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Zondi Phumlani ?



## KZN Health Intranet

KZN HEALTH

HOME CORPORATE INFORMATION COMPONENTS DIRECTORY DISTRICT OFFICES HEALTH FACILITIES

KZN Health > Components > Supply Chain Management

[AdvertQuote](#)



### Quotation Advert

Opening Date:  *2021-11-26*

Closing Date:

Closing Time:

#### INSTITUTION DETAILS

Institution Name:

Province:

Department or Entity:

Division or section:

Place where goods / services is required:

Date Submitted:

#### ITEM CATEGORY AND DETAILS

Quotation Number:

Item Category:

Item Description:

Quantity (if supplies):

#### COMPULSORY BRIEFING SESSION / SITE VISIT

Select Type:

Date:

Time:

Venue:

QUOTES CAN BE COLLECTED FROM:

QUOTES SHOULD BE DELIVERED TO: appelsboschquotes@gmail.com"/>

#### ENQUIRIES REGARDING THE ADVERT MAY BE DIRECTED TO:

Name:


Email:

Contact Number:

Finance Manager Name:

Mr. B. C. Ndlovu

Finance Manager Signature:

\_\_\_\_\_

**No late quotes will be considered**





**DECLARATION OF INTEREST**

1. Any legal person, including persons employed by the state<sup>1</sup>, or persons having a kinship with persons employed by the state, including a blood relationship, may make an offer or offers in terms of this invitation to quote (includes a price quotation, advertised competitive quote, limited quote or proposal). In view of possible allegations of favouritism, should the resulting quote, or part thereof, be awarded to persons employed by the state, or to persons connected with or related to them, it is required that the bidder or his/her authorised representative declare his/her position in relation to the evaluating/adjudicating authority where-
  - the bidder is employed by the state; and/or
  - the legal person on whose behalf the bidding document is signed, has a relationship with persons/a person who are/is involved in the evaluation and or adjudication of the quote(s), or where it is known that such a relationship exists between the person or persons for or on whose behalf the declarant acts and persons who are involved with the evaluation and or adjudication of the quote.

2. In order to give effect to the above, the following questionnaire must be completed and submitted with the quote.

- |  |   |
|--|---|
| 2.1. Full Name of bidder/representative.....   | 2.4. Company Registration Number: ..... |
| 2.2. Identity Number: .....  | 2.5. Tax Reference Number: .....        |
| 2.3. Position occupied in the Company (director, trustee, shareholder <sup>2</sup> ):..... | 2.6. VAT Registration Number: .....     |

2.7. The names of all directors / trustees / shareholders / members, their individual identity numbers, tax reference numbers and, if applicable, employee / persal numbers must be indicated in paragraph 3 below. [TICK APPLICABLE]

2.8. Are you or any person connected with the bidder presently employed by the state? YES  NO

2.8.1. If so, furnish the following particulars:  
 Name of person / director / trustee / shareholder/ member: .....  
 Name of state institution at which you or the person connected to the bidder is employed:.....  
 Position occupied in the state institution: .....Any other particulars:.....

2.8.2. If you are presently employed by the state, did you obtain the appropriate authority to undertake remunerative work outside employment in the public sector? YES  NO

2.8.2.1. If yes, did you attach proof of such authority to the quote document?

*(Note: Failure to submit proof of such authority, where applicable, may result in the disqualification of the quote.)*

2.8.2.2. If no, furnish reasons for non-submission of such proof: .....

2.9. Did you or your spouse, or any of the company's directors / trustees / shareholders / members or their spouses conduct business with the state in the previous twelve months? YES  NO

2.9.1. If so, furnish particulars:.....

2.10. Do you, or any person connected with the bidder, have any relationship (family, friend, other) with a person employed by the state and who may be involved with the evaluation and or adjudication of this quote? YES  NO

2.10.1. If so, furnish particulars:.....

2.11. Are you, or any person connected with the bidder, aware of any relationship (family, friend, other) between any other bidder and any person employed by the state who may be involved with the evaluation and or adjudication of this quote? YES  NO

2.11.1. If so, furnish particulars:.....

2.12. Do you or any of the directors / trustees / shareholders / members of the company have any interest in any other related companies whether or not they are bidding for this contract? YES  NO

2.12.1. If so, furnish particulars:.....

**3. Full details of directors / trustees / members / shareholders.**

NB: The Department Of Health will validate **details of directors / trustees / members / shareholders** on CSD. It is the suppliers' responsibility to ensure that their details are up-to-date and verified on CSD. If the Department cannot validate the **information** on CSD, the quote will not be considered and passed over as non-compliant according to National Treasury Instruction Note 4 (a) 2016/17.

