

USE AND MAINTENANCE MANUAL



filtering unit MiniDygestorium-350

CONTENTS

1. INTRODUCTION	2
2. PURPOSE	2
3. RESERVATIONS OF MANUFACTURER	2
4. TECHNICAL DATA	2
5. STRUCTURE AND FUNCTION	3
6. ASSEMBLY AND STARTUP	4
7. OPERATIONAL USE	5
8. TROUBLESHOOTING GUIDE	5
9. MAINTENANCE	5
10. OCCUPATIONAL HEALTH AND SAFETY	5
11. TRANSPORT AND STORAGE	5
12. TERMS OF WARRANTY	5
13. ABSORPTIVITY OF ACTIVATED CARBON FOR VARIOUS VAPOURS AND GASES	6
14. DECLARATION OF CONFORMITY	8

Producer: **KLIMAWENT S.A.**
 81-571 Gdynia, ul. Chwaszczyńska 194
 tel. 58 629 64 80, 58 771 43 40
 fax 58 629 64 19
 email: klimawent@klimawent.com.pl



1. INTRODUCTION

The purpose of the present Use and Maintenance Manual is to supply User with directions within the range of application, assembly, start-up and operational use of the **MiniDygestorium-350** extraction unit.



Prior to assembly at the place of operation and use, it is important to get thoroughly acquainted with the contents of the present instruction.



With regard to continuity of work carried on improvement of our products, we reserve for ourselves the revision possibility of the draft and technological changes improving their functional features and safety.

Construction of **MiniDygestorium-350** meets the requirements of the current state of technology as well as the safety and health assurances included in:

2006/42/EC Directive of the European Parliament and of the Council of the 17 May, 2006 on machinery, amending the 95/16/EC Directive (recast) / Official Journal EC L157 of the 09.06.2006, page 24);

2014/35/EC Directive of the European Parliament and of the Council of the 26 February, 2014 on the harmonisation of the laws of the Member States, relating to the making available on the market of electrical equipment designed for use within certain voltage limits / Official Journal EC L96 of the 29.03.2014;

The appliance meets the requirements included in:

98/24/EC Directive of the Council of the 7 April, 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work (fourteenth individual Directive within the meaning of Article 16(1) of Directive 89/931/EEC);

Regulation of the Health Minister of the 30 December, 2004 on Occupational Health and Safety with reference to occurrence of chemical agents at workplaces (Journal of Laws Ne. 11 pos. 86 along with the posterior amendments).

Is in accordance with the subsequent harmonised standards:

EN ISO-12100:2012 Safety of machinery – General principles of design – Assessment and reduction of hazard

EN 60204-1:2018-12 Safety of machinery – Electrical equipment of machines – Part 1: General requirements

EN ISO 13857:2010 Safety of machinery – Safe distances to prevent hazard zones from being reached by upper and lower limbs

EN 60529:2003/A2:2014-07 Degrees of protection provided by enclosures (IP Code)

EN 61439-1:2011 Low-voltage switchgear and controlgear assemblies – Part 1: General resolutions

2. PURPOSE

MiniDygestorium-350 is designed for cleaning the air in its process chamber, from gaseous contaminants, emitted in small amounts in such laboratories as: chemical, biological, analytical, in scientific-, research, health care institutions, in chemical workshops in schools and many other places, where noxious gases and vapours arise that are harmful to health.

MiniDygestorium-350 prevents from spreading the contaminants within the process room. The appliance cannot be used in areas of explosion hazard, where explosive atmosphere is likely to occur.

3. RESERVATIONS OF MANUFACTURER

- Manufacturer accepts no liability for any consequences following from the operational use that is in contradiction to the purpose of application.
- Installing of any additional elements that are not belonging to the normal device structure (or accessory set) is not acceptable.
- Do not introduce any structural or constructional modifications on the device on one's own.
- Maintenance and any repair can be performed exclusively by an authorised person after the instructions.
- The appliance cannot be used for conveying the air containing aggressive contaminants and viscous compounds that could damage the filters.
- **In the course of operational use, any ignition sources, i.e. cigarettebutts / embers must not get drawn into the filtration chamber.**

