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BECOME FUME CUPBOARDS GENERAL USE FUME CUPBOARDS

Laboratory fume cupboards are pieces of collective protection equipment that are useful for controlling environmental exposure to chemical pollutants in the laboratory.

Laboratory fume cupboards must be suitable for the products that are handled in them and the operations that are carried out, depending on its effectiveness of both in terms of its location and installation and its proper use and maintenance in accordance with EN 14175 parts 1 to 6.

BST

Standard fume cupboard

BST LOW

Low-level fume cupboard

BM

Fume cupboard with low work surface

BW

Walk in fume cupboard

- **Structure**

Side structures made of steel pipes with side and front covers in 1 mm sheets. Cold rolled steel (fine carbon steels).

The protection comes from a powder coating based on polyester resins formulated without TGIC. Thickness ≥70 µ.

Properties

Adhesion	ISO 2409	Gt 0
Embossing	ISO 1520	> 5 mm
Impact	ASTM D 2794	OK
Salt spray test 1000 hours.	ISO 9227	Max. decrease ≤ 1 mm
Moisture resistance 1000 hours.	ISO 6270	Max. decrease ≤ 1 mm

Ref. manufacturer's technical specifications

- **Interior cabin**

Interior cabin made of 6 mm compact high pressure laminate with an acrylic urethane coating. It is impact and moisture resistant and combines the durability of compact HPL panels with a closed, waterproof surface that is easy to clean and resistant to cleaning products and disinfectants. In addition, the panels have an excellent environmental profile, as they are manufactured in accordance with the standards set out in ISO 14001. It has an integrated antibacterial property and retains it throughout its lifetime. The different parts that make up the cabinet are assembled together, avoiding possible leaks.

Physical and Mechanical Characteristics

Characteristics	Value	Unit	Standard
Dimensional stability	≤ 2.5	mm/m	EN 428
Specific weight	≥ 1350	kg/m3	ISO 1183
Weight	± 8.5	kg/m3	ISO 1183
Tolerance of the panel, length and width	- 0 / + 5	mm	EN 438
Tolerance of the panel, thickness	± 0.4 for 6	mm	EN 438
Resistance to dry heat at 180ºC	≥ 4	Index	EN 438
Resistance to dry heat at 100ºC	≥ 4	Index	EN 438
Crack resistance	≥ 4	Index	EN 438
Resistance to discolouration (UV-A)	≥ 6	Wool Scale	ASTM G-53-91 (315-400 nm)
Modulus of elasticity	≥ 9000	N/mm	ISO 178
Tensile strength	≥ 70	N/mm	ISO 527-2
Flexural strength	≥ 100	N/mm	ISO 178
Resistance to the impact of a large ball, drop height	1800	mm	EN 438
Resistance to the impact of a large ball, diameter of the print	≤ 10	mm	EN 438
Scratch resistance	≥ 3	Index	EN 438
Resistance to stains	5	Index	EN 438
Removal of graffiti, sealants and normal dirt	Good		Internal Trespa test
Determination of antibacterial activity, escherichia coli	≥ 99.99	% reduction	JIS Z 2801:2000
Determination of antibacterial activity, staph aureus	≥ 99.99	% reduction	JIS Z 2801:2000
Disinfection of the surfaces;	IKI (hygiene certificate available)		
Contact with foodstuffs	ISEGA (certificate of conformity available)		
Behaviour in the event of fire, European Union	FR type 6 mm (Fire resistant)	Euroclass B-s2d0	EN 438-7

Note: Due to CE marking, HPL panels must be tested in accordance with the EN 135401-1 standard. The national bodies decide on the timing of the implementation of this standard in their technical building codes.

Tests are carried out through contact on the work surface

Procedure

As per the SEFA procedure. Contact testing is carried out by applying 5 drops of each reagent onto the surface to be tested, covering it with a watch glass or glass capsule to avoid evaporation. In the case of volatile solvents, the test is carried out by soaking a piece of cotton with them, putting it onto the surface of the sample and covering it with a glass capsule to avoid evaporation for the duration of the test. Once the test time has come to an end, rinse the surface with water, rub it with cotton, dry it and assess it.

