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AIR IS LIFE



HEALTH IS BEAUTY

# Work tables with air-purifying fine dust extraction and activated carbon filter

## for hygienically demanding rooms

Filter systems from Jennyswiss GmbH are specially designed for applications with fine dust and odour development. They combine a highly efficient dust filter module (type 800/101 formerly F8) with activated carbon filters for the adsorption of gaseous pollutants.

### Technical Data

- Tested according to ISO 16890-1
- Filter class: ISO ePM10 65 %
- Separation efficiency: up to 99.94 %
- Permeability: only 0.06 %
- Effective separation: 0.02 mm to 2  $\mu\text{m}$
- Filter area: > 2  $\text{m}^2$
- Volume flow: 400-600  $\text{m}^3/\text{h}$  (device-specific)
- Air exchange rate (125  $\text{m}^3$  room): 3.6 - 5  $\text{h}^{-1}$

**The systems (devices from 2014!) guarantee an indoor air quality below the WHO/BAG (Bundesamt für gesundheit BAG - CH) limit values:**

- PM10 (daily average): < 50  $\mu\text{g}/\text{m}^3$
- Ideal value: < 20  $\mu\text{g}/\text{m}^3$
- VOC and odour reduction through activated carbon filters
- The drive aggregate filters and other technical components meet requirements for energy class, fire, sparking interference signals (CE)

### Fields of application

- Dental technology, orthodontics, cosmetics, nail design
- Airbrush, plaster and plastic processing
- Palaeontology, restoration, laboratory environment and School rooms
- Waiting rooms, public rooms, Care facilities, Treatment rooms (not clean rooms of the highest level)

### Efficient particle filtering

Fungal spores, soot (car exhaust fumes), germs, bacteria, pollen, abrasion, etc.

## Warranty under

- The filter must be regularly maintained and correctly installed (tightness!).
- The air exchange rate and room design must match the concept.
- The systems are designed to meet the expected requirements and guidelines.

## Guidelines & recommendations

- For indoor spaces such as schools, offices, daycare centres, public facilities.  
Target: CO<sub>2</sub> value below 1,000 ppm
- Particulate matter (PM10) should be below 50 µg/m<sup>3</sup> if possible (daily average), ideally below 20 µg/m<sup>3</sup> (annual average).
- Concentrations of pollutants (e.g. particulate matter, solvents) must remain well below the MAK values (maximum workplace concentrations).
- For activities involving fine dust (e.g. dental, nail, plaster), local extraction with filtering is recommended.
- Overview of dust particles and classification ( µm=1/1000mm)
- PM 1: < 1 µm → deeply respirable
- PM 2.5: < 2.5 µm → penetrate the bronchi
- PM 10: < 10 µm → reach the upper respiratory tract
- Fine dust reduction thanks to our filter: separation efficiency: 99.94 %
- Removes PM10 and some PM2.5 particles (up to 0.02 µm)
- Even with permanent outdoor air pollution of e.g. 40 µg/m<sup>3</sup> PM10 (urban value), the residual pollution after filtration remains at:
- $40 \mu\text{g}/\text{m}^3 \times 0.0006 = 0.024 \mu\text{g}/\text{m}^3$  is far below the target value of 20 µg/m<sup>3</sup>!

## Particulate Matter (PM) and Classifications

Source / Substance	Particle Size [ $\mu\text{m}$ ]	PM Classification	Comment
Cigarette smoke	0.01 - 1	PM1	Reaches lungs, toxic
Smoke from heaters (oil/wood)	0.1 - 5	PM2.5	Mix of soot and ash, fine dust
Tire abrasion	0.5 - 5	PM2.5	Contains microplastics & organic substances
Plastic particles (e.g. nail studio)	1 - 10	PM10	Depends on grinding process
Fungal spores	2 - 30	maPM10	Allergenic, biologically active
House dust mites (droppings, fragments)	10 - 40	> PM10	Too large for PM10 category
House dust	2 - 20	PM10	Mixture of fibers, skin, microorganisms
Grinding dust (wood, metal)	1 - 10	PM10	Depends on material
Soot	0.01 - 1	> PM10	Coarse, but allergenic
Pollen	10 - 100	> PM10	Coarse, but allergenic
Sand / Construction site dust	50 - 1000	> PM10	Coarse, visible, not respirable

2.5 micrometers (also written as 2.5  $\mu\text{m}$ ) is 0.0025 millimeters in size.