**4 DECLARATION**

I, THE UNDERSIGNED (NAME).....CERTIFY THAT THE INFORMATION FURNISHED IN PARAGRAPHS 2.

I ACCEPT THAT THE STATE MAY REJECT THE QUOTE OR ACT AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

..... Name of bidder	..... Signature	..... Position	..... Date
-------------------------	--------------------	-------------------	---------------

<sup>1</sup>State<sup>1</sup> means –

- |   |   |
|---|---|
| a) any national or provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No. 1 of 1999); | c) provincial legislature;                                    |
| b) any municipality or municipal entity;  | d) national Assembly or the national Council of provinces; or |
|   | e) Parliament.  |

<sup>2</sup>Shareholder<sup>2</sup> means a person who owns shares in the company and is actively involved in the management of the enterprise or business and exercises control over the enterprise.

## SPECIAL CONTRACT CONDITIONS OF QUOTATIONS

### 1. AMENDMENT OF CONTRACT

- 1.1. Any amendment to or renunciation of the provisions of the contract shall at all times be done in writing and shall be signed by both parties.

### 2. CHANGE OF ADDRESS

- 2.1. Bidders must advise the Department of Health (institution where the offer was submitted) should their address (*domicilium citandi et executandi*) details change from the time of bidding to the expiry of the contract.

### 3. GENERAL CONDITIONS ATTACHED TO THIS QUOTATION

- 3.1. The institution is under no obligation to accept the lowest or any quote.
- 3.2. The price quoted must include VAT (if VAT vendor). However, it must be noted that the department reserves the right to evaluate all quotations excluding VAT as some bidders may not be VAT vendors.
- 3.3. The bidder must ensure the correctness & validity of quote:
- (i) *that the price(s), rate(s) & preference quoted cover all for the work/item (s) & accept that any mistakes regarding the price (s) & calculations will be at the bidder's risk*
- 3.4. The bidder must accept full responsibility for the proper execution & fulfilment of all obligations conditions devolving on under this agreement, as the Principal (s) liable for the due fulfilment of this contract.
- 3.5. This quotation will be evaluated based on the 80/20 points system, specification & correctness of information. All required documentation must be completed in full and submitted.
- 3.6. Offers must comply strictly with the specification.
- 3.7. Only offers that meet or are greater than the specification will be considered.
- 3.8. Late quotes will not be considered.
- 3.9. Expired product/s will not be accepted. All products supplied must be valid for a minimum period of six months.
- 3.10. A bidder not registered on the Central Suppliers Database or verification has failed will not be considered.
- 3.11. All delivery costs must be included in the quote price, for delivery at the prescribed destination.
- 3.12. Only firm prices will be accepted. Such prices must remain firm for the contract period. Non-firm prices (including rates of exchange variations) will not be considered.
- 3.13. In cases where different delivery points influence the pricing, a separate pricing schedule must be submitted for each delivery point.
- 3.14. In the event of a bidder having multiple quotes, only the cheapest according to specification will be considered. Furthermore a verification will be done to identify if bidders have multiple companies and are quoting (cover-quoting) for this bid. In such instances only the cheapest bid according to specification will be considered.

### 4. SPECIAL INSTRUCTIONS AND NOTICES TO BIDDERS REGARDING THE COMPLETION OF THIS QUOTATION.

- 4.1. Unless inconsistent with or expressly indicated otherwise by the context, the singular shall include the plural and vice versa and with words importing the masculine gender shall include the feminine and the neuter.
- 4.2. Under no circumstances whatsoever may the quotation/bid forms be retyped or redrafted. Photocopies of the original bid documentation may be used, but an original signature must appear on such photocopies.
- 4.3. The bidder is advised to check the number of pages and to satisfy himself that none are missing or duplicated.
- 4.4. Quotation submitted must be complete in all respects.
- 4.5. Any alteration made by the bidder must be initialled.
- 4.6. Use of correcting fluid is prohibited
- 4.7. Quotation will be opened in public as soon as practicable after the closing time of quotation.
- 4.8. Where practical, prices are made public at the time of opening quotations.
- 4.9. If it is desired to make more than one offer against any individual item, such offers should be given on a photocopy of the page in question. Clear indication thereof must be stated on the schedules attached.

