PROPOSED VENTILATION SYSTEM AT

87 – 89 High Street, Croydon, CR0 1QF

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1.0 INTRODUCTION:

The information contained within this document should be used as supporting information when applying for Change of Use Planning Approval and is based on the '*DEFRA Annex B – Guidance on the control of odour and noise from Commercial* Kitchen *Exhaust system – Jan 05'*. This follows feedback from various Local Authorities who use Annex B as a guide when referring to the extract system as part of the application process.

Annex B advises that the aim of any ventilation/extraction is to ensure that no nuisance, disturbance or loss of amenity is caused by odour, fumes, food droplets or noise, to nearby properties.

Additionally, the visual appearance of the flue may be important and the flue itself may require a separate planning permission. Enquiries should be made to the Local Authority Planning Department regarding this matter.

A suitably qualified and experienced person with specialist knowledge of ventilation schemes should undertake the design and installation of a ventilation system.

Designing and installing appropriate ventilation systems may involve considerable expense.

In circumstances where the end user of the premises is unknown, or where the specific type of food to be cooked is unknown, the installation should be designed to achieve the highest level of odour control in order to cater for a worst case scenario.

There are many different types of odour abatement available (carbon filters, electrostatic precipitation, high dilution and high velocity extraction) however not all types are suitable for all cooking methods. In each case, grease filters must be installed.

2.0 PREAMBLE

All work is carried out in accordance with the latest relevant British (or Irish regulations where applicable) and European Standards, statutory Regulation and ByeLaws together with the following publications:

- CIBSE Codes and guides to current practice
- Water Authority Bye Laws
- HVCA – DW143 Practical Guide to Ductwork Leakage Testing
- HVCA DW144 Specification for Sheet Metal Ductwork
- HVCA DW172 Guide to Good Practice for Kitchen Ventilation Systems
- HVCA – RUAG70 Guide to Good Practice Refrigeration
- The Building Regulations
- Gas Safety (Installation and Use) Regulations 1998

All plant, ducts, pipe cables etc. shall be adequately protected against accidental damage corrosion and external environment and shall be capable of safe decontamination and removal in the future without disturbing other services. Pipes and ducts shall be adequately sized, kept as short as practicable, leak-proof with a minimum number of joints and have provision for routine maintenance. All facilities shall be designed to prevent the ingress or egress of rodents, vermin, and insects.

The duct will be fixed to the shell of the unit using anti-vibration fixing mounts and under no circumstances will flexible ductwork be used other than the fan connections

The HVAC contractor shall supply the client with system design drawings, prior to manufacture and installation

For projects in England and Wales, the HVAC contractor shall also demonstrate compliance with Building Regulations Approved documents L2A & L2B. This will include:

(a) Provision of details of the efficiency and controls of heating , cooling and ventilation systems in accordance with Non-Domestic Heating, Cooling and Ventilation compliance Guide (2006)

(b) Provision of commissioning certificates including air leakage tests on the ductwork

Fire/smoke dampers shall be installed in all fire compartment walls to Building Control requirements

The HVAC contractor shall ensure that externally, the ductwork conforms to the supplied drawings in terms of its route, height and termination. These drawings will have formed part of the planning permission and must not be deviated from without prior consultation with the Project Manager / Architect.

Upon completion of the installation, all shall be fully tested and proved including airflows. The Contractor shall produce an Operating and Maintenance Manual which shall contain details of all equipment supplied; a record drawing of the complete mechanical services installation and copies of all Test Certificates. It shall contain a Maintenance Schedule based on the manufacturer's recommendations.

3.0 INFORMATION ON TYPE OF OPERATION

The proposed operation will produce approximately 100 meals on average per day.

The proposed hours of operation of the business and ventilation plant will be in accordance with the hours stated in the approved Change of Use

4.0 PLANS AND DRAWINGS

Please refer to drawing B10413-AEW-PJ003029-ZZ-DR-0003 of the proposed premises which shows the indicative internal arrangement and location of the ventilation system.