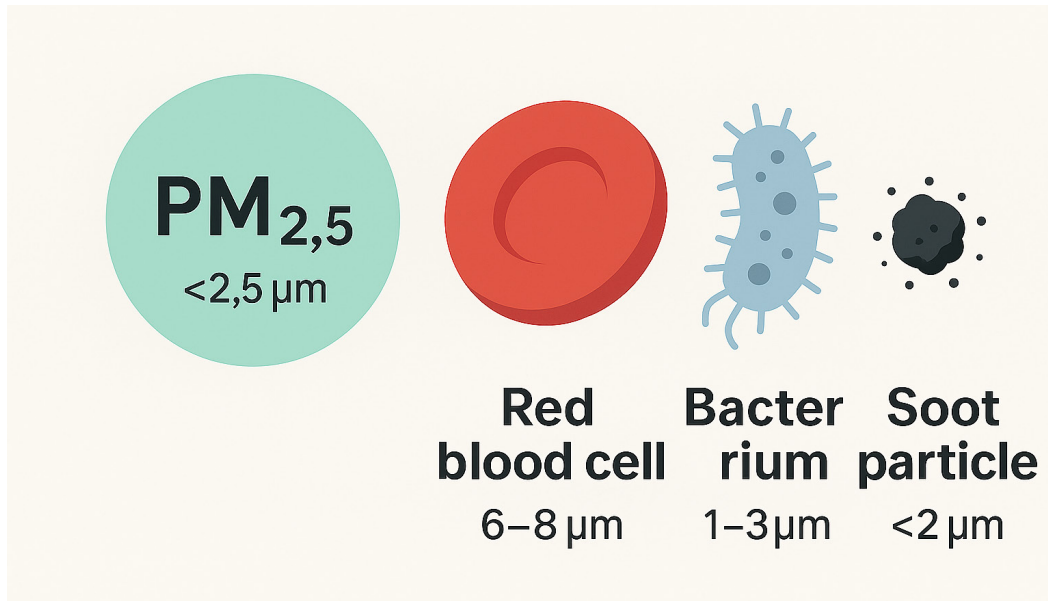
For comparison:

- A human hair has a diameter of about 50 to 100 micrometers.
- That means: PM2.5 is about 20 to 40 times smaller than a hair.
- These particles are so small that they cannot be seen with the naked eye and can penetrate deep into the lungs - in some cases even into the bloodstream.
- This tiny size makes PM2.5 particularly concerning for health.

PM2.5 is so dangerous because:

- It is small enough → penetrates deep into the body
- It is chemically active → damages cells & blood vessels
- It has systemic effects → affects almost all organs

Object	Size (approx.)	Compared to PM2.5
Human hair	70 $\mu\text{m}$	PM2.5 is about 30 times smaller
Fine grains of sand	90-100 $\mu\text{m}$	PM2.5 is about 40 times smaller
Red blood cells	6-8 $\mu\text{m}$	PM2.5 is half the size
Bacteria (e.g., E. coli)	1-3 $\mu\text{m}$	PM2.5 is similar in size
Soot particles	<2 $\mu\text{m}$	PM2.5 is slightly larger



## Air filter - tips on changing the filter and care in the nail salon

The dust filter should be changed approximately every 4 to 5 years, depending on the load.

### Load characteristics include

Location: Rural or urban area - car exhaust fumes and soot put more strain on the filter.

Sanding technique: Sanding materials (e.g. grits, milling cutters, bits) and products such as gel or acrylic place different loads on the filter

With a customer frequency of 3-5 customers per day, the filter should be cleaned about once a week.