Rating codes

0 - No appreciable stains, loss of brightness or change in the material of the work surface.
1 - Clearly visible stain or loss of brightness, but with no alteration to the functionality, smoothness or life of the material of the work surface.
2 - Objectionable stain, appreciable deterioration or chemical attack on the material of the work surface.
3 - Severe stain or moderate deterioration, pitting, craters or chemical attack on the material of the work surface.

No.	Reagent	Concentration	Res.
	ACIDS		
01	Hydrofluoric acid	48%	1
02	Hydrochloric acid	37%	0
03	Sulphuric acid	33%	0
04	Sulphuric acid	77%	0
05	Sulphuric acid	96%	1
06	Nitric acid	20%	0
07	Nitric acid	30%	1
08	Nitric acid	70%	1

09	Sulphuric acid (77%) Nitric acid (70%)	1:1	2
10	Chromic acid	60%	0
11	Formic acid	90%	0
12	Acetic acid	98%	1
13	Dichromate acid	5%	0
14	Phosphoric acid	85%	0
	BASES		
15	Sodium hydroxide	10%	0
16	Sodium hydroxide	20%	0
17	Sodium hydroxide	40%	0
18	Sodium hydroxide flake		0
19	Ammonium hydroxide	28%	0
	SALTS		
20	Saturated silver nitrate		0
21	Saturated zinc chloride		0
	HALOGENS		
22	Tincture of iodine		2
	ORGANIC CHEMICALS		
23	Cresol		0
24	Dimethylformamide		0
25	Formaldehyde	37%	0
26	Furfural		0
27	Gasoline		0
28	Phenol	90%	0
29	Hydrogen peroxide	3%	0
30	Saturated sodium sulphide		0
	SOLVENTS		
31	Acetone		0
32	Amyl acetate		0
33	Benzene		0
34	Butyl alcohol		0
35	Carbon tetrachloride		0
36	Chloroform		0
37	Dichlor acetic acid		0
38	Dioxane		0
39	Diethyl ether		0
40	Ethyl acetate		0
41	Ethyl alcohol		0
42	Methyl alcohol		0
43	Methylene chloride (dichloromethane)		0
44	Methylethylketone		0
45	Mono chlorobenzene		0
46	Napthelene		0
47	Toluene		0
48	Trichloroethylene		0
49	Xylene		0

Resistance to bacteria

Trespa Vertical has an integrated antibacterial property and retains it throughout its lifetime.

- The smooth, non-porous surfaces of Trespa Vertical prevent the development of micro-organisms. Microbial strains dry relatively quickly on the surface because there is no growth medium.
- The hygienic properties of Trespa Vertical remain unchanged, even under the most extreme conditions.

- **Work surface**

26 mm thick vitrified stoneware tile, with a marine edge for retaining liquids. White surface.

Stoneware worktops remain as new, even after permanent exposure to chemicals, high thermal and mechanical loads, scratching, abrasion and cleaning operations. The non-porous surface of the ceramics prevents breeding grounds for viruses, bacteria or germs, in addition to having a high resistance to chemical attack.

Surface mounted directly on the structure using levellers-brackets.

Physical Characteristics

Property	Value	Standard	Result
Density	2.37 g/cm³	DIN EN 993-1	
Weight of 20 mm tile	50 kg/m²		
Weight of 26 mm tile with a ridged edge	65 kg/m²		
Thermal conductivity	1.57 W/mK	DIN EN 821-2	
Breaking load (P) in kg. 20 mm tile	P = 1000 x B/L		
Breaking load (P) in kg. 26mm tile	P = 1600 x B/L		
Burning behaviour	Class A1	DIN EN 13501-1	Not combustible
		DIN 4102	No thermal load

Mechanical Characteristics

Property	Value	Standard	Result
Cold crushing strength	159 MPa	DIN EN 993-5	
Flexural strength	41.3 MPa	DIN EN 993-6	
Static modulus of elasticity	39.0 GPa	DIN EN 993-6	
Wear	8.5 cm³/50 cm²	DIN 52108	
Abrasion resistance	7	DIN EN 101	
Scratch resistance		DIN EN ISO 10545-11	No cracking

Thermal Characteristics

Property	Value	Standard
Thermal expansion	α25-400) 5.6 10-6K-1 (α25-800) 5.9 10-6K-1 (α25-1200) 6.3 10-6K-1	DIN 51045-2
Thermal shock	80ºC	

Tolerance and planning

The tolerance for the length and width dimensions is +2mm for a cut tile and +1.5% of its dimensions for a non-cut tile. The levelling can have a dip/sag of 5mm maximum.