### 5. SPECIAL INSTRUCTIONS REGARDING HAND DELIVERED QUOTATIONS

- 5.1. Quotation shall be lodged at the address indicated not later than the closing time specified for their receipt, and in accordance with the directives in the quotation documents.
- 5.2. Each quotation shall be addressed in accordance with the directives in the quotation documents and shall be lodged in a separate sealed envelope, with the name and address of the bidder, the quotation number and closing date indicated on the envelope. The envelope shall not contain documents relating to any quotation other than that shown on the envelope. If this provision is not complied with, such quotations/bids may be rejected as being invalid.
- 5.3. All quotations received in sealed envelopes with the relevant quotation numbers on the envelopes are kept unopened in safe custody until the closing time of the quotation/bids. Where, however, a quotation is received open, it shall be sealed. If it is received without a quotation/bid number on the envelope, it shall be opened, the quotation number ascertained, the envelope sealed and the quotation number written on the envelope.
- 5.4. A specific box is provided for the receipt of quotations, and no quotation found in any other box or elsewhere subsequent to the closing date and time of quotation will be considered.

- 5.5. No quotation/bid sent through the post will be considered if it is received after the closing date and time stipulated in the quotation documentation, and proof of posting will not be accepted as proof of delivery.
- 5.6. Quotation documents must not be included in packages containing samples. Such quotations may be rejected as being invalid.

**6. SAMPLES**

- 6.1. In the case of the quote document stipulating that samples are required, the supplier will be informed in due course when samples should be provided to the institution. (This decreases the time of safety and storage risk that may be incurred by the respective institution). The bidders sample will be retained if such bidder wins the contract.
  - (i) If a company/s who has not won the quote requires their samples, they must advise the institution in writing of such.
  - (ii) If samples are not collected within three months of close of quote the institution reserves the right to dispose of them at their discretion.
- 6.2. **Samples must be made available when requested in writing or if stipulated on the document.**
  - (i) If a Bidder fails to provide a sample of their product on offer for scrutiny against the set specification when requested, their offer will be rejected. All testing will be for the account of the bidder.

**7. COMPULSORY SITE INSPECTION / BRIEFING SESSION**

7.1. Bidders who fail to attend the compulsory meeting will be disqualified from the evaluation process.

- (i) The institution has determined that a compulsory site meeting [redacted] take place
- (ii) Date [redacted] / [redacted] / [redacted] Time [redacted] : [redacted] Place [redacted]

Institution Stamp:	Institution Site Inspection / briefing session Official  Full Name: ..... Signature: ..... Date: .....
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**8. STATEMENT OF SUPPLIES AND SERVICES**

8.1. The contractor shall, when requested to do so, furnish particulars of supplies delivered or services executed. If he/she fails to do so, the Department may, without prejudice to any other rights which it may have, institute inquiries at the expense of the contractor to obtain the required particulars.

**9. SUBMISSION AND COMPLETION OF SBD 6.1**

9.1. Should a bidder wish to qualify for preference points they must complete a SBD 6.1 document. Failure by a bidder to provide all relevant information required, will result in such a bidder not being considered for preference point's allocation. The preferences applicable on the closing date will be utilized. Any changes after the closing date will not be considered for that particular quote.

**10. TAX COMPLIANCE REQUIREMENTS**

- 10.1. In the event that the tax compliance status has failed on CSD, **it is the suppliers' responsibility to provide a SARS pin in order for the institution to validate the tax compliance status of the supplier.**
- 10.2. In the event that the institution cannot validate the suppliers' tax clearance on SARS as well as the Central Suppliers Database, **the quote will not be considered and passed over as non-compliant according to National Treasury Instruction Note 4 (a) 2016/17.**

**11. TAX INVOICE**

11.1. A tax invoice shall be in the currency of the Republic of South Africa and shall contain the following particulars:

- (i) the name, address and registration number of the supplier;
- (ii) the name and address of the recipient;
- (iii) an individual serialized number and the date upon which the tax invoice is issued;
- (iv) a description and quantity or volume of the goods or services supplied;
- (v) the official department order number issued to the supplier;
- (vi) the value of the supply, the amount of tax charged;
- (vii) the words tax invoice in a prominent place.

