



MiracleAir 400-B

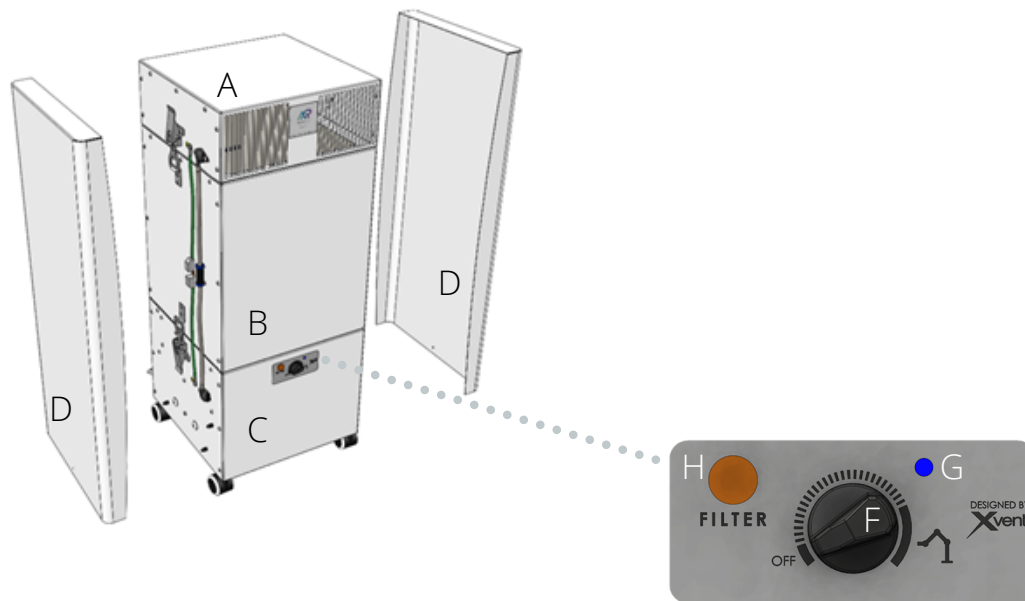


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Description of professional MiracleAir 400-B air purifier

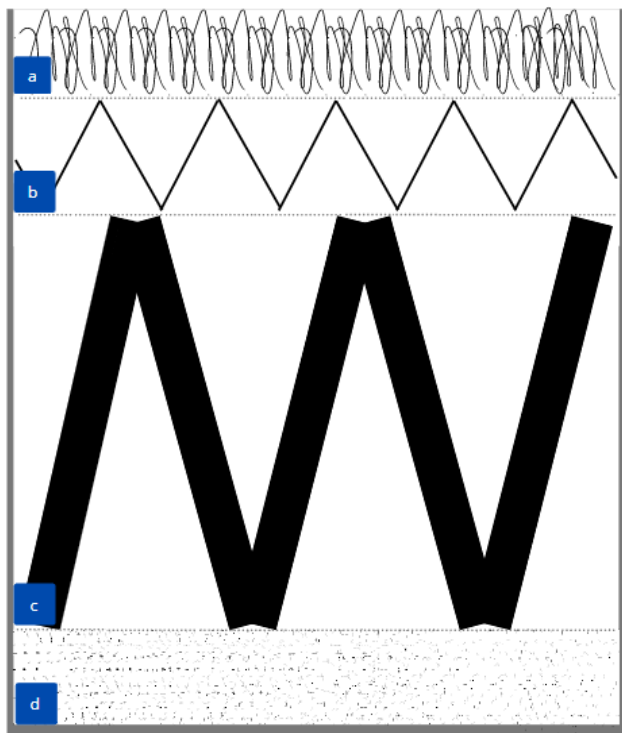
Appliance	Control panel
A. Suction box	F. Dial
B. Filter box	G. Blue LED - running
C. Fan box	H. Orange LED - filters full
D. Cover side	

The professional air purifier was designed to be used namely in the medical field with direct cooperation with a well-respected Czech dental clinic. It is a unique product developed and produced in the Czech Republic. A high cleaning effect is guaranteed thanks to four-level filtration that reliably captures dust microparticles, bacteria and viruses of up to 0.1 µm. Most products offered by the competitors can capture particles only up to 0.3 µm and therefore cannot capture viruses. The filling of filters is indicated based on a real measurement of the filters, which is unique for this type of equipment. The suction arm allows the suction nozzle to be placed comfortably near the patient's mouth. Within the design, focus was placed on facilitating the cleaning of the device and simple, hygienic and safe replacement of the filters.