Please refer to drawing B10413-AEW-PJ003029-XX-DR-0004 for proposed elevations of the unit which shows the external location of the ventilation system.

A schematic drawing produced by the HVAC Designer will be provided at a later date.

5.0 DETAILED DESIGN OF VENTILATION SYSTEM

5.1 Pre-filters (fresh air system)

A copy of the manufacturer's product data sheet should be supplied clearly showing:

- Manufacturer's name: Jasun Filtration
- Filter name and product code: Type 90 and VL2 Panel Filter
- Dimensions of the pre-filter: 45mm thick (rated airflow2.0m/s) see data sheets

- Nature of the filter media: Disposable glass fibre media
- Manufacturer's recommendations on the frequency and type of maintenance of the pre-filter having regard to the conditions that it will be used under: 3 monthly maintenance

5.2 Electrostatic precipitators
(NOT REQUIRED ON THIS SITE – REFER TO 5.9 CARBON FILTERS)

5.3 Odour counteracting or neutralising system
(NOT REQUIRED ON THIS SITE – REFER TO 5.9 CARBON FILTERS)

5.4 Cooker hood

The following information on the characteristics of the cooker hood should be supplied that clearly shows:

- The hood will made of: Stainless Steel construction with all visible joints to be welded, ground and polished and to incorporate a gutter around all edges with a plugged drain connection at lowest point.
- Length that the cooker hood overhangs the appliances: 200mm all round
- Face velocity at the cooker hood (metres per second): 0.25cu/m/s
- Dimensions of the opening of the cooker hood= 2m x 3m

The hood will include 6 no. mesh type grease filters, aluminium frame with mesh inserts:

- Manufacturer's name: Jasun Filtration
- Filter name and product code: Model GF (approx. 450mm x 450mm)

The extract system is predominantly removing heat and gas combustion fumes. Mesh filers are much more efficient at removing any fine particles which may be caught in the air flow.

There is not barrier to flame within the filter, and it is accepted that mesh filters cannot therefore be used on their own in applications where there is appreciable risk of fire. However this does not apply in this operation.

5.5 System Operation

In addition to the specification of the components the following must be provided about the system:

- Proposed extract rate (expressed as m^3/second): 1.5m^3/s
- Dwell time of the gases in the carbon filtration zone: 0.2 – 0.4s

- Volume of the kitchen: based on average prep area size of 100 - 150cu/m
- Efflux velocity: 11m/s

Note: The system performance is dependant upon the extract rate of the air. Where the rate can be adjusted by the use of dampers or a variable speed fan, then the conditions under which the extract rate can be achieved must be described. Single speed fan: no adjustment.

5.6 Flue Design

The height and velocity of the final discharge are the two important factors. Generally, the greater the flue height, the better the dispersion and dilution of odours. The discharge of air should be at a minimum height of 1m above the roof ridge, especially if there are buildings nearby that may affect odour dispersion and dilution.

Where this is not possible (e.g. because of ownership or structural constraints), additional techniques will be required in order to reduce odours, such as an increase in efflux velocity and additional filters, etc. The final discharge should be vertically upwards, unimpeded by flue terminals. The number of bends in the ducting should be minimised and the ducting should have a smooth internal surface.

Details of proposal: Proposed 500mm dia. oven extract duct to run internally above suspended ceiling before penetrating rear elevation and terminating horizontally in PPC aluminium louvred wall grille finished RAL 7043 Traffic Grey. Oven extract system to be fitted with noise attenuation dampers and atmospheric side silencers with fan fixed to anti-vibration mounts to M&A specialist sub-contractor's design and detail. Extract system to further be fitted with fine filtration and carbon filters in accordance with Purified Air report reference: RM23755_Pratt Street, Camden

5.7 Noise

Data on the noise produced by the system as a whole should be provided including:

- Sound power levels or sound pressure levels at given distances (the assumptions to this calculation must be clearly stated);
- An octave band analysis of the noise produced by the system should also be provided, where possible; and
- Hours of operation of the ventilation system (where this differs from the hours of opening).