4. TECHNICAL DATA

Table No.1

Type	Maximum volume flow [m ³ /h]	Maximum vacuum [Pa]	Motor rate [W]	Supply voltage [V / Hz]	Acoustic pressure level [dB(A)]*	Weight [kg]
MiniDygestorium-350	350	220	124	230 / 50	53	80

* Acoustic pressure level has been measured from distance of 1 metre of the device

Table No.2 – High-efficiency HEPA filter

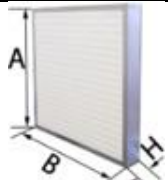
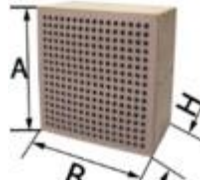
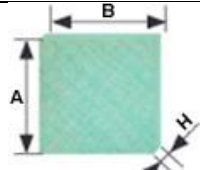
	Type	Weight [kg]	Dimensions AxBxH [mm]	Class	Filtration material
	FW-MD-350	3,2	535x535x78	H13	hydrophobic glass paper 99,95%

Table No.3 – Cassette with activated carbon

	Type	Weight [kg]	Dimensions AxBxH [mm]	Caution
	WA-ECO-20	24*	534x534x155	cassette of cardboard and plywood

* Weight of the activated carbon 20 kg

Table No.4 – Paint-stop nonwoven (spunbond)

	Type	Weight [kg]	Dimensions AxBxH [mm]	Class	Caution
	PS-MD-350	0,5	535x535x50	G3	glass fibre nonwoven of progressive growing density

