



# Range of Products

Filter Systems and Accessories



## KFS – the little one with the big performance

- very compact and integrable into machinery equipment
- high quality suction fan for continuous operation
- automatic filter monitoring via differential pressure
- suitable for 19" rack mounting



Extraction unit	A	B	C	D
KFS	30-80	230/50-60	100	250x250x400

A Air Volume max. (m³/h)      C Engine power (W)  
B Power Input (kW)              D Dimensions (mm)

### Applications:

- Small welding and marking lasers
- Soldering fumes
- Adhesive vapours





## KKF – compact and versatile

- High filter capacity through multistage filter combinations.
- Different fans installable, depending on the application.
- KKF can be dismantled without tools for transportation.



Extraction unit	A	B	C	D	E	F	G	H
<b>KKF</b>	30–320	6300–21000	230/50–60	0,45–1,20	58–67	380x380x625	ca. 30	LED

A Air Volume max. (m³/h)  
B Vacuum max. (Pa)  
C Supply Voltage (V/Hz)

D Power Input (kW)  
E Sound Pressure Level 1m (dBA)  
F Dimensions (mm)

G Weight w/o Filters (kg)  
H Control Board (LED/Display)

### Applications:

- Small marking lasers with little emissions
- Small welding applications
- Soldering fumes/ SMD production
- Solvents/adhesive vapours



TKFD – comparable performance as the MKF but even more compact

- High filter capacity through integrated preliminary separator.
- Ideal in confined spaces - installable under work tops or integratable in machines.



Extraction unit	A	B	C	D	E	F	G	H
<b>TKFD</b>	30–335	6300–21000	230/50–60	0,45–1,20	56–67	490x380x620	ca. 30	LED/Display

#### Applications:

- Marking lasers
- Small welding applications
- Small laser trimming (foils, synthetic material)
- Soldering fumes/ SMD production
- Fine particles/fumes
- Solvents/adhesive vapours

A Air Volume max. (m³/h)  
B Vacuum max. (Pa)  
C Supply Voltage (V/Hz)

D Power Input (kW)  
E Sound Pressure Level 1m (dBA)  
F Dimensions (mm)

G Weight w/o Filters (kg)  
H Control Board (LED/Display)





## MKF – the classic filter unit from the Fuchs Umwelttechnik range

- Compact and versatile.
- High filter capacity through multistage filter combinations.
- Different fans installable, depending on the application.
- MKF can be dismantled without tools for transportation.



Extraction unit	A	B	C	D	E	F	G	H
<b>MKF</b>	30–625	3600–21000	230/50–60	0,40–1,30	57–67	660x380x825	ca. 32	LED/Display

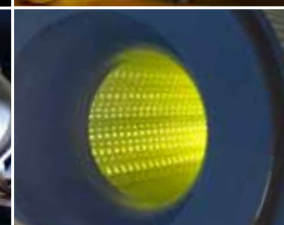
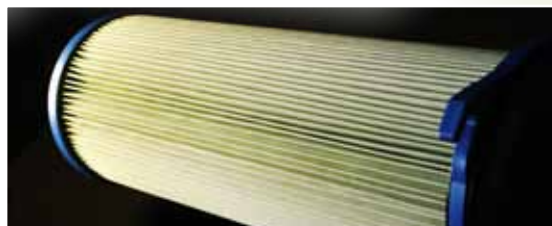
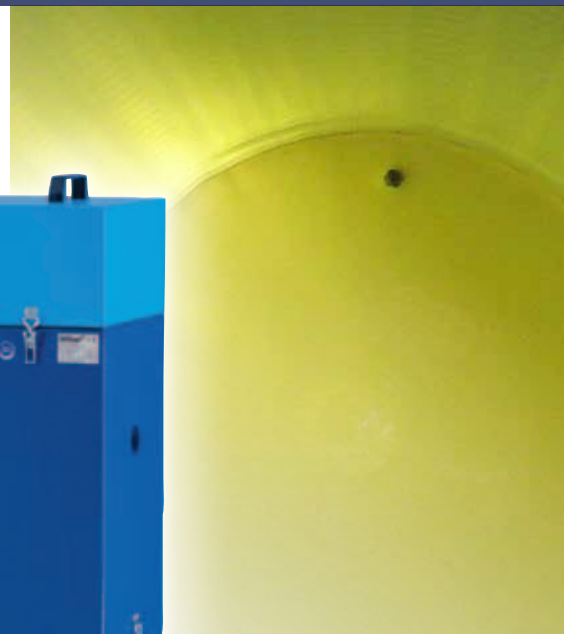
### Applications:

- Marking lasers
- Welding/Cutting applications
- Soldering fumes/multi-ple workplaces
- Fine particles/fumes
- Solvent vapours

A Air Volume max. (m³/h)  
B Vacuum max. (Pa)  
C Supply Voltage (V/Hz)