**12. PATENT RIGHTS**

The supplier shall indemnify the **KZN Department of Health** (here after known as the purchaser) against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the goods or any part thereof by the purchaser.

### **13. PENALTIES**

- 13.1. If at any time during the contract period, the service provider is unable to perform in a timely manner, the service provider must notify the institution in writing/email of the cause of and the duration of the delay. Upon receipt of the notification, the institution should evaluate the circumstances and, if deemed necessary, the institution may extend the service provider's time for performance.
- 13.2. In the event of delayed performance that extends beyond the delivery period, the institution is entitled to purchase commodities of a similar quantity and quality as a substitution for the outstanding commodities, without terminating the contract, as well as return commodities delivered at a later stage at the service provider's expense.
- 13.3. Alternatively, the institution may elect to terminate the contract and procure the necessary commodities in order to complete the contract. In the event that the contract is terminated the institution may claim damages from the service provider in the form of a penalty. The service provider's performance should be captured on the service provider database in order to determine whether or not the service provider should be awarded any contracts in the future.
- 13.4. If the supplier fails to deliver any or all of the goods or to perform the services within the period(s) specified in the contract, the purchaser shall, without prejudice to its other remedies under the contract, deduct from the contract price, as a penalty, a sum calculated on the delivered price of the delayed goods or unperformed services using the current prime interest rate calculated for each day of the delay until actual delivery or performance.

### **14. TERMINATION FOR DEFAULT**

- 14.1. The purchaser, without prejudice to any other remedy for breach of contract, by written notice of default sent to the supplier, may terminate this contract in whole or in part:
  - (i) if the supplier fails to deliver any or all of the goods within the period(s) specified in the contract,
  - (ii) if the supplier fails to perform any other obligation(s) under the contract; or
  - (iii) if the supplier, in the judgment of the purchaser, has engaged in corrupt or fraudulent practices in competing for or in executing the contract.
- 14.2. In the event the purchaser terminates the contract in whole or in part, the purchaser may procure, upon such terms and in such manner as it deems appropriate, goods, works or services similar to those undelivered, and the supplier shall be liable to the purchaser for any excess costs for such similar goods, works or services.
- 14.3. Where the purchaser terminates the contract in whole or in part, the purchaser may decide to impose a restriction penalty on the supplier by prohibiting such supplier from doing business with the public sector for a period not exceeding 10 years.

### **15. FAILURE TO COMPLY WITH ABOVE WILL RESULT IN YOUR QUOTE BEING PASSED OVER.**



**PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2017**

This preference form must form part of all quotes invited. It contains general information and serves as a claim form for preference points for Broad-Based Black Economic Empowerment (B-BBEE) Status Level of Contribution

**NB: BEFORE COMPLETING THIS FORM, BIDDERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF B-BBEE, AS PRESCRIBED IN THE PREFERENTIAL PROCUREMENT REGULATIONS, 2017.**

**1. GENERAL CONDITIONS**

- 1.1 The following preference point systems are applicable to all quotes:
- the 80/20 system for requirements with a Rand value of up to R50 000 000 (all applicable taxes included); and
- 1.2 The value of this quote is estimated to not exceed R50 000 000 (all applicable taxes included) and therefore the 80/20 preference point system shall be applicable.
- 1.3 Points for this quote shall be awarded for:
- (a) Price; and
  - (b) B-BBEE Status Level of Contributor.
- 1.4 The maximum points for this quote is allocated as follows:

	POINTS
<b>PRICE</b>	80
<b>B-BBEE STATUS LEVEL OF CONTRIBUTOR</b>	20
<b>Total points for Price and B-BBEE must not exceed</b>	100

- 1.5 Failure on the part of a bidder to submit proof of B-BBEE Status level of contributor together with the quote, will be interpreted to mean that preference points for B-BBEE status level of contribution are not claimed.
- 1.6 The purchaser reserves the right to require of a bidder, either before a quote is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the purchaser.

