

# Carbon filter TBFK GOLD/SILVER C

## 1. General

Various impurities and odours in the air cause considerable problems, both of a purely economic nature and for occupants who have to endure an unhealthy environment.

Carbon filters arrest most types of harmful and foul-smelling gaseous impurities.

This takes place by means of adsorption, when the gas molecules condense and are precipitated on the surface of the carbon medium.

It should be noted that one-hundred per cent elimination of odours cannot be guaranteed due to variations in impurities and mixtures of various chemical substances.

The carbon filter cartridges are of disposable type. Each cartridge has three pins that, by a simple handgrip, can be turned to engage in holes with slots on the mounting frame, i.e. bayonet fastening. The cartridges contain a filter mat made of polyester, which encloses the activated carbon medium.

The frame construction consists of 38 mm galvanized (Sendzimir) square profiled sections, with a thickness of 1.5 mm, painted in RAL 7032. The profiled sections are held together by plastic corner pieces.

Corner pieces and frame profiled sections can be disassembled as no parts are welded.

Cover panels and inspection doors consist of 1.0 mm galvanized (Sendzimir) sheet steel externally and internally.

The intermediate 45 mm heat and sound insulation consists of fire-resistant mineral wool in accordance with DIN 4102, class A1, specific weight 55 kg/m<sup>3</sup>.

Cover panels can be removed from the unit.

Inspection doors have hinges and handle.

After the manufacture of panels and inspection doors, they are fully powder coated with a surface layer of a min. 60 µm, RAL 7032.

There are therefore no open cuts, which makes for excellent corrosion protection.



*Carbon filter cartridge*

## 2. Maintenance

### 2.1 Storage of replacement cartridges

Storage and handling: No longer than 6 months in sealed packaging. Store in a dry space, not above 70% relative humidity, permissible ambient temperature range: -20 – +50 °C! Handle the filters with care to avoid deforming them.

### 2.2 Expected useful service life

The useful service life of the cartridges varies depending on its dwell time, large particle concentration, airflow, number of cartridges, type of carbon used and other external conditions. The average useful service life is between 2 - 3 years in urban air and without high concentrations of various chemical compounds.

## 3. Installation

Do not install the carbon cartridges in spaces where the temperature is likely to exceed 50°C.

No filter is required downstream of the carbon filter cartridges for collecting detached carbon particles

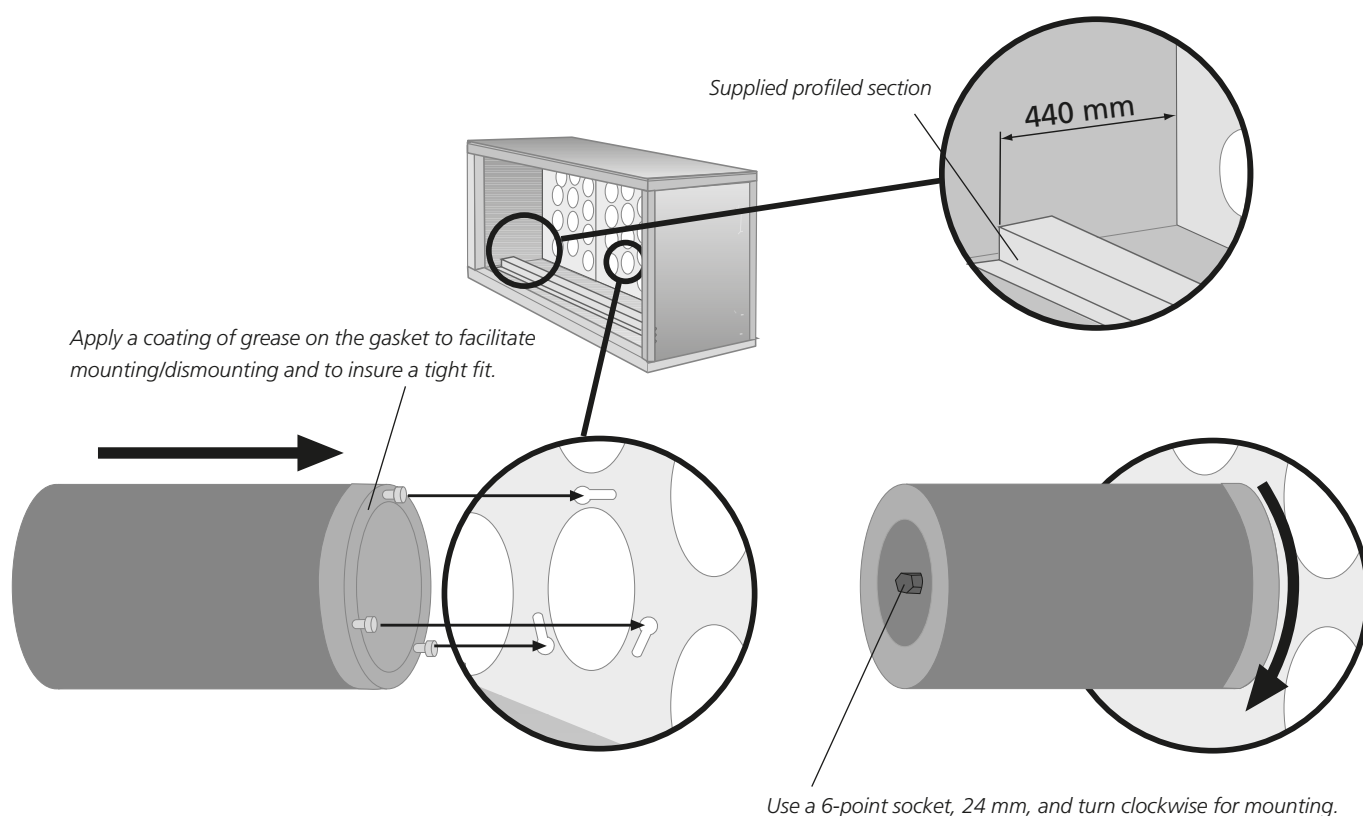
The air passing through the carbon filter must be free from particles. Lowest permissible filter class: F5.

