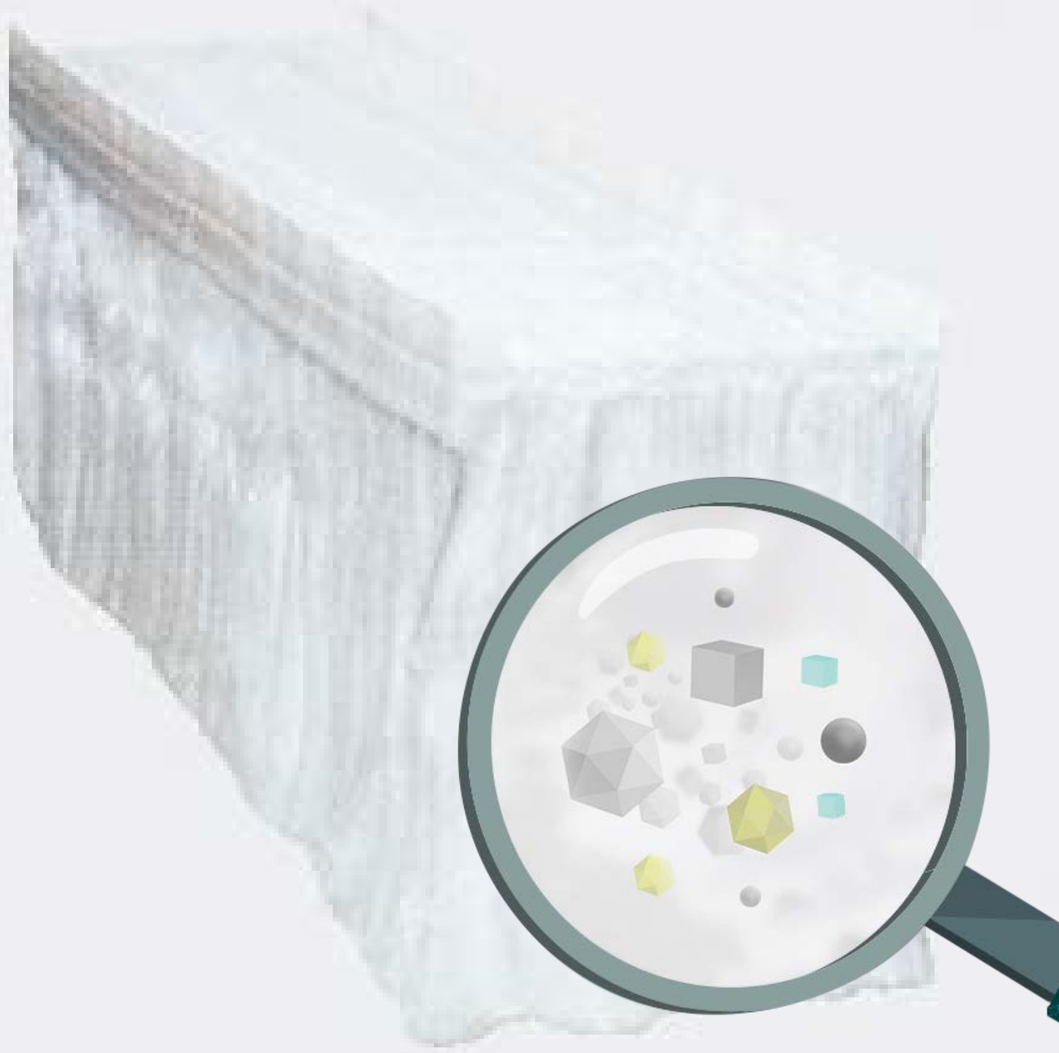
Filter analysis

At Zehnder, we pride ourselves on getting measurable results for our clients – the proof is in the filter. Read on to discover just how effective they are!