Load characteristics are health change symptoms according to the checklist. However, pollutant measuring devices (CO 2 Pm 2.5) for household and semi-professional use can now also be purchased at affordable prices (20 - 200,- euros).

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## Indication that the filter needs to be changed

Reduced suction power. Clean the filter according to the appliance instructions

If the filter has been cleaned and the speed is set to maximum and dust particles are still visible in the air - particularly clearly visible in the light under the work light - it is time to change the filter. Once a new filter has been fitted, the speed can be reduced to 50-70 % again. This ensures less noise/energy consumption.

## Important when changing: Air direction

Place the filter with the marking in the air direction!

**Attention** depending on the device, the air direction is from top to bottom or from bottom to top

The filter is designed for 'mechanical' absorption of dust particles. !

It has no influence on CO<sub>2</sub>, gases, odours and the like!

In order to reduce the CO<sub>2</sub> load in rooms, for example, the operator is responsible for ensuring a sufficient supply of fresh air.

## VOC Compounds and Characteristics (Volatile Organic Compounds)

Compound	Occurrence / Source	Comment
Acetone	Nail polish remover, acrylic processing	Irritating, quickly evaporating
Isopropanol (IPA)	Cleaning agents, disinfection	Mildly irritating, frequently used
Toluene	Paints, varnishes, adhesives	Neurotoxic, volatile
Xylene	Solvents, paints	Similar to toluene, irritating
Ethyl acetate	Nail products, printing inks	Fruity smell, irritating
Benzene	Industrial products (also found in consumer goods)	"Carcinogenic", critical
Styrene	Plastics, polystyrene, acrylic resins	Irritating, potentially carcinogenic
Formaldehyde	Furniture, paints, synthetic resins	"Carcinogenic", strictly regulated
Hexane, Heptane	Adhesives, solvents	Narcotic effect
Terpenes (e.g., limonene)	Fragrances, cleaning agents	Natural, but can oxidize into irritants

Contaminated air due to hydrocarbon compounds Gases Odours

can only be reduced with and activated carbon and ventilation.

Long-term exposure to VOCs can lead to irritation of the respiratory tract, skin and mucous membranes, as well as nerve, liver and kidney damage. Some VOCs are also considered carcinogenic or can impair the immune system and fertility.

## The following short checklist may indicate VOCs

Do the symptoms subside after leaving the room?

Or disappear completely, e.g. on holiday or after a longer break,

A check/measurement of the work area for VOCs is therefore essential.

If the values are not acceptable, it is necessary to install appropriate measures such as activated carbon and ventilation.

Our sense of smell alone is often an early and reliable indicator of VOC exposure. Many substances have a very distinctive, often pungent or 'chemical' odour!

### Checklist – Acute Symptoms from VOC Exposure

Symptom	Occurred today?	Frequency / Comment (e.g., time, trigger)
Headache	<input type="radio"/> Yes	<input type="radio"/> Once <input type="radio"/> Often
Dizziness / Lightheadedness	<input type="radio"/> Yes	<input type="radio"/> Once <input type="radio"/> Often
Burning / Watery eyes	<input type="radio"/> Yes	<input type="radio"/> Once <input type="radio"/> Often
Irritation of nose or throat	<input type="radio"/> Yes	<input type="radio"/> Once <input type="radio"/> Often
Dry cough	<input type="radio"/> Yes	<input type="radio"/> Once <input type="radio"/> Often
Nausea	<input type="radio"/> Yes	<input type="radio"/> Once <input type="radio"/> Often
Burning / Dry skin	<input type="radio"/> Yes	<input type="radio"/> Once <input type="radio"/> Often
Fatigue or concentration problems	<input type="radio"/> Yes	<input type="radio"/> Once <input type="radio"/> Often
Smelled solvents	<input type="radio"/> Yes	<input type="radio"/> Once <input type="radio"/> Often
Do symptoms disappear after leaving the room?	<input type="radio"/> Yes	<input type="radio"/> No

We have new ventilation  
with dust filter

