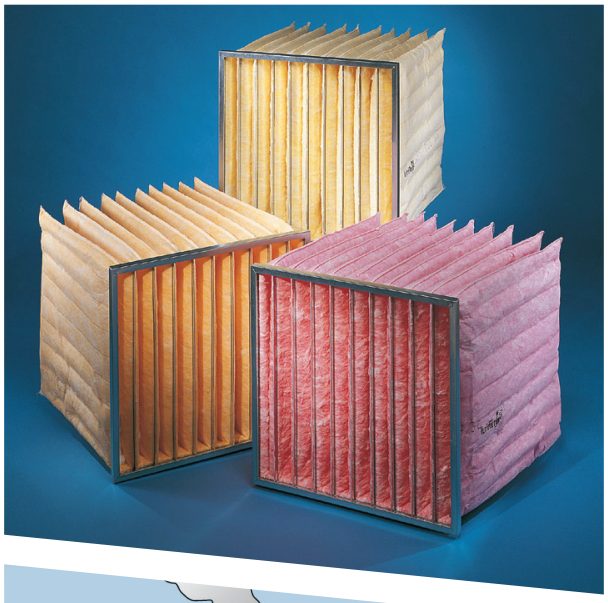
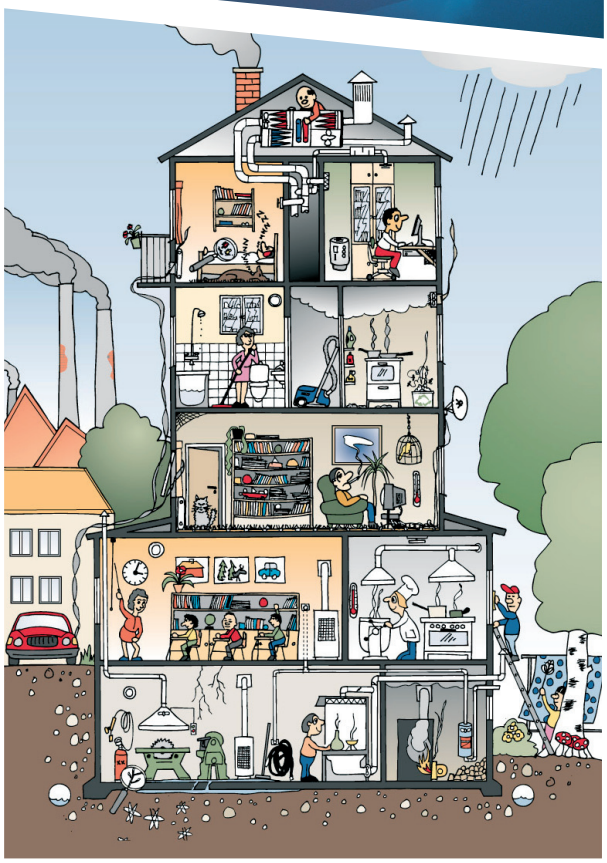
Why Should You Buy P-marked Air Filters?

SP Technical Research Institute of Sweden





Particles in the air can impair technical systems and be harmful to living beings. This is why you should use air filters. You should choose good quality and high class filters that measure up to its promises.

In order to keep components and channels clean, class F7 or better is recommended by SP and others. Even an F5 filter offers a considerable improvement compared to coarse filters or no filters at all. But preferably you should choose a better class of filters if it is technically possible. Your choice should also depend on the level of dust in the surroundings. Consequently, in terms of health, your choice is an important one. Should you wish for a reduction of more than 50 percent of sub-micron particles (particles smaller than 1 µm that reach far down in the respiratory organs) there can never be question of a lower class than F7.

Many buyers choose a higher class in order to get an even better reduction. Naturally, the results in the ventilated areas depend on several other factors such as inner sources, infiltration as well as the effectiveness of the ventilation. If these factors are checked, a better indoor environment can be created.

Ways of controlling levels of particles in indoor environment:

- Ventilation – exchanges the indoor air.
- Ventilation filter – reduces particles from outdoor air.
- Room air cleaner – circulates the air through filters.
- Control of sources – choice of material, furniture, equipment etc that generate less particles.
- Cleaning – reduces dust that may whirl up. Make sure to build and decorate in order to facilitate cleaning.

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What the P-marking Involves

In 1997, SP Technical Research Institute of Sweden together with manufacturers and users, developed "certification rules for air filters", the so-called P-mark rules. These rules involve basic requirements on the product such as the fact that it should measure up to the class of filter it is sold as. It should perform well in real circumstances and should not drastically lose its separating ability. Another requirement is that the manufacturing should operate according to a certified quality system with its own regular measurements. The requirements are basic but in spite of that, far from all companies pass the testing requirements for the P-mark.

The rules consist of mainly three parts:

1. The Quality System

- Requirements for a quality system concerning production (according to ISO 9000).
- Own control with documented tests of filters and material, control during production and final control of filters.
- Documentation of filters and duty of report regarding changes in construction or material.
- Check of all product data that is communicated to customers as well as continuous supervision of improper marketing.
- Annual controlling visits by an accountant with knowledge of the industry.

2. Annual Tests of Filter Class

- Independent selection and visual control.
- Control of pressure drop data and filter cording to EN 779.

3. Tests of Long Term Abilities

- Control of level of the degree of separation against given minimum limits during a 6 month long continuous operation in real circumstances (according to SP-method 1937).

Every Part of the System is Important.
Along with the other components, every part of the P-mark system should ensure that filters meet the requirements of quality and performance raised on the product.

A manufacturer who chooses to fill only a part in the system will not receive the P-mark and cannot equal this with P-marking.

Should you for example demonstrate recent test results according to laboratory-tests (EN 779) this does not mean that the filter will pass the long-term test (SP-method 1937). If the manufacturer chooses to carry out only long-term tests and pass the requirements for P-marking, this does not mean that it counts for all filters that he sells. The tested filter was not selected independently and randomly. Also, the manufacturing is not controlled, something which jeopardizes an even quality. The lack of continuous material-control during manufacturing may result in low performing filters. An alteration in construction or in material may lead to an altered performance.

Rig for laboratory tests according to EN 779.

Filter class SS-EN 779	Lowest particle efficiency at the test according to SP metod 1937	
	0,4 µm	**0,87 µm**
F5	2 %	8 %
F6	12 %	25 %
F7	50 %	70 %
F8	70 %	85 %
F9	80 %	90 %

Limit value for long term filter tests according to CR 055.

Choice of Air Filters
The basic requirement should be that all ordered filters fulfill the requirement for the P-mark. If this is fulfilled one can choose between different suppliers and products depending on other requirements apart from the P-marking such as:

- Low initial pressure drop, which involves lower operational costs and environmental gains.
- Environmental requirements such as material in frames and filters. The greatest burden on the environment is the energy consumption to push air through the filters (up to approx. 80%), i.e. endeavouring low pressure drops.
- Requirements of strength. Some installations require filters and frames with high strength.
- Good service and precise delivery.
- Low total cost regarding purchase, service, operation and set-off (Life Cycle Cost, LCC).

Products that pass the requirements should have the P-mark. Labeling which may cause confusion is not allowed. All P-marked air filters can be found in approved lists that are published annually by The Swedish Building Centre and are updated continuously at SP's web-site. The certifying system has led to increased seriousness in the industry. It has contributed to a positive development of filters and new filter-materials that can meet the requirements. More information about the system and approved filters is available at www.sp.se under 'certified products'.

Rigs for long term filter tests.

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