MiracleAir 400-B consists of four main parts: suction box, filter box, fan box, two side parts. All boxes and side parts are made of zinc-coated metal sheets lacquered by a special white (RAL 9210) antibacterial coating.

A
The suction box is used to suck in air from its surroundings. There is a collection point at the suction box with a tube that measures pressure in front of the filtration box. Part for real measurement of the filling of filters. The box includes a grounding cable and box caps for connecting with the filtration box. Box caps allow the contact force to be set.
 The box is equipped with magnets for easy attachment of the side parts.

B
 The filter box standardly consists of a system of 4 filters. All filters provide a large filtering area that ensures their long service life. The expected service life of the system is 10 to 12 months. The service life of the system depends on the operating conditions (length of use, dustiness of the environment and the types of procedures in patients' mouths). The purifier provides a measurement of real filling of filters. When filters are full, it is indicated by an orange LED on the ventilator box. When the diode comes on, the filtration box needs to be replaced. Replacing the whole box is safe and hygienic as there is no contact with individual filters. The filtration box is an accessory that can be ordered separately.



a G2 coarse particle filter used to capture fine fibers, coarse dust, pulps and water drops.

b F7 the pre-filter catches dust particles up to 1 μm and protects the HEPA filter against filling too quickly.

c H13 a HEPA filter, meeting the strictest European standard EN 1822 for testing of filters for hospitals and clean areas. It catches 99.98 % of particles up to 0.1 μm .

d Carbon filter for the removal of odors.

Fig. 1 Schematic cross-section of the filtration box.

C
The main part of the fan box is a ventilator with an EC engine that allows continuous speed regulation, a differential pressure switch that measures the actual filling of filters, and the main on/off switch, a 2.7m long flexible cord, box caps that allow configuration of the contact force and the control panel. The control panel includes a dial with a scale of the air output, a blue and an orange diode. The OFF position is located on the left side of the scale. The blue diode indicates that the unit is in operation and the orange diode indicates that the filter is full and the filtration box needs to be replaced. The box is equipped with magnets for easy attachment of the side parts. The mesh on the ventilation box protect the user against accidental contact with rotating and electrical parts.

D
The side parts are designed to cover the connections of individual boxes and the electrical and air lines. They are attached to the set of boxes via magnets. On the inside of the side parts are the instructions for replacing the filtration box.

What makes MiracleAir 400-B different from other air purifiers?

MiracleAir 400-B is a professional air purifier. Cheap air purifiers are not intended for professional use and are used primarily by people with allergies to capture dusts and pollens. In most cases these purifiers cannot remove viruses from the air, even though they often state otherwise. MiracleAir is a professional device with technical parameters guaranteed by a certified laboratory. MiracleAir purifier can reliably capture viruses of up to 0.1 µm of size. MiracleAir 400-B is comparable only to professional equipment whose price starts at CZK 30,000. MiracleAir is intended for areas where more people meet, representing a risk of the spread of infection (e.g., pharmacies, waiting rooms, doctors' offices, schools, nurseries,). It significantly reduces the spreading of illnesses in a workplace. Made in Europe!

What is the filtration efficiency?

MiracleAir 400-B is one of the most efficient professional air purification systems in the world. Thanks to the four-level filtration including a H13 HEPA filter it complies with the strict conditions of standard EN 1822 for medical-grade filters. H13 HEPA filter used in MiracleAir 400-A captures 99.98 % of particles of up to 0.1 µm. For example the COVID-19 virus has a particle size of 0.12 µm. Most equipment on the market contains HEPA filters that capture particles of only 0.3 µm and are significantly less or not at all effective against viruses. The filtration efficiency of MiracleAir 400-B is even higher than that of FFP3 respirators

When is it necessary to replace the filter?