This information is site dependent and can only be achieved once the system is designed and installed. Please refer to Appendix 1 for data sheets regarding the fans for more information.

5.8 Maintenance

A schedule of maintenance must be provided including details for:

- Cleaning of washable grease filters: Weekly
- Frequency of inspection and replacement of all filters (grease filters, pre-filters and carbon filters where proposed): Monthly
- Inspection and servicing of fans: Bi-annually

Please note that the HVAC contractor will provide 12 months spare filters at each new store.

5.9 Carbon Filters

Please refer to Purified Air risk assessment and specification document reference RM23755_Pratt Street, Camden dated 2nd August 2018. Please contact Purified Air directly for any additional information with regards to oven extract filtration details / specification. Contact details as follows:

Contract: Rob Martin
Telephone: 0170 8755 414
Mobile: 0777254488
Email: rob@purifiedair.co.uk

6.0 Additional notes for guidance

The air inlets must not permit pests to enter the kitchen. Fly screens are an example of how this can be achieved.

Sufficient air must be permitted into the premises to replace air extracted. The method for supplying this make-up air should be detailed. The route of the air into the kitchen must not result in its contamination, for example passage through a toilet. Separate provision must be made for ventilation of a toilet. There must be sufficient access points to permit adequate cleaning of all the ductwork.

Fresh air is introduced via a dedicated air handling unit to supply 80% of the extracted air, fresh air filtered to EU4 – tempered via a low pressure hot water coil - is introduced via ceiling mounted diffusers to the preparation / office and wash-up areas.

APPENDIX 1

COLDROOM AND AIR CONDITIONING COMPRESSORS

AIR CONDITIONING			**COLD ROOM**	
Model (typical unit)	Mitsubishi H.I. FDC 100VNX		**Model (typical unit)**	Karbox 2464
Dimensions	W 970mm D 350mm H 1300mm		**Dimensions**	W 890 D 560 H 500
Weight	105 kg		**Weight**	78 kg
Airflow	1620 cu.m/h		**Compressor**	Model CAJ2464 34.5cm^3 9.7 MRA 38 LRA
Current	Start N/A Max running current 11.1A		**Refrigerant Connections**	Suction 15.9mm Liquid 9.5mm
Capacity	Cool 10.0 kW Heat 11.2 kW		**Condenser Fan Motor**	220-1 Volts/Phase 0.6 Amps each 2800 m^3/hr Air Flow
Noise	50 dBA @ 1m		**Watts**	4-6kW
			Electrical Details	16 MRA 38 LRA
			Noise	34dBA @ 10m

APPENDIX 2

PRODUCT DATA SHEETS

- Jasun Filtration PLC – Type 90 panel Filter (Fresh Air Intake)
- Air Vent Technology – Water heated air handling units (Fresh Air Intake)
- JASUN Filtration PLC – Model GF mesh grease filters (Canopy Filters)
- Vent-Axia – Black Sabre Slim case sickle fans (Extract Fan)

V Line Panel Filter Economy Pleated Intrepid Media

General Description

The V Line pleated Panel filter is a standard capacity disposable product offering a better than basic level of filtration, or pre-filtration in HEVAC applications. This product is made using patented Kimberly Clark media which delivers a constant level of filtration over its life.

Construction

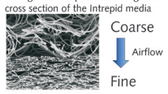
This product is constructed by bonding a pleat pack of Intrepid V Line media into a water repellent AquaKote card frame

Features

The Frame is made from AquaKote card which has

- Superior tear resistance when wet
- Great dry tear resistance and
- Manufactured from a renewable source.