D Power Input (kW)  
E Sound Pressure Level 1m (dBA)  
F Dimensions (mm)

G Weight w/o Filters (kg)  
H Control Board (LED/Display)



## TKFVA – preliminary separator in a compact size

- For the preliminary separation of large dust volumes.
- Extremely compact.
- High filter capacity, additional capacity rapidly implementable if required.
- Special clamping system optimises seal tightness.
- Operator and maintenance friendly

Extraction unit	A	B	C	D	E	F	H
TKFVA103	280	7700	230/50–60	0,55	62	750x400x1205	LED
TKFVA108	200	21000	230/50–60	0,95	62	750x400x1205	LED

A Air Volume max. (m³/h)  
B Vacuum max. (Pa)  
C Supply Voltage (V/Hz)

D Power Input (kW)  
E Sound Pressure Level 1m (dBA)  
F Dimensions (mm)

G Weight w/o Filters (kg)  
H Control Board (LED/Display)

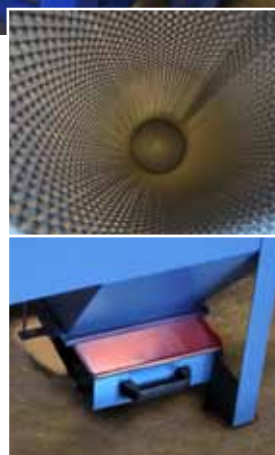
### Applications:

- Small welding, cutting and marking lasers
- for dry fumes from metal processing



## MKFVA – no dust, no fumes – the midsize preliminary separator

- For the preliminary separation of large dust volumes.
- Compact dimensions.
- High filter capacity, additional capacity easily implementable if required.
- Special clamping system optimises seal tightness.
- Operator and maintenance friendly



Extraction unit	A	B	C	D	E	F	H
<b>MKFVA102</b>	415	11000	230/50-60	1,30	65	700x660x1450	LED
<b>MKFVA103</b>	320	12500	230/50-60	1,20	64	700x660x1450	LED
<b>MKFVA08</b>	450					660x550x1560	Display
<b>MKFVA10/11</b>	450					660x550x1560	Display

A Air Volume max. (m³/h)  
B Vacuum max. (Pa)  
C Supply Voltage (V/Hz)

D Power Input (kW)  
E Sound Pressure Level 1m (dBA)  
F Dimensions (mm)

G Weight w/o Filters (kg)  
H Control Board (LED/Display)

### Applications:

- Welding lasers
- Cutting lasers
- Central extraction



## INR – the large filter capacity is achieved by a multistage filter combination

- With integrated preliminary separator.
- Also designed to handle oil or emulsion mist.
- Different fans are possible depending on the application.
- INR can be easily installed anywhere since the filtered air remains in the room – this dispenses with installation of waste air ducts, minimises costs and increases health safety and environmental protection.
- INR can be dismantled without tools for transportation.



Extraction unit	A	B	C	D	E	F	H
<b>INRTW270</b>	100–320	12500	230/50–60	1,20	59	680x590x970	Display
<b>INRTW540</b>	100–640	12500	230/50–60	2,40	65	680x590x970	Display
<b>INRM0810</b>	810	2200	400V/50	0,55	58	680x590x970	Display
<div> <div>A Air Volume max. (m³/h)</div> <div>B Vacuum max. (Pa)</div> <div>C Supply Voltage (V/Hz)</div> <div>D Power Input (kW)</div> <div>E Sound Pressure Level 1m (dBA)</div> <div>F Dimensions (mm)</div> <div>G Weight w/o Filters (kg)</div> <div>H Control Board (LED/Display)</div> </div>							

### Applications:

- Marking and engraving lasers
- Cutting and welding lasers
- Soldering and welding fumes
- Fine particles/fumes
- Solvents and adhesive vapours
- Oil mist, emulsion mist





## IF – for 1, 2 or more extraction points

- Very low noise.
- Suitable for one or several extraction points.
- Different fans are possible depending on the application.
- The very large filter capacity is achieved by a multistage filter combination.
- Range of different air flow rates.
- The filtered air can be recirculated in the room – this dispenses with installation of waste air ducts, minimises costs and increases health safety and environmental protection.
- Ideal for the rapid equipping of existing workplaces.