Chemical

Resistence to chemical attack DIN EN ISO 10545-13, DIN EN ISO 10545-14

Resistance to chemical attack

01	Acetic anhydride		0
02	Acetone		0
03	Acetonitrile		0
04	Acidrine orange		0
05	Alzarin complexone dihydrate		0
06	Formic acid	(99%)	0
07	Ammonium hydroxide	(28%)	0
08	Amylacetat		0
09	Aniline blue, water soluble		0
10	Gasoline		0
11	Benzene		0
12	Butyl alcohol		0
13	Chloroform		0
14	Chromium(VI)oxide	(60%)	0
15	Dichlor acetic acid		0
16	Dichlormethane		0
17	Dioxane		0
18	Ferric(III)chloride	(10%)	0
19	Eosin B		0
20	Acetic acid	(99%)	0
21	Ethyl alcohol		0
22	Ethyl acetate		0
23	Ethylene glycol		0
24	Ethyl ether		0
25	Hydrofluoric acid	(48%)	3.0
26	Formaldehyde	(37%)	0
27	Fuchsin	(basic)	0
28	Furfural		0
29	Giemsa stain		0
30	Iodine solution	(0.1 N)	0
31	Iodine (crystals)		0
32	Tincture of iodine		0
33	Potassium iodite	(10%)	0
34	Potassium permanganate	(10%)	0
35	Carbol fuchsin		0
36	Carmine		0
37	Congo red		0
38	Cresol		0
39	Crystal violet (gentian)		0
40	Copper sulphate	(10%)	0
41	Malachite green oxalate		0
42	Methyl alcohol		0
43	Methylene blue		0
44	Methylethylketone		0
45	Methylisobutylketone		0
46	Methyl violet	2B	0
47	Mono Chlorobenzene		0
48	Naphtaline		0
49	Sodium chloride	(10%)	0
50	Sodium hydroxide	(10%)	0
51	Sodium hydroxide	(20%)	0
52	Sodium hydroxide	(40%)	0
53	Sodium hydroxide	(flakes)	0
54	Sodium hypochlorite	(13%)	0
55	n-Butyl acetate		0
56	n-Hexane		0

57	Perchloric acid	(60%)	0
58	Phenol		0
59	Phosphoric acid	(85%)	0
60	Safranine O		0
61	Nitric acid	(10%)	0
62	Nitric acid	(20%)	0
63	Nitric acid	(30%)	0
64	Nitric acid	(65%)	0
65	Nitric acid	(70%)	0
66	Nitric acid (65%): Hydrochloric acid (37%)		0
67	Hydrochloric acid	(10%)	0
68	Hydrochloric acid	(37%)	0
69	Sulphuric acid	(10%)	0
70	Sulphuric acid	(25%)	0
71	Sulphuric acid	(33%)	0
72	Sulphuric acid	(77%)	0
73	Sulphuric acid	(85%)	0
74	Sulphuric acid	(96-98%)	0
75	50% Sulphuric acid (77%): 50% Nitric acid (70%)		0
76	50% Sulphuric acid (85%): 50% Nitric acid (70%)		0
77	Silver nitrate	(1%)	0
78	Sudan III		0
79	Carbon tetrachloride		0
80	Tetrahydrofurane		0
81	Toluene		0
82	Trichlorethylene		0
83	Hydrogen peroxide		0
84	Xylene		0
85	Zinc chloride	(saturated)	0

Testing procedure

Carried out by applying 5 drops of each reagent to the surface of each panel.
The acids, bases, salts, specific chemical products and biological stains were covered with a downward-facing concave watch glass to confine the reagent.
The test with solvents is conducted by placing a saturated cotton ball covered with an inverted wide neck bottle to prevent evaporation.
At the end of the 24-hour test period,chemical products are washed with water and the usual detergents.

