

Separet Filters in vacuum cleaners: compactly small but hugely efficient!



viledon®

Freudenberg
Filtration Technologies



Welcome to the big wide world of the microcosm!

The more you come to know about nonwovens, the more fascinating you tend to find them.

The big attraction lies in a multiplicity of products used in an enormous variety of applications, most of them concealed from the casual view, but often enough performing truly important functions. Almost everyone uses them, frequently without knowing it.

This particularly applies to Separet filters which, "encased" inside the vacuum cleaner, give a highly efficient performance every day without anyone really noticing.

The acknowledged high quality standard of our nonwovens is based upon our wide expertise in the materials and processes involved. The final products incorporate empirical feedback from our applications engineers in close liaison with our customers to ensure continual testing and design enhancement. This means Freudenberg offers products and system packages of the highest quality at the leading edge of technological excellence: a policy that has made the company into the world's biggest manufacturer of non-woven materials.

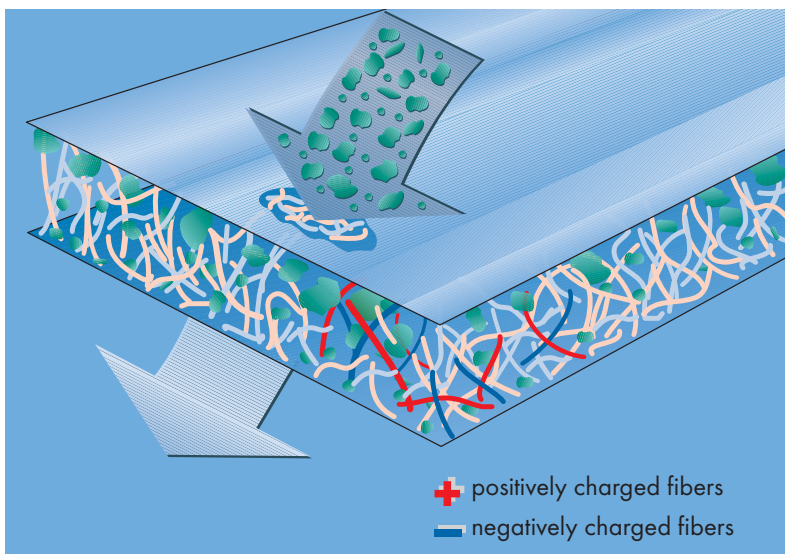


Fig. 1 The structure and functioning of Separet filter media

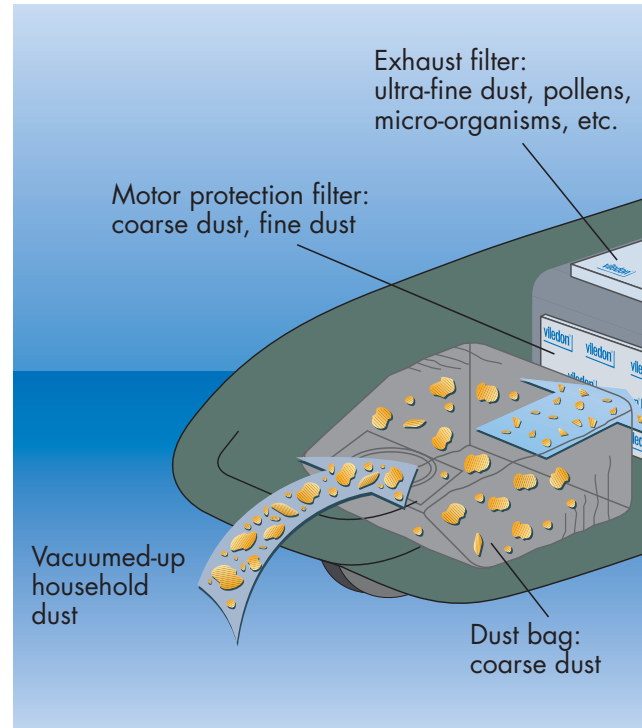


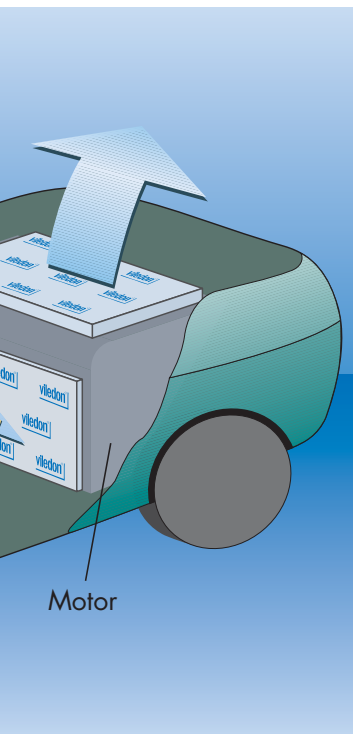
Fig. 2 View of a vacuum cleaner with dust bag, motor protection filter and exhaust filter

positive + negative = highly effective filters

To produce Separet nonwovens, various polymer fibers are mixed with each other, carded and needle-bonded in a patented process. The high level of friction occurring during production causes the fibers to acquire different electrostatic charges, due to their different electro-negativity, resulting in excellent filtration efficiency. The Separet filter media can be vividly depicted as an inhomogeneous mixture of positively and negatively charged individual fibers (Fig. 1).