Grease from e.g. restaurants and fast-food bars, especially such where deep-fat fryers are used, stop up and destroy the carbon and must therefore be arrested upstream of the carbon filter.

The carbon filter section is always supplied in the left-hand version. The section is turned if the right-hand version is required. The handles are easily changed so that they point down in the closed position.

The direction of flow through the carbon filter section must be according to the arrow on the casing.

The supplied profiled sections must be placed at the bottom of the carbon filter section, as support for the carbon filter cartridges. This must be done before installing carbon filter cartridges. See diagram below.



## 4. Technical data

### 4.1 General

To achieve the desired particle arresting effect, the fans in the air handling unit must be operated at speeds low enough to permit contact between the air and the carbon medium for a sufficiently long period of time. Please get in touch with Swegon for further information.

The ventilation system must be properly sized for its task and must receive the maintenance necessary so that the carbon filter will perform well and provide pure air.

Only approx. 2% of the odours, etc. present in the extract air are likely to be transferred to the supply air in the heat exchanger.

The longest possible useful filter life can be obtained by locating the carbon filter in the supply air flow downstream of the fan.

One advantage of locating the carbon filter in the supply air is that even the exhaust fumes from automobiles and other odours present in the outdoor air can be adsorbed by the carbon filter.

Another advantage is that the filter attenuates sound to a certain degree.

### 4.2 Environment

Pure air is an essential prerequisite for a healthy environment.

The use of carbon filters makes it possible to collect all the filtered impurities, toxins and contagions in the filter mat. When the filter is saturated, the cartridges shall be removed from the mounting frame and the filter medium can easily be destroyed by combustion. This minimizes the risk of spreading infection or other harmful matter.

The entire disposable cartridge can be converted to energy if it is used to fuel a refuse incinerator plant or a district-heating power plant.

The saturated filter mats removed from the reusable cartridges can be incinerated in the same manner. The residual products and combustion fumes can be disposed of in a professional manner.

The choice of carbon filters is also positive from an environmental standpoint.

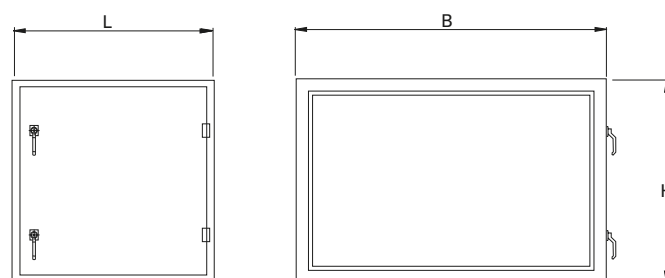
### 4.3 Specification of the Contents

TBFK Carbon filters contain Nordifas type carbon filter cartridges. Each cartridge has the following component parts:

Component	Volume	Material
1 Semicircular tube	150 g.	Polyamide, PA6
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1 Flange	80 g.	Polyamide/ Glass fibre, PA6 30GF (30% glass fibre)
Felt	100 g.	PES, grey
Activated carbon	1,500 g.	Mineral coal pellets CTC 65%
Double adhesive tape	5 g.	
Tape	5 g.	
Packaging	1 g.	Polyethylene cellular plastic
Label	< 1 g.	Paper

### 4.4 Dimensions

Note that the TBFK carbon filter is available in six sizes and that its slip-clamp dimensions do not coincide with those of the GOLD/ SILVER C Air handling units.