5. STRUCTURE AND FUNCTION

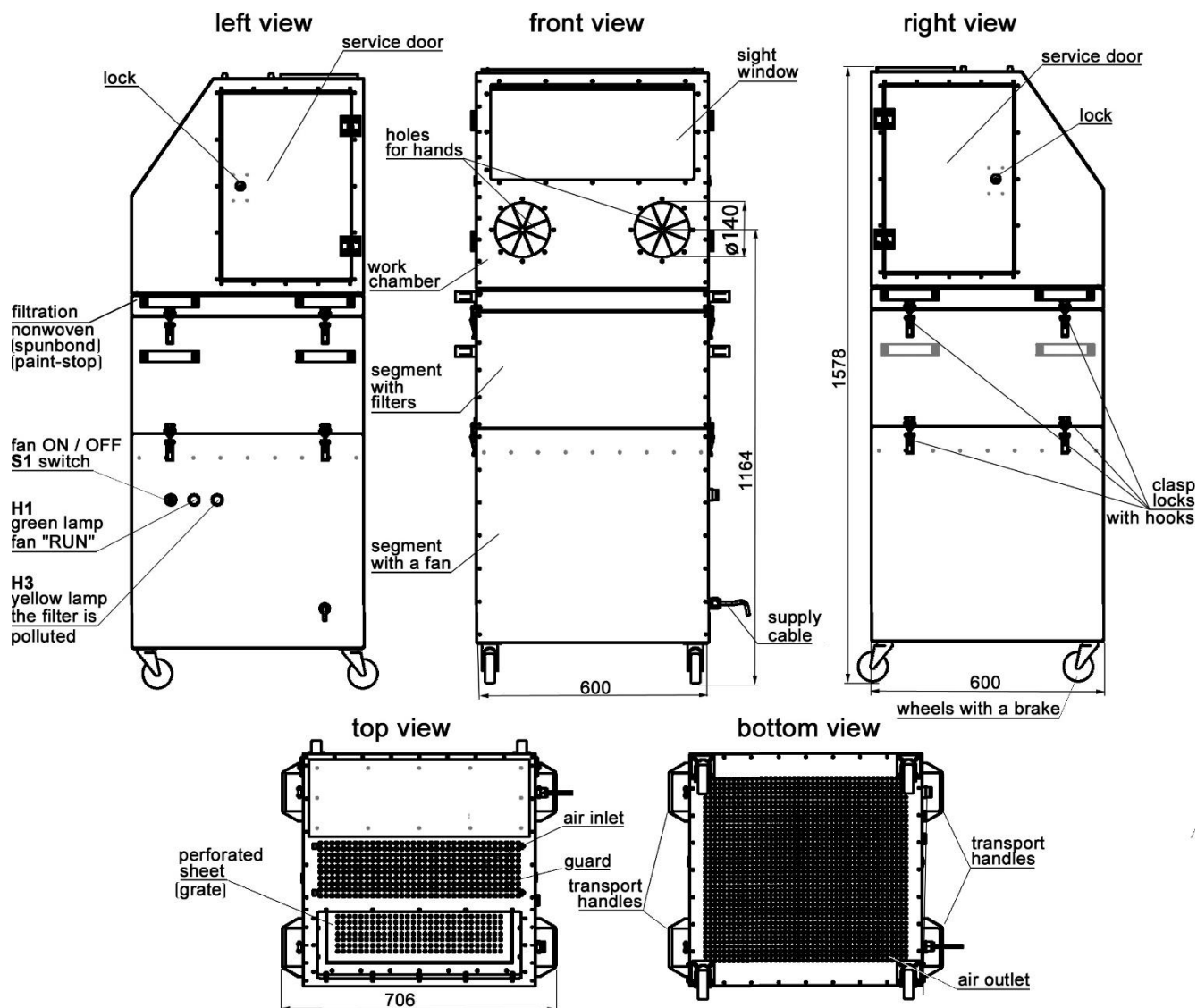


Fig. No.1 – MiniDygestorium-350 – Structure and Dimensions

The steel housing consists of three segments joint together by means of clasp locks with hooks.

MiniDygestorium-350 consists of subsequent elements:

- work chamber – a glass extraction case of acid-proof steel with two holes for operator’s hands, providing convenient area for manoeuvring on the desktop
- filtration nonwoven (spunbond) paint-stop
- HEPA high-efficiency filter – class H13
- gas absorber – a cassette with granular activated carbon
- radial fan in a housing
- pressure control (pressostat) – indication of the excessive flow resistance of the high-efficiency filter
- control unit
- castor wheels – 4 pieces (2 pieces with a brake)
- supply cable

MiniDygestorium-350 has been engineered for continuous work. It can be disconnected only during failure or for replacement of filters and for maintenance. The appliance is operated by means of a key locked switch. The fan works continuously all the time.

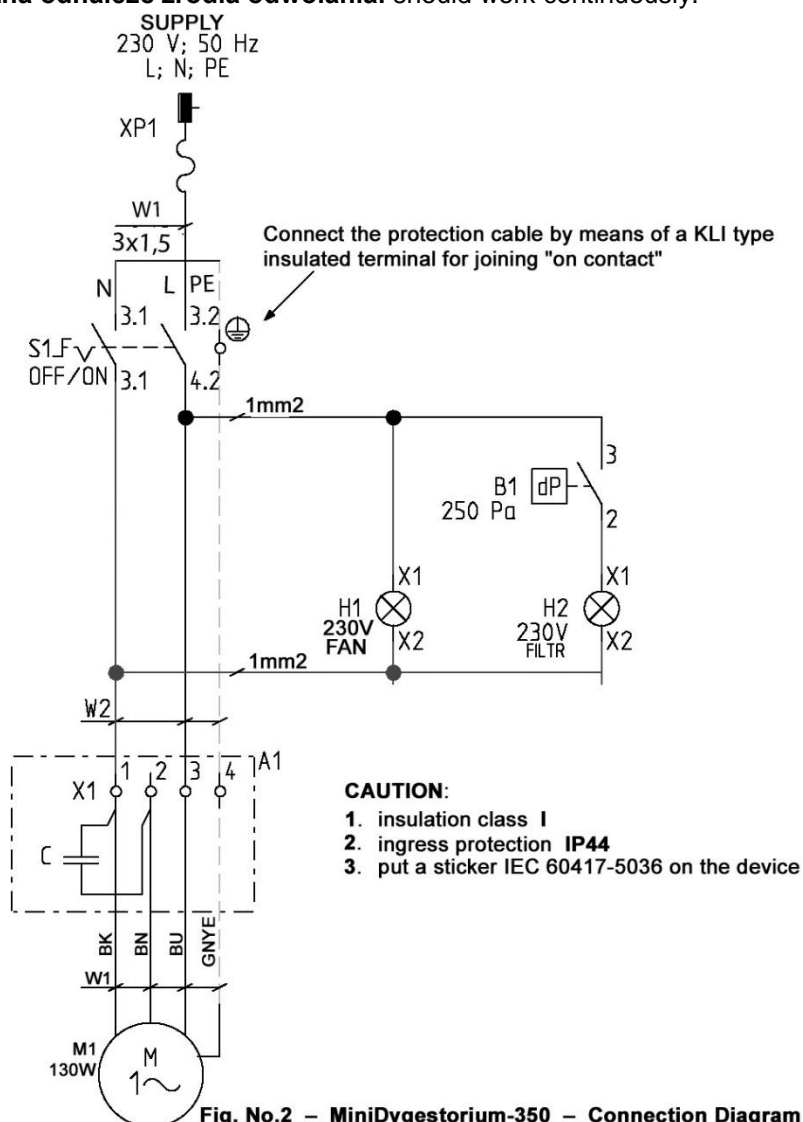
After the side doors are opened, the chemically processed element (along with the emission source on the desktop) can be placed in the extraction chamber. After that the side doors ought to be closed. Subsequently, operator inserts his hands and sprays the chemical agent on the surface of the processed element, and after a while the sprayed element can be removed.