### Applications:

- Marking and engraving lasers
- Cutting and welding lasers
- Soldering and welding fumes
- Fine particles and fumes
- Solvents and adhesive vapours
- Oil mist, emulsion mist

Extraction unit	A	B	C	D	E	F	G	H
<b>IF 1</b>	1450	2230	400/50	1,10	65	950x670x1450	120	Display
<b>IF 2</b>	1700	2910	400/50	1,50	68	950x670x1450	125	Display
<b>IF 3</b>	2200	3000	400/50	1,50	70	950x670x1450	130	Display

A Air Volume max. (m³/h)  
B Vacuum max. (Pa)  
C Supply Voltage (V/Hz)

D Power Input (kW)  
E Sound Pressure Level 1m (dBA)  
F Dimensions (mm)

G Weight w/o Filters (kg)  
H Control Board (LED/Display)

## INR20 – for mobile or stationary applications

- Very low noise.
- With integrated preliminary separation system.
- Also designed to handle oil or emulsion mist.
- Different air flow rates.
- Very high quality standard, not only for sporadic applications but also for continuous duty.
- The filtered air can be recirculated in the room – this dispenses with installation of waste air ducts, minimises costs and increases health safety and environmental protection.
- Highly suitable for one or several extraction points.

### Applications:

- Marking and engraving lasers
- Cutting and welding lasers
- Soldering and welding fumes
- Fine particles; fumes
- Solvents and adhesive vapours
- Oil mist, emulsion mist



Extraction unit	A	B	C	D	E	F	G	H
INR20260	100–320	12500	230/50–60	1,20	58	660x670x2100	120	Display
INR20810	810	2200	400/50	0,55	58	660x670x2100	135	Display
INR20540	540	14000	400/50	2,60	62	660x670x2100	130	Display
INR22200	2220	3000	400/50	1,50	68	660x670x2100	145	Display
INR21700	1700	2910	400/50	1,10	58	660x670x2100	138	Display
INR21380	100–1500	5000	400/50	2,20	70	660x670x2100	142	Display
INR20690	100–1000	5100	400/50	1,10	62	660x670x2100	135	Display
INR20520	100–640	12500	230/50–60	2,40	60	660x670x2100	126	Display
INR20830	100–830	11000	230/50–60	2,60	62	660x670x2100	126	Display

A Air Volume max. (m³/h)	D Power Input (kW)	G Weight w/o Filters (kg)
B Vacuum max. (Pa)	E Sound Pressure Level 1m (dBA)	H Control Board (LED/Display)
C Supply Voltage (V/Hz)	F Dimensions (mm)	



## INRVA – the XL-size preliminary separator

- For the preliminary separation of extra large dust volumes.
- Compact dimensions.
- High filter capacity, additional capacity easily implementable if required.
- Special clamping system optimises seal tightness.
- Operator and maintenance friendly



Extraction unit	A	B	C	D	E	F	H
<b>INRVA05</b>	1680	16000	400V/50 oder 230/50-60	1,2 - 4,0	67	900x660x2220	Display
<b>INRVA10</b>	2500	12500	400V/50 oder 230/50-60	1,2 - 7,5	70	1200x660x2500	Display
A Air Volume max. (m³/h)			D Power Input (kW)			G Weight w/o Filters (kg)	
B Vacuum max. (Pa)			E Sound Pressure Level 1m (dBA)			H Control Board (LED/Display)	
C Supply Voltage (V/Hz)			F Dimensions (mm)				

### Applications:

- Dust separation
- Cutting and welding lasers
- Welding fumes

## IFVA – the big XXL-size preliminary separator

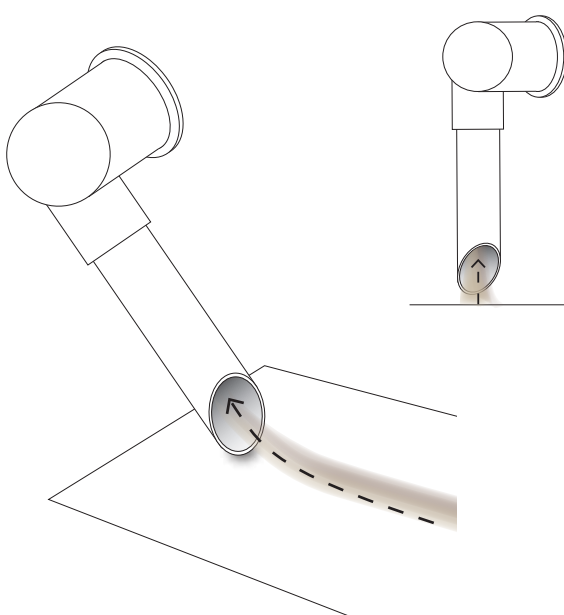
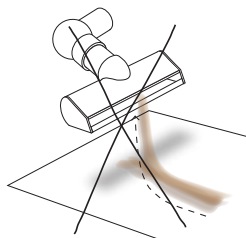
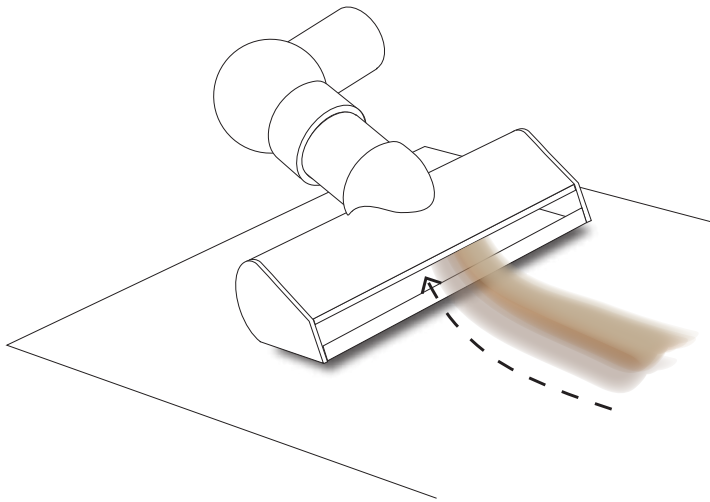
- For the preliminary separation of very large dust volumes.
- High efficiency despite compact dimensions.
- High filter capacity, easy to expand with additional capacity.
- Special clamping system optimises seal tightness.
- Operator and maintenance friendly