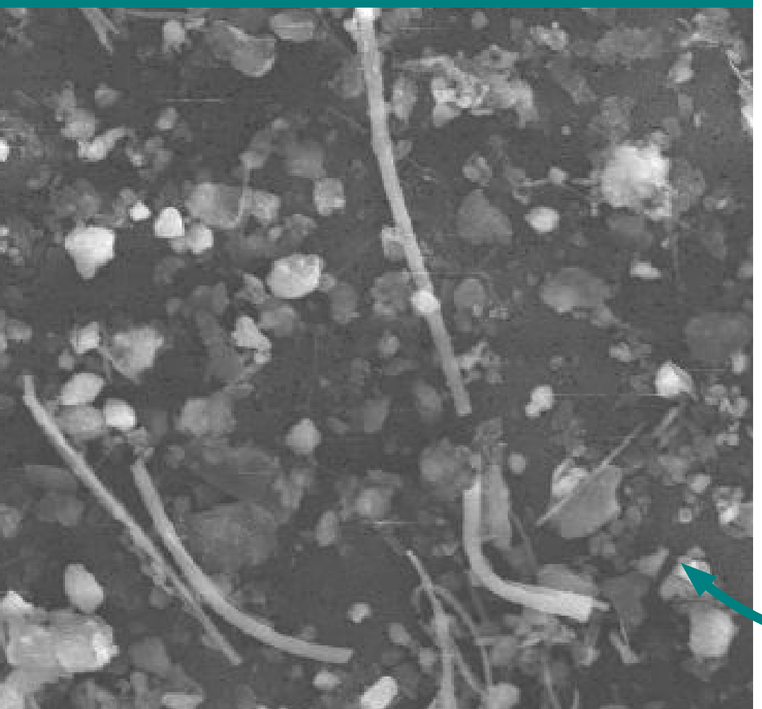
What it is all about

High quality filters, every time

At Zehnder Clean Air Solutions, we regularly run our filters through a rigorous testing and analysis process to ensure that they meet our exact standards. Our approach ensures that our customers can be confident that their employees are breathing clean air. The analysis also reveals some of the most commonly captured types of particles, illustrating that our filters are working as intended.



Precision testing for a precision product



We love seeing positive results for our clients – and we can produce them for you too!

Zehnder's measurement process begins by taking a used filter and sending it to a laboratory. The filter undergoes careful preparation, including an ultrasonic treatment in ethanol. The resulting suspension is then filtered through a gold-coated nucleopore filter and run through a scanning electron microscope.

This intense process provides the values you can see listed in the table on the next page representing the contents of a small extract [~ 1 cm^2] of a single filter. We divide the results between inorganic and organic (naturally occurring) particles as well as fibres, which are bigger than particles. The table offers a breakdown of the frequency at which the particles occur, broken down as numbers of different particles per 100 particles.

Below are the tables for two customers in the food and beverage industry. Both results show: not only industrial processes lead to a high particle load. Also the building itself produces a lot of particles due to wear and tear of building, while much of the other dust is the natural by-product of employees moving around.

In addition to the potentially useful data, this process provides proof that we're catching what customers want us to catch and leaving their air perfectly clean. All of our solutions are designed and configured to exactly respond to our customers' needs.

Particles under electron microscope

Laboratory results

Dust is unavoidable in any industry – it's the art how to catch it effectively.

Type	Amount [%]	Main element	Other elements	Size [µm]	Comment
Anorganic					
	40	Ca, O, C	(Mg, Si, P)	2 - 6	e.g. construction dust
	15	Si, O	(Mg, Ca, Fe, Al, Na, K)	2 - 4	e.g. silicate minerals
	<5	Fe, O		5	e.g. rust
	35	C, O, Si	(Ca, Fe, Al, Mg)	2 - 10	e.g. plastics, paint, rubber
Organic					
	5	C, O		2 - 5	e.g. paper, plastics
Fibres					
	<5	C, O	(Si, Ca)	107	e.g. cellulose

Type	Amount [%]	Main element	Other elements	Size [µm]	Comment
Anorganic					
	20	Si, O	(Al, K, Na, Ca, Fe)	2 - 5	e.g. silicate minerals
	5	Ca, O	(P, Si, Al, Mg, Na, Fe)	2 - 5	e.g. construction dust
	5	Fe, O	(Si, Al)	2 - 3	e.g. rust
	<5	Zn, O	(Cl, Fe, Al, Si)	2	e.g. paint, metal alloy
	<5	Cu, O		2	e.g. metal, paint
	<5	C, O, Ti	(Al, Ca, Fe, Ti, K, Na, Mg)	3	e.g. paint
	65	C, O, Si		2 - 5	e.g. plastics, paint, ash
Organic					
	<5	C, O		140	e.g. textile fibres, cellulose

#startwithcleanair

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