In case when the sprayed element is larger and does not fit in the work chamber, open both the side doors and insert the element, shut the air inlet (close the front window) and, subsequently follow the above mentioned guidelines. The fan chamber walls are clad with sound-absorbing material to reduce the noise additionally. The outlet is equipped with a perforated sheet (perforation 25%).

6. ASSEMBLY AND STARTUP

The appliance is ready for use. To operate, simply put the plug into the socket and turn the key in the control unit.

Błąd! Nie można odnaleźć źródła odwołania. should work continuously.



7. OPERATIONAL USE

The appliance constitutes an individual mobile work station. After it is switched on, the emission source has to be placed on the desktop inside the work chamber. This is a vacuum area, so the contaminants would not get outside during the spraying.

(Paint-stop) nonwoven / spunbond absorbs the varnish-, lacquer mist, whereby the dust particles are captured within the HEPA high-efficiency filter, and the majority of gaseous contaminants, chemical compounds such as: styrene, toluene, alcohols, phenol and many other agents are absorbed in the cassette with activated carbon. At the point when the filtration nonwoven (spunbond) is polluted or the HEPA filter reaches the limit pollution degree – the signalling lamp indicates the replacement necessity of the nonwoven or the filter.

The air is supplied into the fume hood through the perforated top surface (of the extraction chamber) and through the holes for operator's hands, in the front surface. The air is discharged through the perforated outlet underneath the appliance.

Maintenance consists in subsequent steps:

- periodical replacement of the filtration Paint-stop nonwoven (spunbond) – after the indication of the H2 lamp
- periodical replacement of the HEPA filter – see signalling lamp
- periodical replacement of the carbon cassette – after the organoleptic evaluation.

IMPORTANT: It is recommended that after the indication of the H2 lamp, first control the pollution degree of the filtration nonwoven (spunbond) and then the HEPA filter.

CAUTION:

Cassettes with activated carbon ought to be disposed in accordance with the regulations of the country.

8. TROUBLESHOOTING GUIDE

Table No.5 – Typical malfunctions, reasons and corrective measures

	Problem	Possible reason	Corrective action
1.	the flow capacity of the fan decreases while the signalling lamp lights	filtration nonwoven (spunbond) Paint-stop or the high-efficiency filter is polluted	replace the nonwoven (spunbond) or the high-efficiency filter
2.	unpleasant smell is perceptible near the device	the carbon bed is saturated	replace the cassette with activated carbon
3.	sudden vibrations of the device are occurring	failure of the fan impeller	replace the impeller for new

9. MAINTENANCE

Within the scope of technical revisions, every 12 months check the technical state of the fan, strictly according to the specific rules of operational use of the electrical driving devices. During the maintenance examine the mechanical and electrical connections. **Revisions ought to be carried out exclusively after the appliance is disconnected from the power supply system.**

CAUTION: During the maintenance do not use the MiniDygestorium-350.