**2. DEFINITIONS**

- (a) **"B-BBEE"** means broad-based black economic empowerment as defined in section 1 of the Broad-Based Black Economic Empowerment Act;
- (b) **"B-BBEE status level of contributor"** means the B-BBEE status of an entity in terms of a code of good practice on black economic empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act;
- (c) **"bid"** means a written offer in a prescribed or stipulated form in response to an invitation by an organ of state for the provision of goods or services, through price quotations, advertised competitive bidding processes or proposals;
- (d) **"Broad-Based Black Economic Empowerment Act"** means the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003);
- (e) **"EME"** means an Exempted Micro Enterprise in terms of a code of good practice on black economic empowerment issued in terms of section 9 (1) of the Broad-Based Black Economic Empowerment Act;
- (f) **"functionality"** means the ability of a tenderer to provide goods or services in accordance with specifications as set out in the tender documents.
- (g) **"prices"** includes all applicable taxes less all unconditional discounts;
- (h) **"proof of B-BBEE status level of contributor"** means:
  - 1) B-BBEE Status level certificate issued by an authorized body or person;
  - 2) A sworn affidavit as prescribed by the B-BBEE Codes of Good Practice;
  - 3) Any other requirement prescribed in terms of the B-BBEE Act;
- (i) **"QSE"** means a qualifying small business enterprise in terms of a code of good practice on black economic empowerment issued in terms of section 9 (1) of the Broad-Based Black Economic Empowerment Act;
- (j) **"rand value"** means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes;

**3. POINTS AWARDED FOR PRICE**

**3.1 THE 80/20 PREFERENCE POINT SYSTEMS**

A maximum of 80 points is allocated for price on the following basis:

$$Ps = 80 \left( 1 - \frac{Pt - P \text{ min}}{P \text{ min}} \right) \text{ Where}$$

- Ps = Points scored for price of bid under consideration
- Pt = Price of bid under consideration
- Pmin = Price of lowest acceptable bid

**4. POINTS AWARDED FOR B-BBEE STATUS LEVEL OF CONTRIBUTOR**

4.1 In terms of Regulation 6 (2) and 7 (2) of the Preferential Procurement Regulations, preference points must be awarded to a bidder for attaining the B-BBEE status level of contribution in accordance with the table below:

B-BBEE Status Level of Contributor	Number of points (80/20 system)
1	20
2	18
3	14
4	12
5	8
6	6
7	4
8	2
Non-compliant contributor	0

**5. BID DECLARATION**

5.1 Bidders who claim points in respect of B-BBEE Status Level of Contribution must complete the following:

**6. B-BBEE STATUS LEVEL OF CONTRIBUTOR CLAIMED IN TERMS OF PARAGRAPHS 1.4 AND 4.1**

6.1 B-BBEE Status Level of Contributor: = .....(maximum of 20 points)

(Points claimed in respect of paragraph 7.1 must be in accordance with the table reflected in paragraph 4.1 and must be substantiated by relevant proof of B-BBEE status level of contributor.

**7. SUB-CONTRACTING**

(Tick applicable box)

7.1 Will any portion of the contract be sub-contracted?

YES	<input type="checkbox"/>	NO	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

7.1.1 If yes, indicate:

- i) What percentage of the contract will be subcontracted.....%
- ii) The name of the sub-contractor.....
- iii) The B-BBEE status level of the sub-contractor.....

8. Whether the sub-contractor is an EME or QSE

(Tick applicable box)

iv) Specify, by ticking the appropriate box, if subcontracting with an enterprise in terms of Preferential Procurement Regulations,2017:

YES	<input type="checkbox"/>	NO	<input type="checkbox"/>
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Designated Group: An EME or QSE which is at least 51% owned by:	EME	QSE
Black people	√	√
Black people who are youth		
Black people who are women		
Black people with disabilities		
Black people living in rural or underdeveloped areas or townships		
Cooperative owned by black people		
Black people who are military veterans		
OR		
Any EME		
Any QSE		

9. **DECLARATION WITH REGARD TO COMPANY/FIRM**

9.1 Name of company/firm:.....

9.2 VAT registration number:.....

9.3 Company registration number:.....

9.4 **TYPE OF COMPANY/ FIRM [TICK APPLICABLE BOX]**

- Partnership/Joint Venture / Consortium
- One person business/sole propriety
- Close corporation
- Company
- (Pty) Limited

9.5 **DESCRIBE PRINCIPAL BUSINESS ACTIVITIES**

.....  
.....

9.6 **COMPANY CLASSIFICATION [TICK APPLICABLE BOX]**

- Manufacturer
- Supplier
- Professional service provider
- Other service providers, e.g. transporter, etc.