Kimberley Clark Patented Intrepid Media



- Has a Graduated Density for even dirt loading , resulting in greater dust holding
- Hydrophobic – so will not load with moisture in the air
- Has a constant efficiency due to its extra electrostatic charge
- Superior Efficiency V's Particle size (see table)
- Has a low pressure drop
- Is made form continuous fibres so will not shed

Filter Class EN 779:2012		G4
Filter Depth	**Rated Airflow**	**Initial Pressure Drop**
20mm	1.5m/sec	45Pa
45mm	2.0m/sec	45Pa
95mm	2.7m/sec	53Pa
Final Recommended Pressure Drop		200Pa

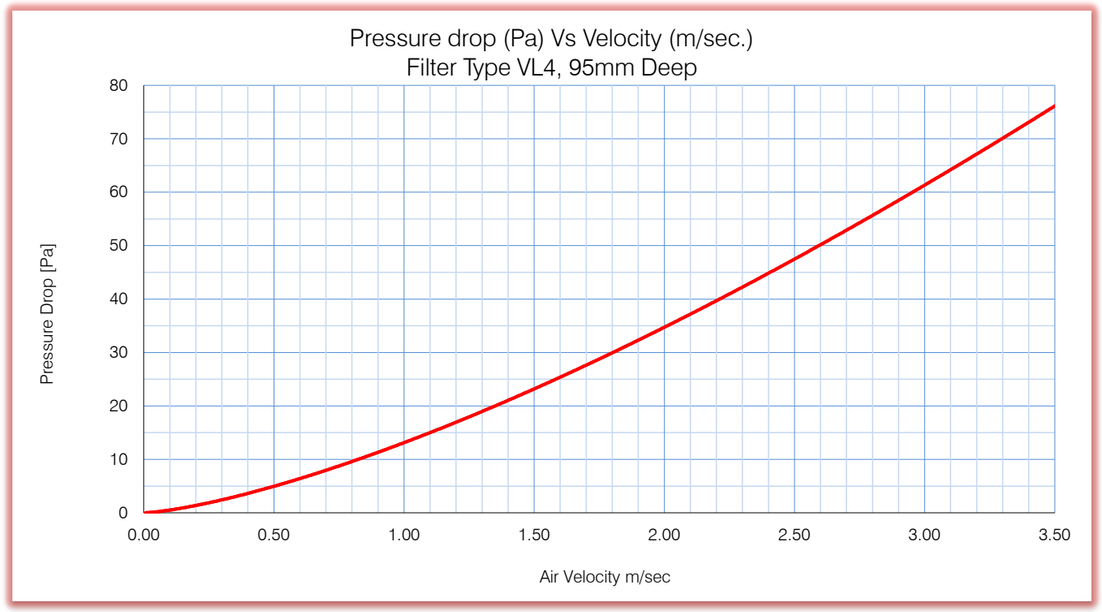
Operating Temperature

Continuous 80 °Centigrade

Test Comparing Filtration efficiency V's different sized particles. Intrepid Media V's Cotton Polyester Filters		
Particle Size Rang(mm)	Initial Fractional Efficiency(%)	
	V Line Intrepid	The "best" Cotton Poly Alternative
0.3-0.4	7	2
0.4-0.55	15	6
0.55-0.7	28	11
0.7-1.0	41	19
1.0-1.3	52	24
1.3-1.6	58	28
1.6-2.2	63	32
2.2-3.0	67	36
3.0-4.0	70	37
4.0-5.5	71	38
5.5-7.0	72	38
7.0-10.0	73	39

STANDARD SIZES VL4

No.	Nominal Size Inches	Height (mm)	Width (mm)	Depth (mm)	Rated Airflow m^3/hr
VL4-1010	10x10x4	241	241	95	565
VL4-1020	10x20x4	241	495	95	1160
VL4-1212	12x12x4	292	292	95	829
VL4-1224	12x24x4	292	594	95	1686
VL4-1515	15x15x4	368	368	95	1316
VL4-1520	15x20x4	368	495	95	1771
VL4-1616	16x16x4	394	394	95	1509
VL4-1620	16x20x4	394	495	95	1896
VL4-1625	16x25x4	394	622	95	2382
VL4-1818	18x18x4	445	445	95	1925
VL4-1831	18x31x4	445	775	95	3352
VL4-2020	20x20x4	495	495	95	2382
VL4-2024	20x24x4	495	594	95	2858
VL4-2025	20x25x4	495	622	95	2993
VL4-2424	24x24x4	594	594	95	3404



Purified Air Limited
Lyon House, Lyon Road
Romford, Essex
RM1 2BG.