TBFK	Guide connection Width x height	B	H	L	Weight without cartridges (kg)	No. of cartridges	Weight with cartridges (kg)
017	850x350	1039	546	763	75	17	113
024	1100x500	1259	656	763	89	24	143
036	1300x600	1459	756	763	104	36	185
050	1600x700	1759	906	763	120	50	233
072	1800x800	1946	1026	763	144	72	307
098	2100x1000	2306	1206	763	172	98	393

## 4.5 Chemical substances

Some of the contaminants listed in the table are specific chemical compounds. Some represent classes of compounds and others are mixtures and of variable composition. Activated charcoal capacity for odours varies somewhat with the concentration in the air with humidity and temperatures. The numbers given represent typical or average conditions and might vary in specific instances. The capacity index has the following meaning:

4. High capacity for all materials in this category. One pound takes up about 20 % to 50 % of its own weight, (average 33.3%). This category includes most of the odour causing substances.
3. Satisfactory capacity for all items in this category. These constitute good applications but the capacity is not as high as for category 4. Adsorbs about 10 % to 25 % of its weight, (average 16.7 %).
2. Includes substances which are not highly adsorbed but which might be taken up sufficiently to give good service under the particular conditions of operation. These require individual checking.
1. Adsorption capacity is low for these materials. Activated carbon cannot be satisfactorily used under ordinary circumstances.

\*In these cases, impregnated carbon is recommended, which will greatly increase the adsorption ability.