9.7 Total number of years the company/firm has been in business:.....

9.8 I/we, the undersigned, who is / are duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the B-BBE status level of contributor indicated in paragraphs 1.4 and 6.1 of the foregoing certificate, qualifies the company/ firm for the preference(s) shown and I / we acknowledge that:

- i) The information furnished is true and correct;
- ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;
- iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 6.1, the contractor may be required to furnish documentary proof to the satisfaction of the purchaser that the claims are correct;
- iv) If the B-BBEE status level of contributor has been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the purchaser may, in addition to any other remedy it may have –
  - (a) disqualify the person from the bidding process;
  - (b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;
  - (c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;
  - (d) recommend that the bidder or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted by the National Treasury from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and
  - (e) forward the matter for criminal prosecution.

**WITNESSES**

1. ....

2. ....

.....  
**SIGNATURE(S) OF BIDDERS(S)**

DATE: .....

ADDRESS.....  
.....  
.....

## **TECHNICAL SPECIFICATIONS**

When the technology is difficult, you may find help below or download the Technical Specifications in pdf-format here

Technical Data of the Vacuum Cleaner  
Dust Classes and Application Categories  
Suction Capacity and Air Velocity  
What is dust?  
Filtration

## **Technical Specifications:**

The large European manufacturers of vacuum cleaners have worked out a standard describing how the various properties are to be defined and measured.

IEC 312 / DS/EN 60312 Vacuum Cleaners for Use in the Household – Methods for Measuring the Utility Properties.

If you want to compare various vacuum cleaners you should make sure that they have been tested according to IEC 312. If the measurements have been made in accordance with this standard, it should be possible to compare the result with other results directly. Not all results indicated by the manufacturers are in accordance with IEC 312.

Below please find examples of definition and the things to be aware of.




## **Technical Data of the Vacuum Cleaner**


The vacuum cleaner must always have a sign mentioning some of the technical specifications.

The technical data of an industrial vacuum cleaner may look like this:

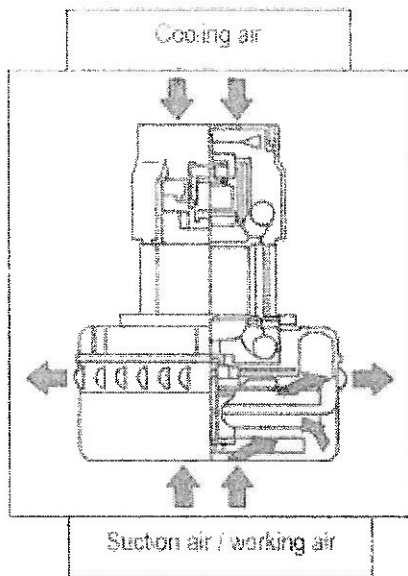
Type: By-pass	Industrial	H
	vacuum cleaner	
Motor power	1200	W
Voltage	230	V
Suction capacity	2400	mmWc
Air flow, max.	58	l/sec.
	216	m <sup>3</sup> /h
Suction power, max. (IEC 60312)	353	Watt
Noise level (EN 60704-1)	69	dB(A)
Filter area HEPA	1,1	m <sup>2</sup>
Filter area	0,8	m <sup>2</sup>
Height	780	mm
Width	425	mm
Length/depth	425	mm
Collection capacity (container)	16	l
Collection capacity (bag)	14	l
Weight without accessories	17	Kg
Length of supply cable	8	m

The information of the sign may look like this:

<b>V.BRØNDUM A/S - INDUSTRIAL CLEANER</b>	  
Sadollinsvej 14-16 - DK-8600 silkeborg	
Serieno.: 82.06.1069-4710- ???	
Type: 200H 1100+2000W	
230V 50Hz IPX4	
Noise: <70dB(A)	
Mass: 17 Kg	
Prod: 47-2010	
HEPA-Filtertype: H14 (V.B 84.67.5006)	

- |                     |  |
|---------------------|--|
| Serial number       |  |
| Type:               | L, M or H must be included for vacuum cleaners that have been classified   |
| Mains connection:   | 230V 50 Hz (ex)  |
| Class of enclosure: | IPX4 – for double insulated machines there must be a  |
| Noise level:        | Stated in dB(A)  |
| Weight:             | Stated in kg   |
| Date of Production: | Stated in week and year  |
| HEPA filter:        | State an article No. when ordering   |