The filter needs to be replaced when the orange diode on the ventilation box is switched on. The diode is controlled by a sensor of the actual filling of filters. This method of filter filling measurement is unique for these types of products and guarantees the maximum utilization of the filters' capacity. For user it means the maximum period between filter replacement with a guaranteed efficiency of filtering. Most competing products only estimate the filling of filters using indirect methods regardless of the actual operating conditions (dustiness of the specific place, operation duration and the used air output). In standard operating conditions (low dustiness, operation for 4 hours a day, medium air output), the estimated service life of filters is 12 months.

How to dispose of the filtration box?

The full filtration box is stored in a bag that was included in the delivery of a spare filtration box. The full filtration box in a bag is inserted into the large box in which the new filtration box was packed, and then is disposed of as normal communal waste.

Where is this product manufactured?

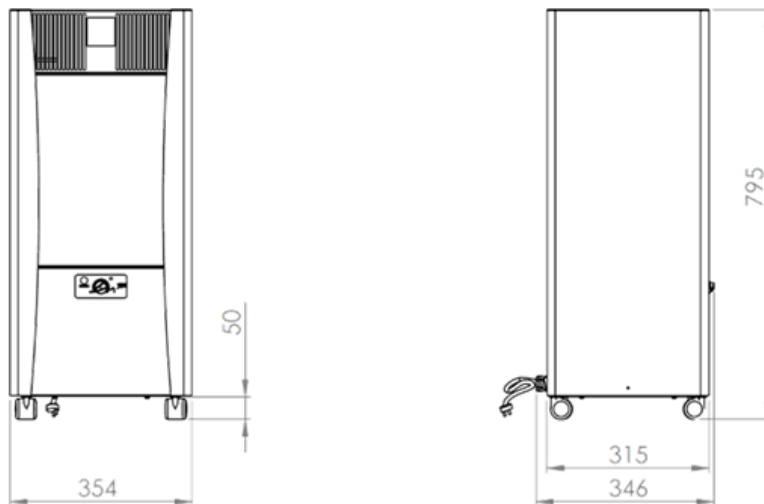
MiracleAir 400-B is a Czech product. Only high-quality components are used in its production. For example the ventilator and filters are supplied by leading German manufacturers. This allows us to provide a 3-year guarantee for MiracleAir 400-B (for VAT payer and non-payers) with the exception of the filtration box.

Technical specification

Maximal air power	up 450 m ³ /h
Weight	26,5 kg
Power supply/el. consumption; min. consumption	210-240 V/50 Hz; 4-85 W
Protection	IP 20
Noise level LpA in the distance 3 m*	47-51 dB
Dimensions (w x d x h)	350 x 310 x 800 mm
Fan	radial with EC motor
Control	continuous speed control
Air supply	upper suction box
Air outlet	lower part of the unit
Color	antibacterial RAL 9210
Material	galvanized steel
Filtration	four-filter
Filtration efficiency	99,98 % for particles 0,1 μm

*In the part of the scale marked with the arm symbol

MiracleAir 400-B dimensions



Declaration of conformity

Xvent s.r.o.

Poděbradská 289, 530 09 Pardubice Česká republika

www.xvent.cz

Hereby confirms that the filtration unit MiracleAir, type identification MIRACLEAIR has been produced in compliance with the following European standards::

- 1) Government Regulation no. 117/2016 Coll. - Electromagnetic Compatibility/2014/30/EU - Electromagnetic compatibility (EMCD).
- 2) Government Regulation no.176/2008 Coll. - Technical Requirements on Machinery / 2006/42/EC - Machinery Directive (MD).
- 3) Directive 2016/2281 of the European Parliament and the Council establishing requirements for air heating products, cooling products and high temperature process chillers and fan coil units.
- 4) Directive 2014/35/EU of the European Parliament and Council -Low Voltage Electrical Equipment (LVD).