Evaluation

0	There is no change in colour and / or brightness
0,5	Slight change in colour and / or brightness, but no change on the surface
1,0	Slight change in colour and / or brightness, but no change on the surface
2,0	Slight change in colour and / or brightness slight damage on the surface
3.0	Slight change in colour and / or brightness, and damage / corrosion on the surface

- **Sash and windows**

Sash window made of extruded aluminium profiles with panes of safety glass (3+3 bi-laminate glass). The double-rail guide profile allows the glass panes to be opened horizontally.

The sash is balanced by means of a counterweight fixed by two steel cables 3 mm in diameter sheathed in 1 mm plastic which protects them from corrosion; if one of the cables breaks, the sash is locked preventing it from falling, in accordance with the EN 14175 standard.

Total sash opening of 860 mm (tolerance ±15 mm); for safety reasons a mechanical stop is incorporated for the sash opening for maximum operational opening in accordance with the EN 14175-2 standard.

All aluminium sections are protected against acids, bases and alkalis, as well as against knocks and abrasion, thanks to a powder coating based on polyester resins formulated without TGIC, designed for outdoor environments, offering excellent resistance to light and weather on a wide variety of substrates, applied in a single layer. Thickness ≥70 µ.

Test results

Test carried out with a 0.7 mm thick chrome-plated aluminium panel.

Adhesion	ISO 2409	Gt 0
Embossing	ISO 1520	> 5 mm
Impact	ASTM D 2794	OK
Salt spray test 1000 hours.	ISO 9227	Max. decrease ≤ 1 mm
Moisture resistance 1000 hours.	ISO 6270	Max. decrease ≤ 1 mm

Ref. manufacturer's technical specifications

- **Services**

The Become fume cupboard has vertical service panels on both sides, with taps usually installed on the left and electrical sockets on the right.

The taps inside the cabinets of BST, BST Low and BM fume cupboards are located on the back.

- **Access to installations**

Access to the upper part of the cabinet is via a removable front cover made of an epoxy-polyester coated steel sheet. The lower part of the fume cupboard has inspection covers for access to the service tunnels, with the possibility of incorporating modules with a height of 650 mm.

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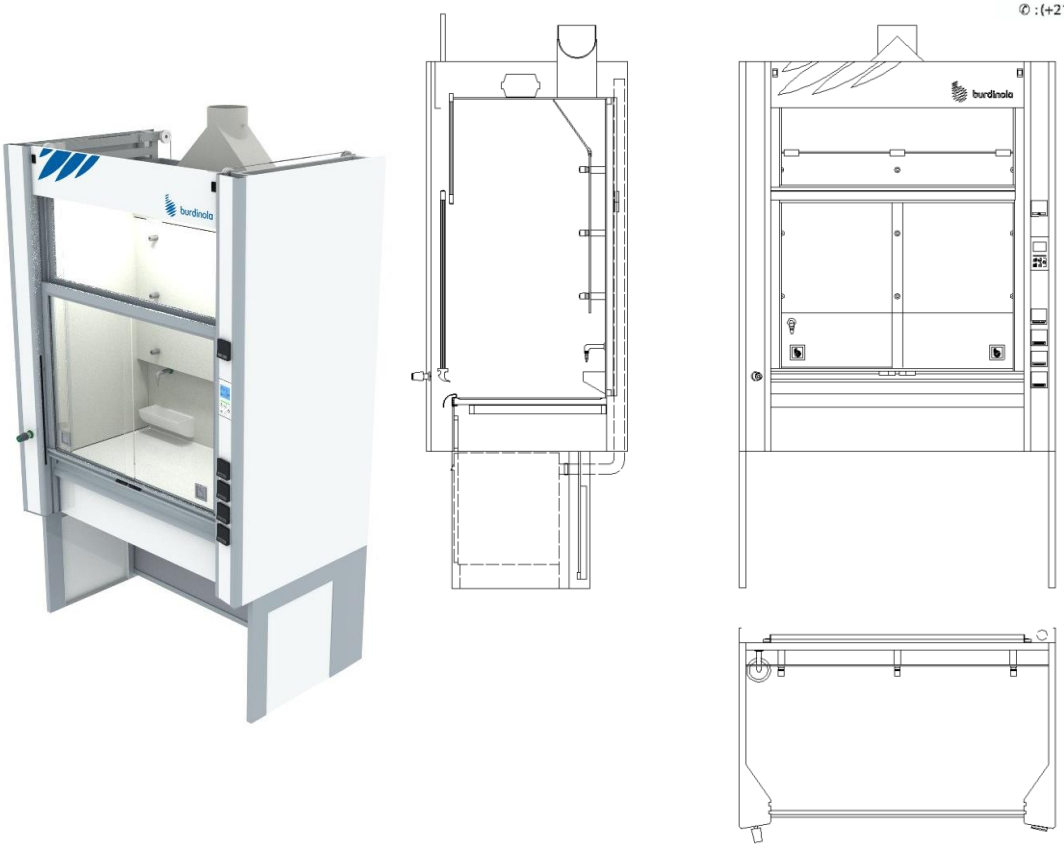
- **Fume cupboards – Become BST**