### Applications:

- Dust separation
- Cutting and welding lasers
- Welding fumes

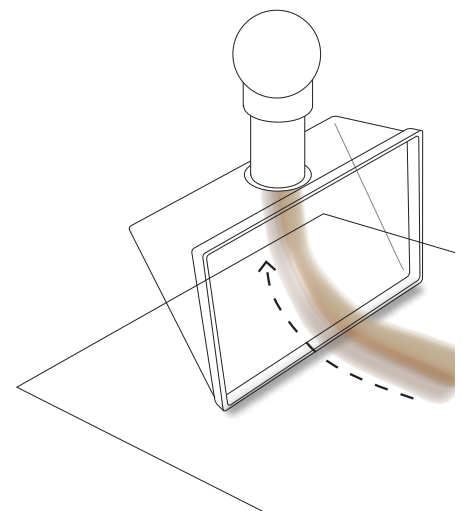
Extraction unit	A	B	C	D	E	F	H
<b>IFVA</b>	2800	8600	400V/50 oder 230/50-60	2,2 - 5,0	69	1480x950x3900	Display
<div> A Air Volume max. (m³/h)  B Vacuum max. (Pa)  C Supply Voltage (V/Hz) </div> <div> D Power Input (kW)  E Sound Pressure Level 1m (dBA)  F Dimensions (mm) </div> <div> G Weight w/o Filters (kg)  H Control Board (LED/Display) </div>							



## The Coanda Effekt

When the extractor opening is positioned close to a flat surface, it has a limited capacity to extract excess room air that is unsoiled by fumes or vapor. As a result, a vacuum builds up between the surface and the extracted air. This is why the air tries to "adhere" to the surface. This is a type of ejector effect which is called the Coanda or adhesion effect. The distance between the place where soiling takes place and the extraction shield can be lengthened by utilizing this effect.

The extractor tip must be positioned as close to the surface as possible.





## Effective extraction needs suitable collection

- precisely accurate, central, wide or as extraction cabinet
- sophisticated aero dynamics and optimal flow combined with simulation software are essential for developing perfect collection systems
- extraction nozzles, extraction unit and extraction power need to be harmonized



MKF SD15



MKF SD35



MKF SD 20

# Extraction Accessories

MKF AB

MKF SD10



MKF MH 300

MKF TK

MKF TR

MKF AH

AS AH

Extraction arm  
diam. 50 or 75 for  
wall mounting

MKF RD

Transparent pipe  
with slid MKF ARR



MKF APL1

## REGULATIONS, RULES AND MEASURES

### The Hazardous Substances Ordinance (GefStoffV), basic legislative framework

#### **Duty to investigate**

According to section 16, the employer must perform investigations to ascertain if hazardous substances are present in the workplace. Welding fumes, soldering fumes and fumes arising from laser use must always be considered to be hazardous, the same applying to solvent vapours and vapours released by plastics.

#### **General duty of protection**

The "general duty of protection" referred to in section 17 is the legal duty of the employer to take the necessary measures to meet currently valid health and safety regulations in the workplace.

#### **Duty to monitor**

There is no completely reliable way of preventing the release of one or more hazardous substances into the air at the workplace when welding, cutting and related procedures are being performed; this also applies to laser emissions, solder fumes and solvent vapours.

Section 18 "Duty to monitor" requires the employer to determine whether concentrations are below the MAK (maximum workplace concentration) or the TRK (technical guide concentration) or whether the trigger threshold has been exceeded.

#### **Priority of safety measures**

Section 19 "Priority of safety measures", after taking into account the state of the art for the measures to reduce or eliminate hazards, gives the following priorities:

- Work-process design to prevent the release of hazardous substances
- Detection of hazardous substances in the areas where they arise
- Ventilation measures
- Personal safety equipment

### Regulations relating to recycled air

#### **General requirements**

Section 4 Ventilation equipment, par. 2 of UVV VBG 15 states: Extracted air may only be returned to work and traffic areas after adequate removal of substances that are hazardous to health. According to the instructions that specify how this requirement is to be implemented, "adequate removal" is defined to be a concentration that does not exceed 1/4 of the MAK.