Free Phone:- 0800 018 4000
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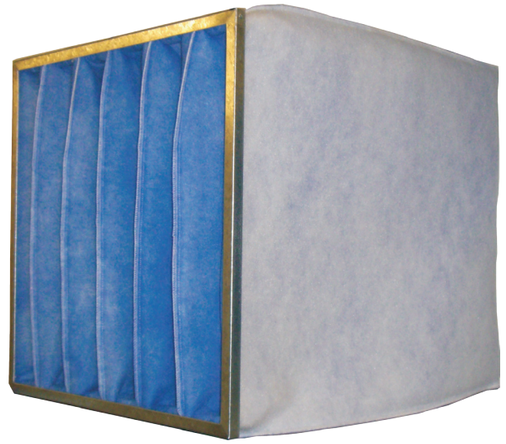
Web:- www.purifiedair.com

CleanPak CP4 Bag Filter
Fire Rated CP413



General Description

The Cleanak, fire rated range of bag filters are used widely in government buildings, hospitals and other sensitive areas. This grade of filter is suitable for air condition to offices, theatres, computer rooms and spray booths.

Meets NHS HTM03 Filter Specification

Construction

Cleanpak bag filters are manufactured by mounting the 100% polyester synthetic media into a galvanised steel header frame. Corrosion resistant

Features

- Efficient mechanised manufacturing techniques delivery cost effective filtration
- Polyester Media delivers fire rating to CP413
- Rolled safety edge to prevent the material being cut and to prevent injury to the engineers who handle them
- Extra depth filter layer which provides extended filter life
- Versatile manufacture - available in most sizes and pocket configuration
- FREE gasket - simply specify side, face or back.
- Packed individually in a plastic bag and then into strong cartons for safe transportation and storage.

Filter Media

- Is polyester
- Deep Filtration layered
- Is available any size
- Is totally non toxic and non irritant
- Is very inexpensive
- Is fire retardant
- No Fibre Shedding

Operating Temperature

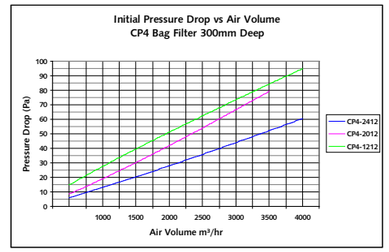
Continuous 80 °Centigrade

Filter Efficiency to BS EN 779:2012		G4
Pocket Depth	**Rated Airflow**	**Initial Pressure Drop**
300mm	1.70m/sec	30Pa
355mm	2.46m/sec	30Pa
600mm	3.30m/sec	50Pa
Maximum Final Recommended Pressure Drop		250Pa
Minimum Velocity required		2m/sec

STANDARD SIZES

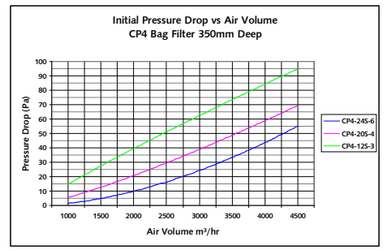
Series 300 - Economy Configuration

Part Number	Header Dimensions			Pocket Details		Capacity m³/hr
	Height (mm)	Width (mm)	Thickness (mm)	Depth (mm)	No. of Pockets	
CP4-1212	592	287	20	300	2	1000
CP4-2012	592	492	20	300	3	1800
CP4-2412	592	592	20	300	4	2100



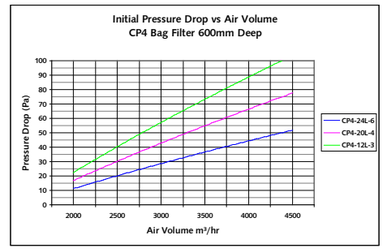
Series 350 - Low Initial Pressure Drop Configuration