Sizing (mm)					
Total width	**1200**	**1500**	**1800**	**2100**	**2400**
Total height	2500	2500	2500	2500	2500
Total depth	950	950	950	950	950
Usable interior width	1135	1435	1735	2035	2335
Usable interior height	1415	1415	1415	1415	1415
Usable interior depth	740/620	740/620	740/620	740/620	740/620
Height of the work surface	900	900	900	900	900
Height of the extraction outlet	2670	2670	2670	2670	2670

Characteristics					
Configuration	**1200**	**1500**	**1800**	**2100**	**2400**
230V/16A IP55 electrical sockets	4	4	4	4	4
Magneto-thermal protection	1 x 16 A	1 x 16 A	1 x 16 A	1 x 16 A	1 x 16 A
Fume cupboard control	EO 25	EO 25	EO 25	EO 25	EO 25
Worktop	Stoneware	Stoneware	Stoneware	Stoneware	Stoneware
Sink with water tap (*)	1	1	1	1	1
Lighting	1 LED	2 LEDs	2 LEDs	3 LEDs	3 LEDs
Extraction outlet (**)	1 x Ø200	1 x Ø200	1 x Ø250	1 x Ø250	1 x Ø250
Support for busbar	9	9	9	12	12
No. of sash windows	1	1	1	1	1
No. of sliding windows	2	2	2	4	4

Notes: Dimensional data (Tolerance ±5 mm)
(*) Standard without sink, optional.
(**) The diameters of the outlet may vary depending on the installation.

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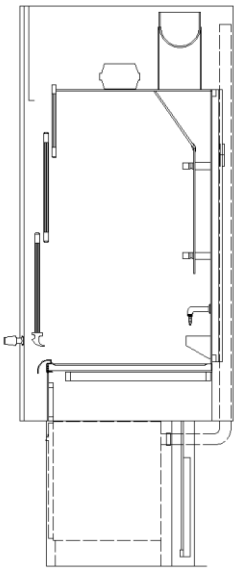
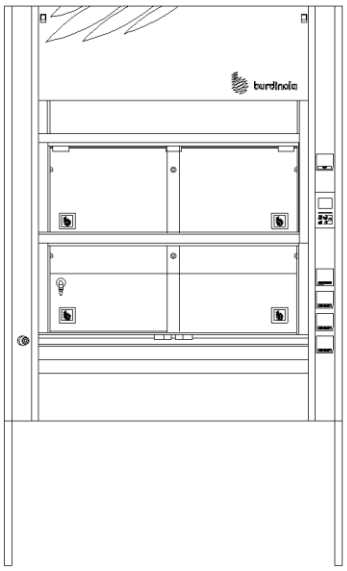
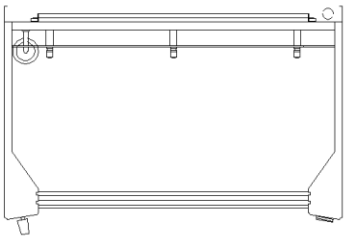
- **Fume cupboards – Become BST Low**

Sizing (mm)					
Total width	**1200**	**1500**	**1800**	**2100**	**2400**
Total height	2500	2500	2500	2500	2500
Total depth	950	950	950	950	950
Usable interior width	1135	1435	1735	2035	2335
Usable interior height	1215	1215	1215	1215	1215
Usable interior depth	740/620	740/620	740/620	740/620	740/620
Height of the work surface	900	900	900	900	900
Height of the extraction outlet	2470	2470	2470	2470	2470