This open fiber composite is characterized by locally very strong electrostatic forces, which ensure that the arriving dust particles are attracted and finally arrested at the fibers' surfaces. The electrostatic filtration effect, combined with the product's mechanical filtration efficiency, enables even the finest of dust particles to be arrested.

Filter media made of electrostatically charged fibers are called "electrets".



exhaust filter

Separet's pluses

When used in vacuum cleaners, Separet filter media offer the following advantages:

- ▶ maximized collection efficiency
 - ▶ extremely low air resistance
 - ▶ optimum air-permeability/intake performance
 - ▶ high dust holding capacity, and thus a long lifetime
- additionally they are
- ▶ customizable
 - ▶ available in a wide choice of geometries
 - ▶ easy to handle

Freudenberg has developed "motor protection filters" and "exhaust filters" made of Separet nonwovens for secondary filtration in domestic vacuum cleaners. This guarantees optimum final filtration and users can breathe more easily.

Secondary filtration: motor protection filter

The motor protection filter is fitted between the filter bag and the motor of the vacuum cleaner. Coarse and fine particles not retained by the bag are arrested by this filter. In addition, it protects the motor if the bag bursts or has been incorrectly installed by mistake. For this reason, the motor protection filter is also referred to as a policing filter – it ensures an extended and useful lifetime for the domestic vacuum cleaner.

Secondary filtration: exhaust filter

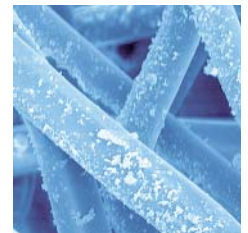
The exhaust filter is fitted inside the vacuum cleaner after the motor, and is the "end of the line" for the air flow as it exits.

It can be relied on to filter out ultra-fine dust particles, micro-organisms, bacteria, pollens, etc. The abraded particles from the motor's carbon brushes are likewise retained by this filter.

Secondary filters from Freudenberg are available in so many geometries and customized variants that they "fit snugly" into any vacuum cleaner.



Separet filter medium unloaded, magnified 200 times



Separet filter medium with dust loading, magnified 200 times

Captures the tiniest particles thanks to ingenious air-craftsmanship!

