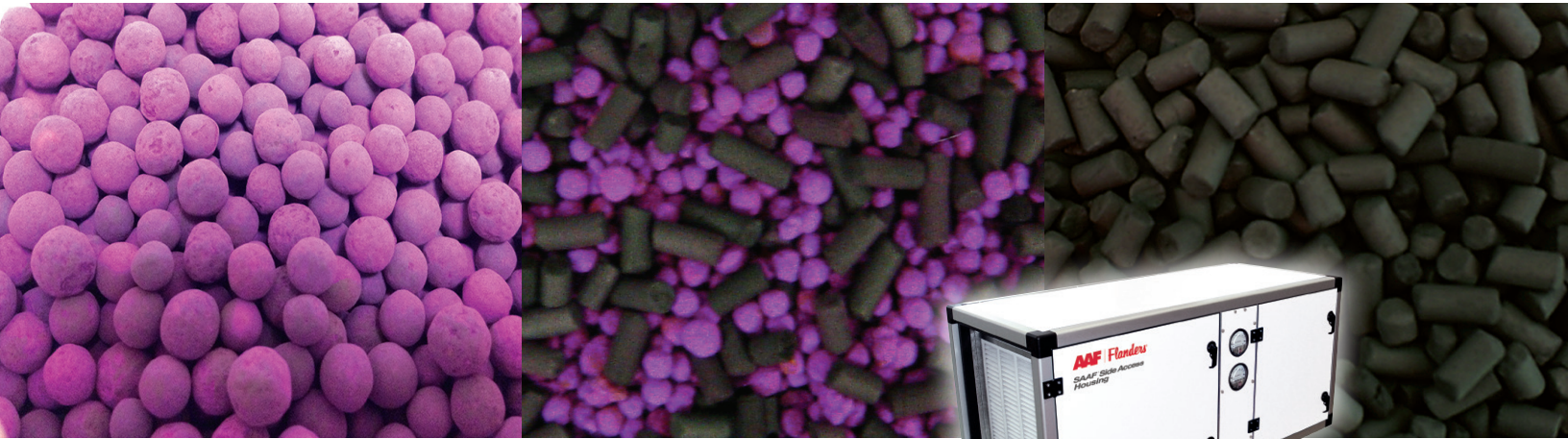
DimplePleat



MEGAcel® II eFRM

Gaseous Filtration Solutions

AAF Flanders has assumed an industry-leading position with the development of its innovative SAAF (pronounced "SAFE") product line that reduces or eliminates harmful gaseous contaminants. In combination with our expertise in airborne particulate filtration, SAAF products and solutions allow us to develop unique and effective total filtration solutions to protect people, processes, and equipment. No other company offers this combination of experience, expertise, innovation, and capability to combat airborne contaminants, whether particulate or gaseous, and deliver the best clean air solutions.



The SAAF product line features:

- Patented chemical media cassettes with superior sealing and energy savings. These cassettes also fit in most legacy units. The housings are designed for quiet operation and durability
- Complete chemical media line – adsorbents, oxidants, and blends configured by and produced under the supervision of our world-class global research and development teams
- Environmental Measurements related to the ISA Standard S71.04: "Environmental Conditions for Process Measurement and Control Systems: Airborne Contaminants" to determine types of contaminants and their relative concentrations
- RoHS-compliant corrosion control (ASHRAE TC 9.9 Guideline)
- Comprehensive, industry-leading software – SAAF Tech Tools analyzes applications, develops solutions, configures equipment and media, and delivers a complete technical proposal
- Full line of gas-phase equipment, including side access housings, air purification systems and machine intake filter systems



SAAF™
Side Access Housing



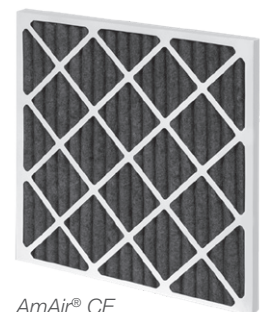
SAAF™ Cassette



VariSorb® XL



SAAF™
Front-Access Housing



AmAir® CE
Pleated Carbon Filter

Proven Expertise of AAF Flanders

AAF Flanders offers the most comprehensive air filtration portfolio in the industry, including particulate and gas-phase filters, to provide a customized clean air solution. Each product is carefully designed, manufactured, and tested in full compliance with all applicable standards to meet the most challenging demands with the lowest Total Cost of Ownership.

Contact your local AAF Flanders representative for a complete list of AAF Flanders Air Filtration Product Solutions.

888.223.2003
aafintl.com



Bringing clean air to life.®

9920 Corporate Campus Drive, Suite 2200, Louisville, KY 40223-5690
888.223.2003 Fax 888.223.6500 | aafintl.com

AAF Flanders has a policy of continuous product research and improvement. We reserve the right to change design and specifications without notice.

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ISO Certified Firm

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