Characteristics					
Configuration	**1200**	**1500**	**1800**	**2100**	**2400**
230V/16A IP55 electrical sockets	4	4	4	4	4
Magneto-thermal protection	1 x 16 A	1 x 16 A	1 x 16 A	1 x 16 A	1 x 16 A
Fume cupboard control	EO 25	EO 25	EO 25	EO 25	EO 25
Worktop	Stoneware	Stoneware	Stoneware	Stoneware	Stoneware
Sink with water tap (*)	1	1	1	1	1
Lighting	1 LED	2 LEDs	2 LEDs	3 LEDs	3 LEDs
Extraction outlet (**)	1 x Ø200	1 x Ø200	1 x Ø250	1 x Ø250	1 x Ø250
Support for busbar	6	6	6	8	8
No. of sash windows	2	2	2	2	2
No. of sliding windows	4	4	4	8	8

Notes: Dimensional data (Tolerance ±5 mm)
(*) Standard without sink, optional.
(**) The diameters of the outlet may vary depending on the installation.

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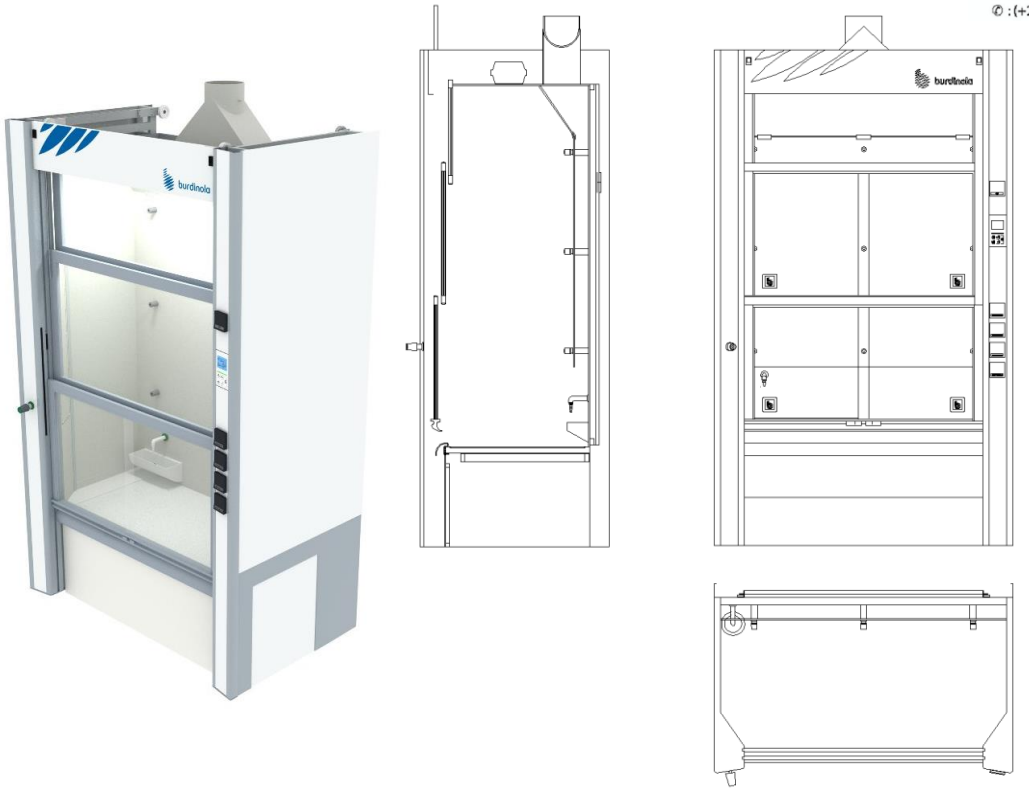
- **Fume cupboards – Become BM**



Sizing (mm)					
Total width	**1200**	**1500**	**1800**	**2100**	**2400**
Total height	2500	2500	2500	2500	2500
Total depth	950	950	950	950	950
Usable interior width	1135	1435	1735	2035	2335
Usable interior height	1815	1815	1815	1815	1815
Usable interior depth	740/620	740/620	740/620	740/620	740/620
Height of the work surface	500	500	500	500	500
Height of the extraction outlet	2670	2670	2670	2670	2670