10. OCCUPATIONAL HEALTH AND SAFETY

MiniDygestorium-350 can exclusively be operated after getting acquainted with the contents of the present Use and Maintenance Manual. **Circuits of the plugs ought to be equipped with short-circuit- and differential current protections (see Connection Diagram). The appliance meets the requirements of the 2006/42/EC Directive and do not require additional protections for a safe operational use.**

CAUTION: Any repair ought to be performed after the fan is switched off and disconnected from the power supply system.

11. TRANSPORT AND STORAGE

MiniDygestorium-350 is transported on a pallet, in foil and protected against atmospheric factors. During the transport the appliance must be kept in vertical position and protected from displacement / slide and from being overturned. The filtering unit ought to be stored in dry rooms and areas of efficient ventilation.

12. TERMS OF WARRANTY

The period of warranty for the purchased device is indicated in the **Card of Warranty**. The warranty does not comprise:

- mechanical damage and malfunctions caused by User,
- device failures caused during the use which is in contradiction with the purpose of application and with the present Use and Maintenance Manual,
- malfunctions resulting from the improper transport, storage or incorrect maintenance.

Infringement of the Section 3 "Reservations of Producer" of the present Use and Maintenance Manual and, especially modifications undertaken by User on one's own or use in contradiction with the purpose of application – shall result in the loss of warranty validity.