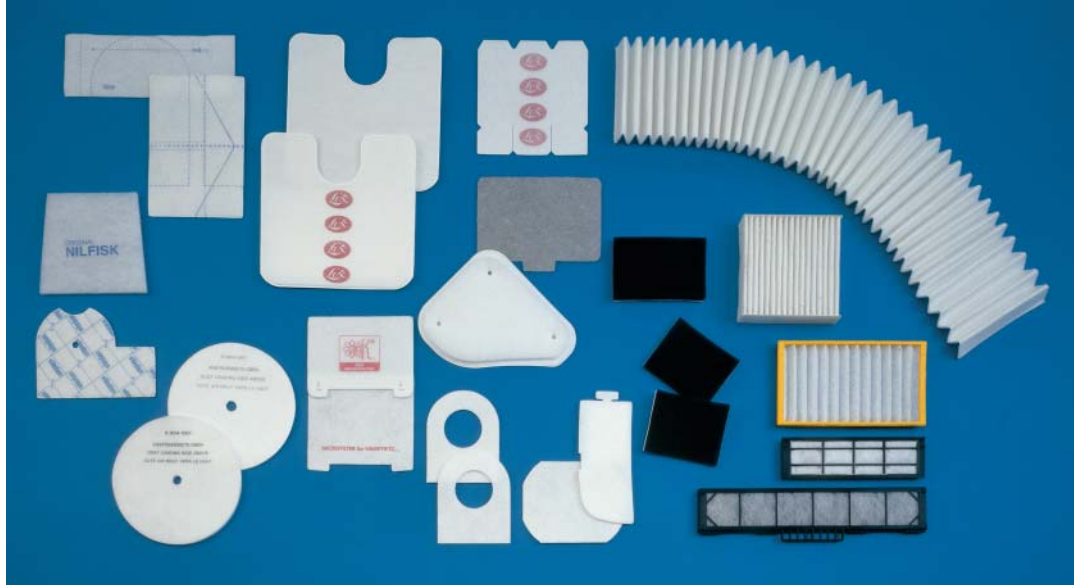
The growing number of people afflicted by allergies has led to filtration becoming a major concern for the householders. It is a topical and escalating problem. Nowadays polluted air is normally filtered through three filtration stages (see the table below). Under the Viledon brandname,

Filtration stages in domestic vacuum cleaners

Filter stage	Aerosol type	Application	Filter media	Remarks
▶ 1. Bag	Coarse dust	Pre-filter	Paper (cellulose) Nonwovens (polymers)	Fine and ultra-fine particles cannot be retained by the paper bag: additional filtration stages are needed.
▶ 2. Motor protection filter	Coarse dust, fine dust	Fine and policing filters	Coarse filter mat, electret filter or combination of the two	Arrestance of fine particles. In the event of the paper bag being destroyed or incorrectly installed, this prevents the motor being clogged with dust.
▶ 3. Exhaust filter	Ultra-fine dust, micro-organisms, pollens, etc.	Ultra-fine filters (hygiene filters)	Electret filters	Effective final filtration of even ultra-fine particles, including abraded carbon from the motor.

This combination of filters ensures that 99 % of particles > 3 µm and practically 100 % of particles > 5 µm are arrested.

Separet filters – quality right down to the tiniest fiber



Vacuum cleaner secondary filters "tailormade" to suit the individual customer



Reg. No. 1420

Freudenberg
Filtration Technologies
Weinheim/Germany

Quality – signed, sealed and superlative

Continual quality checks at Freudenberg guarantee an optimum of consistently high quality in our filter media for domestic vacuum cleaners. During the entire production process, there are constant checks on

- ▶ fiber fineness and quality
- ▶ weight per unit area
- ▶ fleece pattern
- ▶ collection efficiency for NaCl particles
- ▶ pressure drop

A state-of-the-art quality management system to ISO 9001 effectively assures each and every workstep involved, from the drawing board and applications engineering consultancy all the way through to punctual delivery and after-sales support.

Viledon is a registered and protected trademark of Messrs Carl Freudenberg.

Applications unlimited

The superlative quality features provided by Viledon nonwovens render it ideal for use in a broad spectrum of job categories above and beyond domestic vacuum cleaners. For example, to filter the intake air in

- ▶ respirators
- ▶ room-air cleaners
- ▶ photocopiers
- ▶ air-conditioners

Many other uses are of course conceivable, wherever ultra-stringent requirements apply for the quality of the air involved.

Take advantage of our multifaceted experience in the field of filtration technology! Get in touch with us, and we'll be pleased to give you technical advice and guidance on the use of Separet and other Viledon filter media.

Freudenberg Filtration Technologies KG

69465 Weinheim/Germany

Tel. +49 (0) 6201/80-6268 | Fax +49 (0) 6201/88-6299

viledon@freudenberg-filter.com | www.viledon-filter.com