#### **Recycled air in relation to carcinogens and other emissions**

If welding fumes contain carcinogenic components, say, nickel compounds or chromates, and it is not possible to release exhaust air directly into the open air for operational reasons, the requirements stated in TRGS 560 "Technical regulations relating

to hazardous substances – recycled air containing carcinogens" must be fully complied with. Consequently, the concentration of hazardous substances in the recycled, cleaned air shall not exceed a tenth of the TRK.

#### **Tips on implementation**

Operators can use both mobile dust removers and systems under central control to comply with regulations.

Only a regime of regular checks can ensure that extraction systems for hazardous substances are operating effectively in the long term. Factory legislation stipulates annual inspection by an authorised inspector which must be documented in a log book. The legislative basis for the approval authority for waste air extraction

## German federal immissions legislation

### Technical Instructions on Air Quality Control (TA-Luft)

According to section 22 "Duties of the operators of systems which do not require approval" in the Federal Immissions Law, harmful environmental effects which can be avoided by state-of-the-art measures must be prevented and if they cannot be eliminated, they must be minimised as far as possible.

The technical instructions on air quality (TA-Luft) can be used to determine the state of the art. In this context, the main requirements of TA-Luft are:

#### Total dust

Emissions in the form of dust in waste gas shall not exceed a concentration of 0.05 g/m<sup>3</sup>

- at a mass flow rate greater than 500 g/h nor a concentration of 0.15 g/m<sup>3</sup>
- at a mass flow rate less than or equal to 500 g/h.

#### Inorganic substances in dust form

The inorganic substances in dust form referred to below shall in total not exceed the following waste air concentrations by mass even if several substances from the same class or classes II and III are present:

##### Class II:

Cobalt and its compounds, indicated by "Co", nickel and its com-

pounds, indicated by "Ni", at a

- mass flow rate of 5 g/h or more than 0.001 g/m<sup>3</sup>

##### Class III:

Chromium and its compounds, indicated by "Cr", at a

- mass flow rate of 25 g/h or more than 0.005 g/m<sup>3</sup>

### Hazard assessment

Technical directive on hazardous substances (TRGS)

If it is not possible to guarantee the absence of hazardous substances at MAK or TRK levels in the workplace, then, according to TRGS 402 "Determination and assessment of concentrations of hazardous substances in the air at the workplace", the concentration of the hazardous substances must be determined and assessed. This is done by means of workplace analyses and, if necessary, by control measurements.

Data on the time and space distribution of the hazardous substances is used to determine whether the limits have been met. This information is derived from measurements in the workplace or from reliable calculations. The following can be used to obtain this information:

- Results already obtained from one's own measurements or empirical data from third parties
- Measurement results obtained from comparable systems or activities
- Reliable calculations

## Terminology

### MAK value

(maximum workplace concentration)

The purpose of MAK values is to safeguard the health of workers at the workplace. They are defined as the maximum permissible concentration of a substance (gas, vapour or suspension) that will not lead to health impairments in the long-term.

### TRK value

(technical guide concentration)

The Committee on Hazardous Substances instituted by the Federal Ministry for Employment and Social Security specifies TRK values for carcinogens and suspected carcinogens for which no MAK value exists. The risk of impairments to health is reduced by observing TRK-values, but does not mean that no health risk exists. MAK and TRK values are listed in TRGS 900 and are re-issued annually. MAK and TRK values are referred to as "air limits".

### Trigger threshold

The trigger threshold is exceeded, if it cannot be demonstrated that the air limit is met. In the case of split air limits, the lower value applies, if special stipulations have not been made (TRGS 101). If the trigger threshold has been exceeded, additional

measures must be taken to safeguard health, e.g. medical examination at the workplace (GefStoffV and UVV VBG 100).).

### Extracting hazardous substances directly at the point of origin and efficiently filtering them with our compact filter devices.

As our extraction systems are precisely tailored to requirements, effective hazardous substance removal is possible

Technical and economic advantages:

- Smaller pipe diameters and short pipe lengths mean minimal installation costs
- Compact ventilators and filter technology
- Detection elements can be individually configured and are easy to handle
- Hazardous substances are eliminated well before they can be inhaled by the user.
- Great acceptance by users ensures a high level of effectiveness
- Minimal costs resulting from reduced intake of fresh air (reduction in heating costs)

## FILTER TECHNOLOGY FOR LASER EMISSIONS – TESTED BY THE HANNOVER LASER CENTRE

**T**he company Fuchs Umwelttechnik GmbH has set itself the task of continuously investing in the further development of extraction and filter technology. This means that our filtering equipment is constantly being further developed and improved in all areas. It also means that filtering equipment which has been further developed must be put to the test again and again in order to ensure that it fulfils the legally stipulated safety and quality requirements. These are the criteria we set ourselves!