And standard harmonized with the above listed directives:

- 1) ČSN EN 60335-1 ed.3:2012+A11:14 - Safety of household and similar electrical appliances - Part 1: General requirements
- 2) ČSN EN 60730-1 ed.4:2016 - Automatic electrical controls - Part 1: General requirements
- 3) ČSN EN 60204-1 ed.3:2019 - Safety of machinery - Electrical equipment of machines - Part 1: General requirements
- 4) ČSN EN ISO 12100:2011 - Safety of machinery - General principles for design - Risk assessment and risk reduction
- 5) ČSN EN 61000-3-2 ed.4:2015 - Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current (equipment with rated current ≤ 16 A)
- 6) ČSN EN 61000-3-3 ed.3:2014 - Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection
- 7) ČSN EN 61000-6-3 ed.2:2007 - Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments

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Responsibility: Radim Kmoníček (R&D Manager)

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Information for the antibacterial color finish IGP-DURA®care

A special combination of active substances containing nanoparticles of silver prevents the settlement of bacteria and fungi on the organic coating and destroys them. The antimicrobial effects of silver have been known for centuries. It is therefore logical to use these special properties also for powder painted surfaces in order to achieve long-lasting antimicrobial protection.

The foundation for this comprises three basic mechanisms that:

- block the cell metabolism
- stop cell respiration
- prevent cell division

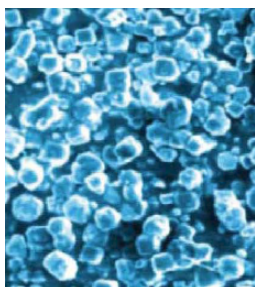


Fig. 1 Combination of active substances in the paint



Fig. 2 Effect of nanoparticles on the paint surface

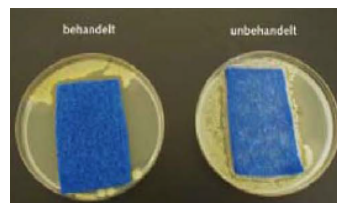


Fig. 3 A test WITH (left) and WITHOUT (right) the active substances

These mechanisms prevent the growth of undesirable microorganisms on the surface and kill them. The combination of active substances with nanoparticles of silver travel thanks to air humidity to the coating surface until they spread out on it (in the direction of the concentration gradient). Existing bacteria and fungi are continuously destroyed in three ways and only a clean antimicrobial surface remains.

The combination of nanoparticles of active substances is incorporated in high concentrations into the powder paint, which ensures its supply. When the concentration on the surface gets low, the active substance is distributed continuously on it from the whole surface. This results in long-lasting effects. Depending on the surrounding conditions you can enjoy many years of a hygienically clean surface coated with the IGP-DURA®care powder paint.

Application:

IGP-DURA®care is a special product used primarily for interior purposes. It is based on well-established IGP epoxy polyesters of the 31 and 33 series. Upon request, we can also formulate weather-resistant polyesters. For a fee it is possible to carry out additional tests against microbial germs as per specific instructions and specifications of the customer. These products can be used to ensure a safe and hygienic future in many important areas - healthcare, drinking water supply, cooling and ventilation technology, medical devices and equipment, as well as electronics.

Hospitals:

- furniture
- medical tools

Medical devices:

- sinks
- shower cubicles
- radiators
- partitions

Household appliances:

- microwave glass
- air conditioning

Industrial application:

- packaging machines
- antimicrobial work surfaces

Product advantages:

- permanent protection against a high number of bacteria, fungi, algae and viruses
- long-term protection thanks to the combination of active substances
- non-toxic to the human organism
- environmentally friendly
- without side effects
- chemically resistant
- optically neutral

The high efficiency of the combination of active substances of IGP-DURA@care has been verified by external studies. The amount of germs within 24 hours was demonstrably reduced by up to 100%.