13. ABSORPTIVITY OF ACTIVATED CARBON FOR VARIOUS VAPOURS AND GASES

Table No.6

HIGH ABSORBED GASES	
ethyl acrylate – C ₅ H ₈ O ₂	fluorotrichloromethan – CCl ₃ F
methyl acrylate – C ₄ H ₆ O ₂	phosgene – COCl ₂
acrylonitrile – C ₃ H ₃ N	anaesthetics
valericaldehyde – C ₅ H ₁₀ O	hexane – C ₆ H ₁₄
alkohol amyłowy – amył alcohol – C ₅ H ₁₂ O	hexylene – C ₆ H ₁₂
alkohol butyłowy – butyl alcohol – C ₄ H ₁₀ O	hexyne – C ₆ H ₁₀
alkohol propyłowy – propyl alcohol – C ₃ H ₇ OH	isoprene – C ₅ H ₈
anilina – aniline – C ₆ H ₅ NH ₂	hydrogen iodide – HI
benzyna cięzka z ropy naftowej – naphta (petroleum)	xylene – C ₈ H ₁₀
benzyna cięzka ze smoły węglowej – naphta (coal tar)	formic acid – HCOOH
brom – bromine – Br ₂	methyl mercaptan – CH ₃ SH
butoxyethanol – butyl cellosolve – C ₆ H ₁₄ O ₂	ethyl formate – C ₃ H ₆ O ₂
– cellosolve – C ₄ H ₁₀ O ₂	methyl formate – C ₂ H ₄ O ₂
– cellosolve acetate – C ₆ H ₁₂ O ₃	nitromethane – CH ₃ NO ₂
butyl chloride – C ₄ H ₉ Cl	methyl acetate – C ₃ H ₆ O ₂
propyl chloride – C ₃ H ₇ Cl	pentane – C ₅ H ₁₂
monochlorobenzene – C ₆ H ₅ Cl	pentylene – C ₅ H ₈
chlorobenzene – C ₆ H ₅ Cl	pentyne – C ₅ H ₈
ethylene chlorhydrin – C ₂ H ₅ ClO	propionandehyde – C ₃ H ₆ O
chloroform – CHCl ₃	ethylene oxide – C ₂ H ₄ O
chloronitropropane – C ₃ H ₆ ClNO ₂	carbon monoxide – CO
chloropicrin – CCl ₃ NO ₂	dimethylaniline – C ₈ H ₁₁ N
chlorobutadiene – C ₄ H ₅ Cl	amył ether – C ₁₀ H ₂₂ O
cyclohexanol – C ₆ H ₁₂ O	butyl ether – C ₈ H ₁₈ O
cyclohexanone – C ₆ H ₁₀ O	dichloroethyl ether – C ₄ H ₈ Cl ₂ O
tetrachloroethane – C ₂ H ₂ Cl ₄	isopropyl ether – C ₆ H ₁₄ O
tetrachloroethylene – C ₂ Cl ₄	propyl ether – C ₆ H ₁₄ O
carbon tetrachloride – CCl ₄	ethyl benzene – C ₈ H ₁₀
decane – C ₁₀ H ₂₂	phenol – C ₆ H ₆ O
dioxane – C ₄ H ₈ O ₂	heptane – C ₇ H ₁₆
dibromomethane – CH ₂ Br ₂	heptylene – C ₇ H ₁₄
ethylene dichloride – C ₂ H ₄ Cl ₂	indole – C ₈ H ₇ N
dichlorobenzene – C ₆ H ₄ Cl ₂	isophorone – C ₉ H ₁₄ O
dichloroethane – C ₂ H ₄ Cl ₂	iodine – I
dichloroethylene – C ₂ H ₂ Cl ₂	iodoform – CHI ₃
dichloronitroethane – CH ₃ CCl ₂ NO ₂	camphor – C ₁₀ H ₁₆ O
dichloropropane – C ₃ H ₆ Cl ₂	diethyl ketone – C ₅ H ₁₀ O
	dipropyl ketone – C ₇ H ₁₄ O
	methyl butyl ketone – C ₆ H ₁₂ O
	methyl isobutyl ketone – C ₆ H ₁₂ O
	methyl ethyl ketone – C ₄ H ₈ O
	creosole – C ₈ H ₁₀ O ₂
	cresol – C ₇ H ₈ O
	crotonaldehyde – C ₄ H ₆ O
	ethyl silicate – C ₈ H ₂₀ O ₄ Si
	acrylic acid – C ₃ H ₄ O ₂
	caprylic acid – C ₈ H ₁₆ O ₂
	butyric acid – C ₄ H ₈ O ₂
	lactic acid – C ₃ H ₆ O ₃
	uric acid – C ₅ H ₄ N ₄ O ₃
	acetic acid – CH ₃ COOH
	propionic acid – C ₃ H ₆ O ₂
	kwas walerianowy – valeric acid – C ₅ H ₁₀ O ₂
	mentol – menthol – C ₁₀ H ₂₀ O
	ethyl mercaptan – C ₂ H ₆ S
	– propyl mercaptan – C ₃ H ₈ S
	– methyl cellosolve – C ₃ H ₈ O ₂
	– methyl cellosolve acetate – C ₅ H ₁₀ O ₃
	methylcyclohexane – C ₇ H ₁₄
	methylcyclohexanol – C ₇ H ₁₄ O
MEDIUM ABSORBED GASES	
acetone – C ₃ H ₆ O	
acetylene – C ₂ H ₂	
acrolein – C ₃ H ₄ O	
butyraldehyde – C ₄ H ₈ O	
ethyl alcohol – C ₂ H ₅ OH	
methyl alcohol – CH ₃ OH	
benzene – C ₆ H ₆	
ethyl bromide – C ₂ H ₅ Br	
methyl bromide – CH ₃ Br	
butadiene – C ₄ H ₆	
chlorine – Cl ₂	
ethyl chloride – C ₂ H ₅ Cl	
vinyl chloride – C ₂ H ₃ Cl	
cyclohexene – C ₆ H ₁₀	
dichlorodifluoromethane (phreon 12) – CCl ₂ F ₂	
diethyl amine – C ₄ H ₁₁ N	
carbon disulphide – CS ₂	
ether – C ₄ H ₁₀ O	
ethyl ether – C ₄ H ₁₀ O	
ethyl amine – C ₂ H ₇ N	