Acetaldehyde*	2	Cigarette smoke odor	4	Floral scents	4	Methyl chloroform	3	Propionaldehyde*	3
Acetic acid	4	Citrus & other fruits	4	Fluorotrichloromethane	3	Methyl ether	3	Propionic acid	4
Acetic anhydride	4	Cleaning compounds	4	Food aromas	4	Methyl ethyl ketone	4	Propyl acetate	4
Acetone	3	Combustion odours	3	Formaldehyde*	2	Methyl formate	3	Propyl alcohol	4
Acetylene*	1	Cooking odours	4	Formic acid*	3	Methyl isobutyl ketone	4	Propyl chloride	4
Acrolein*	3	Corrosive gases	3	Fuel gases	2	Methyl mercaptan	4	Propyl ether	4
Acrylic acid	4	Cresote	4	Fumes	3	Methylcyclohexane	4	Propyl mercaptan	4
Acrylonitrile	4	Cresol	4	Gangrene	4	Methylcyclohexanol	4	Propylene*	2
Adhesives	4	Crotonaldehyde	4	Garlic	4	Methylcyclohexanone	4	Propane*	2
Air-Wick	4	Cyclohexane	4	Gasoline	4	Methylene chloride	4	Putrefying substances	3
Alcoholic beverages	4	Cyclohexanol	4	Heptane	4	Mildew	3	Putrescine	4
Amines*	2	Cyclohexanone	4	Heptylene	4	Mixed odours	4	Pyridine	4
Ammonia*	2	Cyclohexene	4	Hexane	3	Mold	3	Radiation products	2
Amyl acetate	4	Dead animal	4	Hexylen*	3	Monochlorobenzene	4	Rancid oils	4
Amyl alcohol	4	Decane	4	Hexyne*	3	Monofluorotri-		Resins	4
Amyl ether	4	Decaying substances	4	Hospital odours	4	chloromethane	4	Reodorants	4
Animal odor	3	Deodorants	4	Household smells	4	Moth balls	4	Ripening fruits	4
Anesthetics	3	Detergents	4	Hydrogen	1	Naptha (coal tar)	4	Rubber	4
Aniline	4	Dibromethane	4	Hydrogen bromide*	2	Naptha (petroleum)	4	Sauerkraut	4
Antiseptics	4	Dichlorobenzene	4	Hydrogen chloride*	2	Naphthalene	4	Sewer odors	4
Asphalt fumes	4	Dichlorodifluoromethane	4	Hydrogen cyanide*	2	Nicotine	4	Skatole	4
Automobile exhaust	3	Dichloroethane	4	Hydrogen fluoride*	2	Nitric acid*	3	Slaughtering odours	3
Bathroom smells	4	Dichloroethylene	4	Hydrogen iodide*	3	Nitro benzenes	4	Smog	4
Bleaching solutions*	3	Dichloroethyl ether	4	Hydrogen selenide*	2	Nitroethane	4	Soaps	4
Body odours	4	Dichloromonofluoromethane	3	Hydrogen sulfide*	3	Nitrogen dioxide*	2	Smoke	4
Borane	3	Dichloronitroethane	4	Incense	4	Nitroglycerine	4	Solvents	3
Bromine	4	Dichloropropane	4	Indole	4	Nitromethane	4	Sour milk	4
Burned flesh	4	Dichlorotetrafluoroethane	4	Industrial wastes	3	Nitropropane	4	Spitted beverages	4
Burned food	4	Diesel fumes	4	Iodine	4	Nonane	4	Spoiled food	4
Burning fat	4	Diethylamine*	3	Iodoform	4	Noxious gases	3	Stale odours	4
Butadiene	3	Diethyl ketone	4	Irritants	4	Octalene	4	Stoddard solvent	4
Butane	2	Dimethylaniline	4	Isophorone	4	Octane	4	Stuffiness	4
Butonone	4	Dimethylsulfate	4	Isoprene*	3	Odorants	4	Styrene monomer	4
Butyl acetate	4	Dioxane	4	Isopropyl acetate	4	Onions	4	Sulfur dioxide*	2
Butyl alcohol	4	Dipropylketone	4	Isopropyl alcohol	4	Organic chemicals	4	Sulfur trioxide*	3
Butyl cellosolve	4	Disinfectants	4	Isopropyl ether	4	Ozone	4	Sulfuric acid	4
Butyl chloride	4	Embalming odours	4	Kerosene	4	Packing house odours	4	Tar	4
Butyl ether	4	Ethane	1	Kitchen odours	4	Paint and	4	Tarnishing gases*	3
Butylene*	2	Ether	3	Lactic acid	4	redecorating odours	4	Tetrachloroethane	4
Butyne*	2	Ethyl acetate	4	Lingering odours	4	Palmitic acid	4	Tetrachloroethylene	4
Butyraldehyde*	3	Ethyl acrylate	4	Liquid fuels	4	Paper deteriorations	4	Theatrical makeup odours	4
Butyric acid	4	Ethyl alcohol	4	Liquor odors	4	Paradichlorobenzene	4	Tobacco smoke odor	4
Camphor	4	Ethyl amine*	3	Lubricating oils and		Paste and glue	4	Toilet odours	4
Cancer odor	4	Ethyl benzene	4	greases	4	Pentane	3	Toluene	4
Caprylic acid	4	Ethyl bromide	4	Lysol	4	Pentanone	4	Toluidine	4
Carbolic acid	4	Ethyl chloride	3	Making agents	4	Pentylene*	3	Trichlorethylene	4
Carbon disulfide	4	Ethyl ether	3	Medicinal odours	4	Pentyne*	3	Trichloroethane	4
Carbon dioxide*	1	Ethyl formate	3	Melons	4	Perchloroethylene	4	Turpentine	4
Carbon monoxide	1	Ethyl mercaptan	3	Menthol	4	Perfumes and cosmetics	4	Urea	4
Carbon tetrachloride	4	Ethyl silicate	4	Mercaptans	4	Perspiration	4	Uric acid	4
Cellosolve	4	Ethylene*	1	Mesityl oxide	4	Persistent odours	4	Valeric acid	4
Cellosolve acetate	4	Ethylene chlorhydrin	4	Methane	1	Pet odours	4	Valeric aldehyde	4
Charred materials	4	Ethylene dichloride	4	Methyl acetate	3	Phenol	4	Varnish fumes	4
Cheese	4	Ethylene oxide	3	Methyl acylate	4	Phosgene	3	Vinegar	4
Chlorine	3	Essential oils	4	Methyl alcohol	3	Pitch	4	Vinyl chloride	3
Chlorobenzene	4	Eucalyptole	4	Methyl bromide	3	Plastics	4	Waste products	3
Chlorobutadiene	4	Exhaust fumes	3	Methyl buty ketone	4	Pollen	3	Wood alcohol	3
Chloroform	4	Fertilizer	4	Methyl cellosolve	4	Popcorn and candy	4	Xylene	4
Chloronitropropane	4	Film processing odours	3	Methyl cellosolve acetate	4	Poultry odours	4		
Chloropicrin	4	Fish odours	4	Methyl chloride	3	Propane	2		