For this reason, Fuchs Umwelttechnik has its equipment regularly tested by the Hannover Laser Centre. These series of tests are designed to show how high the separation power of Fuchs Umwelttechnik filtering equipment is. After all, this separation power, specific to the filtering equipment, is the guarantee that the filtering equipment is safe to use in all situations specified.

The filtering equipment and high-quality filter technology must suit each other. This means that the filters inserted into the equipment must fit precisely and sit tightly in the housing to prevent leakages. If this is not the case, the result can be disastrous: the pollut-

ants, which should actually be filtered out, will leak out into the exhaust air. This is very dangerous because the pollutant danger is concealed. In such cases, however, the service life of the filters used is very high – considerably higher than in “leak-proof” filter/housing combinations. A false saving!

The following summary shows the separation power of Fuchs Umwelttechnik filtering equipment.

The laser was chosen as the emission source because the emissions caused by inscription, welding or cutting lasers, for example, are composed of very fine particles and gases.

Plastic foils and chrome nickel metal were treated by the laser. The resulting emissions were extracted and filtered by our equipment.

All the tests are practice-oriented, i.e. inscribing, removing and cutting were the methods used. In the following pages, you can learn about the impressive results of these tests.

### 1. Inscribing acrylate foil by laser beam

Filter MKF 103 in combination with pre-separation system MKFVA 10

#### Summary of the results

The tests conducted to determine the features of the emissions caused by inscribing acrylate foil material by means of laser beams show a wide range of different emission components. Apart from the numerous substances with different chemical and physical features, the fineness of the resulting particle emissions places heavy demands on the filter technology.

**The filter MKF 103 / MKFVA 10 from Fuchs Umwelttechnik GmbH was used to separate the emissions caused when acrylate foil is inscribed by laser. The filtration efficiency**

**achieved by this filter on the acrylate foil not only meets all statutory requirements and limits but also exceeds them by a considerable margin.**

The tests on the loss of pressure caused when high particle elements are separated, show that the filter elements used achieve a high separation power. However, the strongly adhesive features of the particle emissions caused by the laser treatment of plastic materials, in combination with the fine-grained nature of the particles, lead to a constant, almost linear rise in the loss of pressure.

The separation of gaseous compounds, possessing different chemical and physical features, places heavy demands on the adsorption processes.

**The tests on the adsorption behaviour of a model substance show how suitable the activated carbon filter elements from Fuchs Umwelttechnik GmbH are in efficiently cleaning gaseous emissions caused by the laser treatment of**

## Evaluation of the results

The results of the analysis of the emissions caused when acrylate foils are inscribed by laser show that different hydrocarbon compounds are formed. Particle-shaped components (aerosols) represent the main proportion of the emissions. They account for 89.44% of the total emission released (mass difference of treated and untreated material).

In regard to inscribing acrylate foils by laser, a maximum emission source strength was tested using the laser parameters selected.

The microscopic examinations of the particle emissions show that the particles have a distinct tendency to agglomerate. The average aerodynamical particle diameter is 0.22 µm; the inhalable fraction is therefore 80.99%.

**plastic materials.** Even at high pressure (approx. 8200 mg MMA/m<sup>3</sup>) and high flow speeds (>8m/s), **a separation or adsorption of >99.99% is achieved until such time as the breakthrough phase is reached.** In the case of the model substance under examination (MMA), the breakthrough phase starts when the load rate reaches approx. 58% (in relation to the saturation loading) or approx. 192 mg MMA/g activated carbon.

**The particle separation power for emissions caused by inscribing acrylate foil by laser is  $\eta = 100\%$ .**

**This applies to all particle size fractions examined.**

The separation power for odorous substance emissions is 97%. The strength of the total emission source during the laser inscription test represents relatively low pressure for the filter system used. In test phase 2, model exhaust air currents are used in order to determine the criteria for the filter service life and the separation power when the particle pressure is high.

When evaluating the results obtained, it should be borne in mind that these apply exclusively to the foil material examined using the given process parameters.

## 2. Laser beam treatment of Cr/Ni steel material

### Summary of the results

The test to determine the efficiency of the filter MKF 103 / MKFVA 10 from Fuchs Umwelttechnik GmbH is carried out using a laser beam cutting process. For this purpose, Cr/Ni steel plates with a material strength of 5 mm are treated with a CO<sub>2</sub> laser at an average power of 3 kW and a feed speed of 0.48 m/min.

**The test shows that the filter separates a total of 99.72% of the particle emissions.**

The distribution of raw gas particles during the cutting process examined possesses 2 maxima between the fractions 0.06 – 0.13 µm and 5.7 – 11.3 µm. Because of the cutting power of the filter, there is only one maximum between the fraction 0.021 – 0.042 µm during the distribution of pure gas particles.