Aspergillus niger	Aspergillus niger IFO 4407	Apergillus niger (DSM 1957)
Aureobasidium pullulans IFO 6353	Bacillus cereus var. Mycooides ATCC 11778	Escherichia coli (DSM 10233)
Candida albicans ATCC 14053	Candida albicans IFO 1594	Staphylococcus (DSM 799)
Enterobacter aerogenes ATCC 13049	Chaetomium globosum ATCC 6255	
Escherichia coli ATCC 25922	Escherichia coli IFO 3301	
Gliocladium virens IFO 6355	Legionella	
Klebsiella Pneumoniae	Mycobacterium Tuberculosis	
Proteus mirabilis ATCC 9240	Penicillium funiculosum IFO 6245	
Proteus vulgaris ATCC 13315	Pseudomonas aeruginosa IID P-1	
Pseudomonas Aeruginosa ATCC 27853	Saccharomyces gallinarum	
Salmonella typhimurium ATCC 14028	Staphylococcus aureus ATCC 6538	
Staphylococcus epidermidis ATCC 12228	Streptococcus faecalis R ATCC 8043	
Staphylococcus aureus ATCC 25923	Trycophyton malmsten	
Streptococcus agalactiae ATCC 13813	Vibrio parahaemolyticus	

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Despite the high efficiency of IGP-DURA@care, the product is completely safe to people and animals. This has been proven in detail in strict tests.

Successfully passed safety tests:

- oral toxicity,
- absorption by skin,
- primary skin irritation,
- mutagenicity,
- carcinogenicity,
- chronic toxicity (2 years),
- complete tests as per ISO 10993-1 biological tolerance for permanent medical implants.

Information about filtration efficiency

Test report according to EN 1822-4

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Filterdaten / Filter data / Fiches techniques

Artikel-Nummer Part no. Numéro du filtre	Bezeichnung Filter type Type du filtre	Serien-Nummer Serial no. Numéro de production	Prüf-Datum Date of test Date du test	Prüfer Operator Opérateur
	KS BESTFIL	2006013451	2020-07-10	PB
Filterabmessung (L x B x T) Filter dimensions (L x W x D) Dimensions du filtre (L x L x P)	Nennvolumenstrom Nominal flow rate Débit d'air nominal	Anfangsdruckdifferenz Initial pressure drop Perte de charge initiale		
290 x 290 x 292mm	450m³/h	239Pa		
Filterklasse Filter class Classe de filtration	Minimaler integraler Abscheidegrad Minimum integral efficiency Minimum efficacité intégrale	Minimaler lokaler Abscheidegrad Minimum local efficiency Minimum efficacité locale	Kommentar Comment Commentaire	
HEPA H13	99.9500000%	99.7500000%		

Prüfbedingungen / Test Conditions / Conditions de test

Prüfvolumenstrom Test flow rate Débit de test	Prüfaerosol Test aerosol Aérosol de test	Partikelgröße Particle size Taille de particule	Rohgaskonzentration Upstream concentration Concentration amont	Temperatur Temperature Température	Rel. Feuchte Rel. Humidity Humidité rel.
449m³/h	DEHS	0.10 - 0.30µm	2.24E+3#/cm³	23.2°C	55.1%

Prüfergebnisse / Test results / Résultats de test

Klassifizierung gemäß Testergebnis Classification to test result Classification selon résultat de test	Integraler Abscheidegrad Integral efficiency Valeur intégrale d'efficacité	Minimaler Abscheidegrad Minimum efficiency Minimum valeur d'efficacité	Druckdifferenz Pressure drop Perte de charge
HEPA H13	99.9877367%	99.9874474%	241Pa
Maximum (Leak signal) Maximum (Leak signal) Maximum (Signal du fuite)	Anzahl der gefundenen Leckstellen Number of leaks detected Nombre de fuites détectées	Lecktest gemäß EN 1822-4 Leakage test to EN 1822-4 Test de fuite selon EN 1822-4	
44 (116)	0	bestanden/passed/accepté	