Part Number	Header Dimensions			Pocket Details		Capacity m³/hr
	Height (mm)	Width (mm)	Thickness (mm)	Depth (mm)	No. of Pockets	
CP4-12S-3	592	287	20	350	3	1500
CP4-20S-4	592	492	20	350	4	2500
CP4-24S-6	592	592	20	350	6	3100



Series 600 - Long Pocket, long Life, High Capacity Configuration

Part Number	Header Dimensions			Pocket Details		Capacity m³/hr
	Height (mm)	Width (mm)	Thickness (mm)	Depth (mm)	No. of Pockets	
CP4-12L-3	592	287	20	600	3	2000
CP4-20L-4	592	492	20	600	4	3460
CP4-24L-6	592	592	20	600	6	4200



Options

Standard header frame depth is 20mm, also available 12mm, 15mm, 25mm, 33mm

Pocket Depths of 229mm(9”), 300mm(12”), 380mm (15”), 450mm (18”) 530mm (21”), 635mm(25”), 760mm(30”) Also available.

Other Pocket configurations available to order, for instance 8 pockets across a 592mm wide frame.

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Web:- www.purifiedair.com

Sitesafe Carbon Units

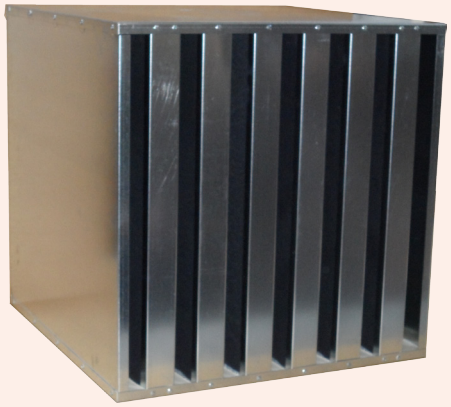
General Description

Standard Carbon multipanel carbon units have been in circulation for many years and there are many tens of thousand of units in service today. These filters are very heavy and nearly always installed in situations with very poor access.

With the new appreciation of risk which we have in the 21st Century it has become apparent that these units represent a real danger to health and potentially offer risk in the work place when a filter change is required.

The new Sitesafe Carbon cells provide exactly the same filter performance with a set of filters which will retrofit exactly for an existing full size cell.

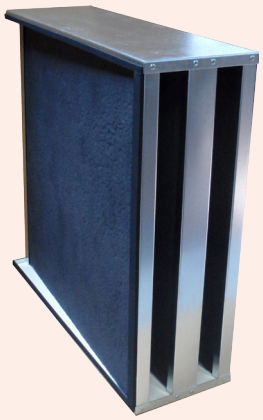
Will require two people plus lifting gear to carry and install



Carbon PA242424

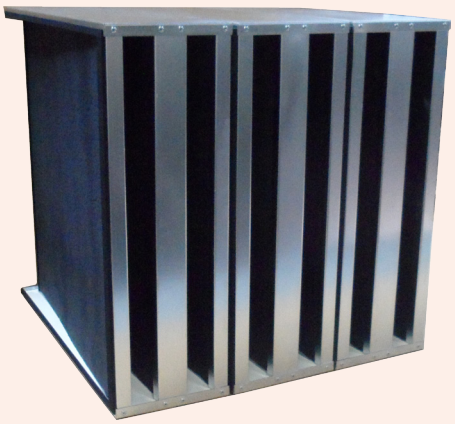
Size 594x594x597
Gross Weight 68.2Kg
Carbon Weight 50kg
Rated Airflow 3600m³/hr*
Pressure Drop 120Pa

Safe for one person to carry, no special lifting gear required.



Sitesafe PA240824

Size 594x196x597
Gross Weight 17.95Kg
Carbon Weight 16.6kg
Rated Airflow 1200m³/hr*
Pressure Drop 120Pa



Sitesafe 3xPA240824

Size 594x594x597
Gross Weight 53.85Kg
Carbon Weight 50kg
Rated Airflow 3600m³/hr*
Pressure Drop 120Pa

*Rated Airflow based on a dwell time of 0.1 seconds.
Available in all sizes to retrofit carbon cells