	POORLY ABSORBED GASES
urea – CH ₄ N ₂ O	acetaldehyde – C ₂ H ₄ O
kerosene	ammonia – NH ₃
nicotine – C ₁₀ H ₁₄ N ₂	hydrogen bromide – HBr
nitrobenzene – C ₆ H ₅ NO ₂	butane – C ₄ H ₁₀
nitroethane – C ₂ H ₅ NO ₂	butanone – C ₄ H ₈ O
nitroglycerine – C ₃ H ₅ N ₃ O ₉	butylene – C ₄ H ₈
nitropropane – C ₃ H ₇ NO ₂	butyne – C ₄ H ₆
nitrotoluene – C ₇ H ₇ NO ₂	methyl chloride – CH ₃ Cl
nonane – C ₉ H ₂₀	hydrogen chloride – HCl
amyl acetate – C ₇ H ₁₄ O ₂	hydrogen cyanide – HCN
butyl acetate – C ₆ H ₁₂ O ₂	nitrogen dioxide – NO ₂
ethyl acetate – C ₄ H ₈ O ₂	sulphur dioxide – SO ₂
isopropyl acetate – C ₅ H ₁₀ O ₂	hydrogen fluoride – HF
propyl acetate – C ₅ H ₁₀ O ₂	formaldehyde – CH ₂ O
octalene – C ₁₂ H ₈ Cl ₆	propane – C ₃ H ₈
octane – C ₈ H ₁₈	propylene – C ₃ H ₆
putrescent vapours – putrescine – C ₄ H ₁₂ N ₂	propyne – C ₃ H ₄
ozone – O ₃	hydrogen selenide – H ₂ Se
– paradichlorobenzene – C ₆ H ₄ Cl ₂	hydrogen sulphide – H ₂ S
– pentanone – C ₅ H ₁₀ O	sulphur trioxide – SO ₃
perchloroethylene – C ₂ Cl ₄	
pirydyna – pyridine – C ₅ H ₅ N	
siarczan dimetylu – dimethylsulphate – C ₂ H ₆ O ₄ S	
skatol – skatole – C ₉ H ₉ N	
styren – styrene monomer – C ₈ H ₈	
terpentyna – turpentine – C ₁₀ H ₁₆	
tlenek mezytylu – mesityl oxide – C ₆ H ₁₀ O	
toluen – toluene – C ₇ H ₈	
toluidyna – toluidine – C ₇ H ₉ N	
trójchloroetylen – trichloroethylene – C ₂ HCl ₃	

14. DECLARATION OF CONFORMITY



DECLARATION OF CONFORMITY EC

No. _____

Manufacturer (eventually also the authorised representative / importer):

name: **KLIMAWENT S.A.**

address: **81-571 GDYNIA, ul. Chwaszczyńska 194**

A person, authorised for issuing the technical documentation:

name and address: Teodor Świrbutowicz, **KLIMAWENT S.A.**

hereby declares that the product: **filtering unit**

type / model: **MiniDygestorium-350**

serial number: _____

year of production: _____

Meets the requirements of the subsequent European Directives:

2006/42/EC Directive of the European Parliament and of the Council of the 17 May, 2006 on machinery, amending the 95/16/EC Directive (recast) / Official Journal EC L157 of the 09.06.2006, page 24);

2014/35/EC Directive of the European Parliament and of the Council of the 26 February, 2014 on the harmonisation of the laws of the Member States, relating to the making available on the market of electrical equipment designed for use within certain voltage limits / Official Journal EC L96 of the 29.03.2014;

The appliance meets the requirements included in:

98/24/EC Directive of the Council of the 7 April, 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work (fourteenth individual Directive within the meaning of Article 16(1) of Directive 89/931/EEC);

Regulation of the Health Minister of the 30 December, 2004 on Occupational Health and Safety with reference to occurrence of chemical agents at workplaces (Journal of Laws Ne. 11 pos. 86 along with the posterior amendments).

Meets the requirements of the following harmonised standards:

EN ISO-12100:2012 Safety of machinery – General principles of design – Assessment and reduction of hazard

EN 60204-1:2018-12 Safety of machinery – Electrical equipment of machines – Part 1: General requirements

EN ISO 13857:2010 Safety of machinery – Safe distances to prevent hazard zones from being reached by upper and lower limbs

EN 60529:2003/A2:2014-07 Degrees of protection provided by enclosures (IP Code)

EN 61439-1:2011 Low-voltage switchgear and controlgear assemblies – Part 1: General resolutions

place, date

*signature of the
authorised person*

*name, surname,
function of the signatory*