For the fine grain fraction <0.021 µm, the filter separates 90.42% of the particle emissions examined. The separation rate of all fractions > 0.042 µm is higher than 98 %, for the particle fractions > 0.18 µm it is higher than 99.99%.

The REM pictures used to test the consistency and morphology of the particle emissions show that the particles have a slight tendency to agglomerate or stick together. A tendency towards the creation of a stable filter sludge is to be observed. This is caused by the relatively high proportion of very fine particles.

*Please ask for the complete report of the Hannover Laser Centre. We will be pleased to send it to you.*

## FILTRATION EFFICIENCY FOR SMOKE AND FINE DUST

<b>Particle filtration efficiency</b>	Suspended matter filter
<b>Category</b>	Class S → H14 in compliance with new DIN EN1822
<b>Filtration efficiency</b>	99.995% as per DIN EN1822 (99.999% as per previous DIN 24184)
<b>Particle size distribution</b>	0.021 – 0.3 µm
<b>Types of pollutant Filters</b>	fungi, spores, toxic fumes and dust
<b>Occupational TLV</b> (occupational threshold limit value) as prescribed by law	Exceeds less than 5% of permissible value
<b>Quality certificates for Fuchs Umwelttechnik suspended matter filter</b>	Laserzentrum (Laser Centre) Hannover examination report, BIA test certificate, test report by Werkarztzentrum Westfalen Mitte (Central Westphalia Factory Clinic). Detailed report is available on request

## Filter classification according to DIN EN 779 new and DIN 24 185 old (prefilters)

new Filter classification	old Filter classification	Filtration efficiency in %
<b>G1</b>	EU1	< 65
<b>G2</b>	EU2	65 – 80
<b>G3</b>	EU3	80 – 90
<b>G4</b>	EU4	90 – 95
<b>F5</b>	EU5	96 – 98
<b>F6</b>	EU6	97 – 98
<b>F7</b>	EU7	98 – 99
<b>F8</b>	EU8	98,5 – 99
<b>F9</b>	EU9	99 – 99,5

## Classification for suspended matters filters according to DIN EN 1822 and DIN 24 184 old

new Filter classification	Filtration efficiency new (%)	old Filter classification	Filtration efficiency old (%)
<b>H 10</b>	≥ 85	Q	≥ 85
<b>H 11</b>	≥ 95	R	≥ 98
<b>H 12</b>	≥ 99,5	S	≥ 99,97
<b>H 13</b>	≥ 99,95	S	≥ 99,997
<b>H 14</b>	≥ 99,995	S	≥ 99,999
<b>U 15</b>	≥ 99,9995		
<b>U 16</b>	≥ 99,99995		
<b>U 17</b>	≥ 99,999995		

Bescheinigung  
Nr. IFA 1005054  
vom 16.11.2010



Institut für Arbeitsschutz der  
Deutschen Gesetzlichen Unfallversicherung  
Prüf- und Zertifizierungsstelle im DGUV Test

## DGUV Test Prüfbescheinigung

Name und Anschrift des  
Bescheinigungsinhabers:  
(Auftraggeber) Fuchs Umwelttechnik  
Produktions- und Vertriebs-GmbH  
Gassenäcker 15  
D-89195 Steinberg

Name und Anschrift des  
Herstellers: Fuchs Umwelttechnik  
Produktions- und Vertriebs-GmbH  
Gassenäcker 15  
D-89195 Steinberg

Produktbezeichnung: Mobiles Schweißrauchabsauggerät

Typ: MKF 103

Bestimmungsgemäße  
Verwendung: Abscheidung von Schweißrauch  
Schweißrauchabscheideklasse „W3“

Prüfgrundlage: DIN EN ISO 15012-1 (2005)

Zugehöriger Prüfbericht: 201021110/1140 vom 16.11.2010, IFA – Sankt Augustin

Bemerkungen/  
Zeichenzusatz: Der an dem umseitig abgebildeten DGUV Test-Zeichen aufzuführende  
Hinweis lautet:  
Gefahrstoffgeprüft  
Schweißrauchabscheideklasse „W3“

Das geprüfte Baumuster entspricht der oben angegebenen Prüfgrundlage. Der Bescheinigungsinhaber ist berechtigt, das umseitig abgebildete DGUV Test-Zeichen an den mit dem geprüften Baumuster übereinstimmenden Produkten anzubringen, sofern zutreffend mit dem oben genannten Zeichenzusatz.

Diese Bescheinigung einschließlich der Berechtigung zur Anbringung des DGUV Test-Zeichens ist gültig bis: 15.11.2015

Weiteres über die Gültigkeit, eine Gültigkeitsverlängerung und andere Bedingungen regelt die Prüf- und Zertifizierungsordnung vom September 2010.

