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Final Report

Study on the filtration effect of a pollen screen of the company Greenweb

Initial remark: The test was carried out on an identical pollen screen of the company K-Systems and are transferred to the present report.

1. Study assignment

On behalf of K-Systems GmbH a textile material was tested for its suitability for the retention of airborne pollen.

The aim was to examine the extent to which the penetration of birch (*Betula*) pollen, grass (*Poaceae*) pollen and ragweed (*Ambrosia*) pollen from the outside air can be avoided in an inside space by attaching a pollen screen in front of a window.

2. Study design

The measurement of pollen was carried out in an experimental "pollen chamber" with two empty rooms.

The rooms (hereinafter referred to as room A and room B) are part of a two-part pollen chamber.

Both rooms were extensively cleaned mechanically and wet before they were used for the study. After the cleaning, the rooms were accessed only during the checks of the Burkard trap.

The pollen screen was mounted with the help of a clamping frame to the window frame of the open window, which is located between the two rooms. This window has a size of 49 x 49 cm.

Room B has a size of 15.9 m³ and represents the pollen-containing outside air. Inside room B, over a period of 8 hours every 2 hours 32 mg of each pollen type (Ambrosia, grass and birch) was released. These pollen could then reach room A through the open window, simulating a housing situation, for example a bedroom.

These pollen types were chosen because they differ in size and structure and so constitute a representative cross section of all the pollen. In addition, the mentioned types of pollen have a high allergic potential and are common triggers for pollen allergies.

The measurements of invading pollen within room A (room size 16.6 m³) is carried out by a volumetrically operating Burkard-trap, a standard technique for pollen recording in Europe.

The analysis of the pollen trap was performed by an experienced pollen analyst. The resulting preparations were archived to be available for later controls.

The preparation technique, determination and evaluation of pollen with the Burkard-trap in the study was carried out according to current recommendations of the “Stiftung Deutscher Polleninformationsdienst”, as described in detail.

3. Study procedure

The study took place as follows:

1. With the windows open (without pollen filter) in room A the amount (outside) air from room B and the respective amount of pollen was measured over a period of 8 hours.
2. When applying the pollen filter, which was attached to the window, the concentration of pollen in Room A was measured over an 8 hour period after the release of pollen in Room B.

4. Evaluation

The amount of pollen in Room A while using the pollen filter is expressed as a percentage of pollen that penetrated the room without filter protection. Furthermore the total amount of pollen is given. An 8 hour period of total evaluation time was chosen.

5. Results

The results of each pollen release are shown in the following table.

Tissue	Interval	before			after		
		Poaceae (Grass)	Betula (Birch)	Ambrosia (ragweed)	Poaceae (Grass)	Betula (Birch)	Ambrosia (ragweed)
K- Systems	0-2	285	718	1257	129	184	878
	2-4	241	690	1265	55	240	695
	4-6	331	988	1622	42	164	558
	6-8	305	876	1745	38	174	444
Total		1162	3272	5889	265	762	2575

This results in a respective pollen restraining effect for different types of pollen over the respective periods.

Interval	restraining effect in %			Total
	Poaceae (Grass)	Betula (Birch)	Ambrosia (ragweed)	
0-2	55%	74%	30%	53%
2-4	77%	65%	45%	62%
4-6	87%	83%	66%	79%
6-8	87%	80%	75%	81%
Total	77%	76%	54%	69%

The protective effect of the pollen screen was thus for ragweed pollen 54 % , for grass pollen 77% and for birch pollen 76 % .

6. Overall assessment

The tested material helps significantly to reduce interior exposure to airborne pollen.

According to the available data, the pollen screen is suitable to protect against intruding pollen from the outside air.

Berlin, June 22nd 2015★

A blue ink signature of Tim Müller, written over the ECARF logo and contact information.

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