Characteristics					
Configuration	**1200**	**1500**	**1800**	**2100**	**2400**
230V/16A IP55 electrical sockets	4	4	4	4	4
Magneto-thermal protection	1 x 16 A	1 x 16 A	1 x 16 A	1 x 16 A	1 x 16 A
Fume cupboard control	EO 25	EO 25	EO 25	EO 25	EO 25
Worktop	Stoneware	Stoneware	Stoneware	Stoneware	Stoneware
Sink with water tap (*)	1	1	1	1	1
Lighting	1 LED	2 LEDs	2 LEDs	3 LEDs	3 LEDs
Extraction outlet (**)	1 x Ø200	1 x Ø200	1 x Ø250	1 x Ø250	1 x Ø250
Support for busbar	9	9	9	12	12
No. of sash windows	2	2	2	2	2
No. of sliding windows	4	4	4	8	8

Notes: Dimensional data (Tolerance ±5 mm)
(*) Standard without sink, optional.
(**) The diameters of the outlet may vary depending on the installation.

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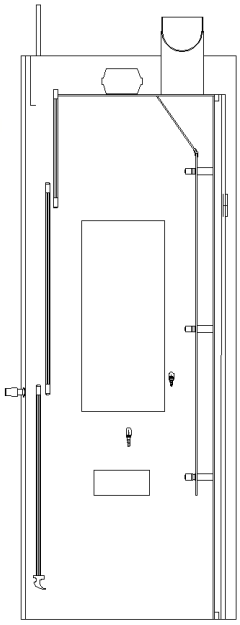
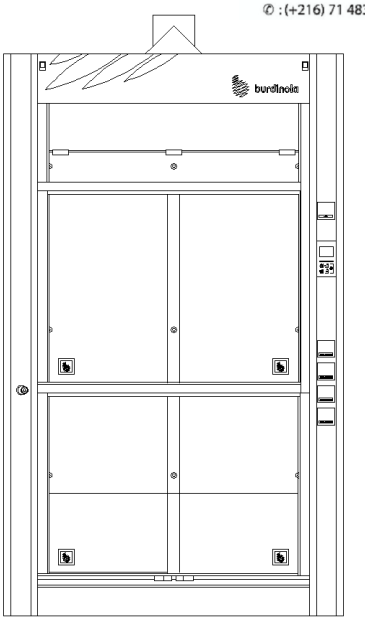
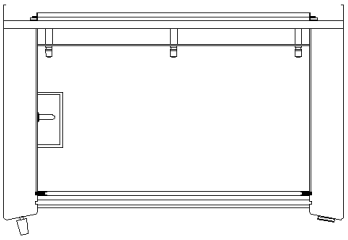
- **Direct access fume cupboard - Become BW**







Sizing (mm)					
Total width	**1500**	**1800**	**2100**	**2400**	**2700**
Total height	2500	2500	2500	2500	2500
Total depth	950	950	950	950	950
Usable interior width	1200	1500	1800	2100	2400
Usable interior height	2315	2315	2315	2315	2315
Usable interior depth	740/620	740/620	740/620	740/620	740/620
Height of the extraction outlet	2670	2670	2670	2670	2670

Characteristics					
Configuration	**1500**	**1800**	**2100**	**2400**	**2700**
230V/16A IP55 electrical sockets	4	4	4	4	4
Magneto-thermal protection	1 x 16 A	1 x 16 A	1 x 16 A	1 x 16 A	1 x 16 A
Fume cupboard control	EO 25	EO 25	EO 25	EO 25	EO 25
Sink with water tap (*)	1	1	1	1	1
Lighting	1 LED	2 LEDs	2 LEDs	3 LEDs	3 LEDs
Extraction outlet (**)	1 x Ø200	1 x Ø200	1 x Ø250	1 x Ø250	1 x Ø250
Support for busbar	9	9	9	12	12
No. of sash windows	2	2	2	2	2
No. of sliding windows	4	4	4	8	8

Notes: Dimensional data (Tolerance ±5 mm)
(*) Standard without sink, optional.
(**) The diameters of the outlet may vary depending on the installation.