Leiter der Prüf- und Zertifizierungsstelle  
(Dr. Peter Paszkiewicz)

Fachzertifizierer  
(Dipl.-Ing. Arno Goebel)

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P2308  
08.10



Institut für Arbeitsschutz der  
Deutschen Gesetzlichen Unfallversicherung  
Prüf- und Zertifizierungsstelle im DGUV Test

Bescheinigung  
Nr. IFA 1005055  
vom 16.11.2010

## DGUV Test Prüfbescheinigung

Name und Anschrift des  
Bescheinigungsinhabers:  
(Auftraggeber) Fuchs Umwelttechnik  
Produktions- und Vertriebs-GmbH  
Gassenäcker 15  
D-89195 Steinberg

Name und Anschrift des  
Herstellers: Fuchs Umwelttechnik  
Produktions- und Vertriebs-GmbH  
Gassenäcker 15  
D-89195 Steinberg

Produktbezeichnung: Mobiles Schweißrauchabsauggerät

Typ: KKF 102

Bestimmungsgemäße  
Verwendung: Abscheidung von Schweißrauch  
Schweißrauchabscheideklasse „W3“

Prüfgrundlage: DIN EN ISO 15012-1 (2005)

Zugehöriger Prüfbericht: 201023788/1140 vom 16.11.2010, IFA – Sankt Augustin

Bemerkungen/  
Zeichenzusatz: Der an dem umseitig abgebildeten DGUV Test-Zeichen aufzuführende  
Hinweis lautet:  
Gefahrstoffgeprüft  
Schweißrauchabscheideklasse „W3“

Das geprüfte Baumuster entspricht der oben angegebenen Prüfgrundlage. Der Bescheinigungsinhaber ist berechtigt, das umseitig abgebildete DGUV Test-Zeichen an den mit dem geprüften Baumuster übereinstimmenden Produkten anzubringen, sofern zutreffend mit dem oben genannten Zeichenzusatz.

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Leiter der Prüf- und Zertifizierungsstelle  
(Dr. Peter Paszkiewicz)

Fachzertifizierer  
(Dipl.-Ing. Arno Goebel)

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08.10

Bescheinigung  
Nr. IFA 1005056  
vom 16.11.2010

**IFA**  
Institut für Arbeitsschutz der  
Deutschen Gesetzlichen Unfallversicherung  
Prüf- und Zertifizierungsstelle im DGUV Test

## DGUV Test Prüfbescheinigung

Name und Anschrift des  
Bescheinigungsinhabers:  
(Auftraggeber) Fuchs Umwelttechnik  
Produktions- und Vertriebs-GmbH  
Gassenäcker 15  
D-89195 Steinberg

Name und Anschrift des  
Herstellers: Fuchs Umwelttechnik  
Produktions- und Vertriebs-GmbH  
Gassenäcker 15  
D-89195 Steinberg

Produktbezeichnung: Mobiles Schweißrauchabsauggerät

Typ: TKFD 103

Bestimmungsgemäße  
Verwendung: Abscheidung von Schweißrauch  
Schweißrauchabscheideklasse „W3“

Prüfgrundlage: DIN EN ISO 15012-1 (2005)

Zugehöriger Prüfbericht: 201023769/1140 vom 16.11.2010, IFA – Sankt Augustin

Bemerkungen/  
Zeichenzusatz: Der an dem umseitig abgebildeten DGUV Test-Zeichen aufzuführende  
Hinweis lautet:  
Gefahrstoffgeprüft  
Schweißrauchabscheideklasse „W3“

Das geprüfte Baumuster entspricht der oben angegebenen Prüfgrundlage. Der Bescheinigungsinhaber ist berechtigt, das umseitig abgebildete DGUV Test-Zeichen an den mit dem geprüften Baumuster übereinstimmenden Produkten anzubringen, sofern zutreffend mit dem oben genannten Zeichenzusatz.

Diese Bescheinigung einschließlich der Berechtigung zur Anbringung des DGUV Test-Zeichens ist gültig bis: **15.11.2015**

Weiteres über die Gültigkeit, eine Gültigkeitsverlängerung und andere Bedingungen regelt die Prüf- und Zertifizierungsordnung vom September 2010.

*P. Paszkiewicz*  
Leiter der Prüf- und Zertifizierungsstelle  
(Dr. Peter Paszkiewicz)

*A. Goebel*  
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Rückseite der DGUV Test Prüfbescheinigung

## DGUV Test-Zeichen



1) Bescheinigungs-Nummer

Das DGUV Test-Zeichen ist gegebenenfalls mit einem Zeichenzusatz entsprechend den Angaben auf dem Zertifikat zu versehen. Bei Zertifikaten mit ergänzenden Zusätzen weicht das Aussehen von dem Muster ab.

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06.10



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