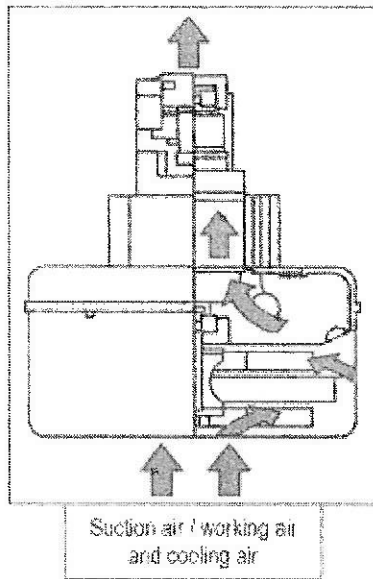
## Bypass Motor



A bypass motor has its own cooling wing. It will suck the cooling air independent of the working air. The vacuuming air flows are blown out of the side of the turbine housing. In this way the motor is cooled, also even if the air flow is blocked.

This cooling method does not make the same demands on filtration of the working air, as this air will be blown out before it gets in contact with the motor. But demands are made on the filtration of the cooling air, if the room, in which the vacuum cleaner is used, contains many suspended particles.

According to EN60335-2-69 a blow through motor must not be used for vacuum cleaners intended to liquid, as liquid might be “pumped” through the electrical parts in case of an overfilled collection container.



**Blow through motor**

A blow through motor is cooled by the same air that is used for vacuuming the material. This makes larger demands on the filters of the vacuum cleaner. If they are damaged or missing, the motor will be exposed to a large influence of dust and might consequently seize up.

### **Watt**

The nominal and maximum motor power reflects how much energy the motor of the vacuum cleaner requires when functioning. The power is measured in Watt (W). The typical consumption of Watt for industrial vacuum cleaners will be between 1000-4000 W depending on the application. For a machine with one motor it is typically 1000-1500 W. This size (W) is **NOT** an expression of how powerful the motor is or how well the motor vacuums, but only a measurement of how much energy the motor requires. (Compared to a car it is 1 / 100km). The suction capacity is more interesting than the electrical power of the motor.

### **Vacuum / Suction Capacity**

Expresses how much negative pressure (lift) the vacuum cleaner is able to produce



when the motor is running. The vacuum will be measured in mm water column or in Pascal (Pa). 10 Pa corresponds to 1 mm water column. The various household vacuum cleaners and industrial vacuum cleaners are able to produce from 2000 to 3000 mm water column.

### **Air Volume / Air Flow**

It is not enough for the vacuum cleaner to loosen the dust; the dust must also be carried to the collection bag or the collection container. The capability to transport air containing dust is called air flow. The air flow is measured in l/sec. (litres per second) or m<sup>3</sup> / hour. The level is between 25 and 65 l/sec. The larger the air flow, the larger the capability is to carry the dust from the nozzle and into the bag.

**For an H-marked machine – a vacuum cleaner for collection of dust hazardous to health – the air flow / air velocity in the suction hose must never be less than 20 m/sec. cf. DS/EN 60335-2-69.**

### **Suction Power**

The suction capacity indicates how powerful the vacuum cleaner is, and the air volume indicates how much air the vacuum cleaner is able to move. The suction power adds up the suction capacity and the air volume and indicates how much power the vacuum cleaner has. This is an indication of how good the vacuum cleaner is to clean – i.e. the work to be done. The suction power is measured in Watt (W) and is typically between 250 W and 450 W for machines with 1 motor.

The suction power is to be measured at the end of the tube of a complete vacuum cleaner (i.e. with tube, hose and filters – but without nozzle).

Some manufacturers show the results from measurements made at the suction of the actual vacuum cleaner. If you do that, you will obtain higher powers, which are not comparable.

A good cleaning result (dust collection capacity) will be obtained when the suction power is high and the nozzle of a good quality. I.e. the suction power together with the nozzle is to give a good cleaning result.

The result is shown as a percentage (%) and indicates the quantity of dust collected. The results obtained on hard surfaces are from 90 to 100% and on carpets from 50 to 85%.

**Please verify whether the suction power is indicated according to EN60312, which makes it easier to compare the data of various vacuum cleaners.**

### Volume of the Bag

The measurement should be made with the bag in the vacuum cleaner, as it is often the room for the bag (in the vacuum cleaner) that decides the quantity of dust.

Some manufacturers measure the volume of the bag before it is placed in the vacuum cleaner. This makes the measure capacity too large.

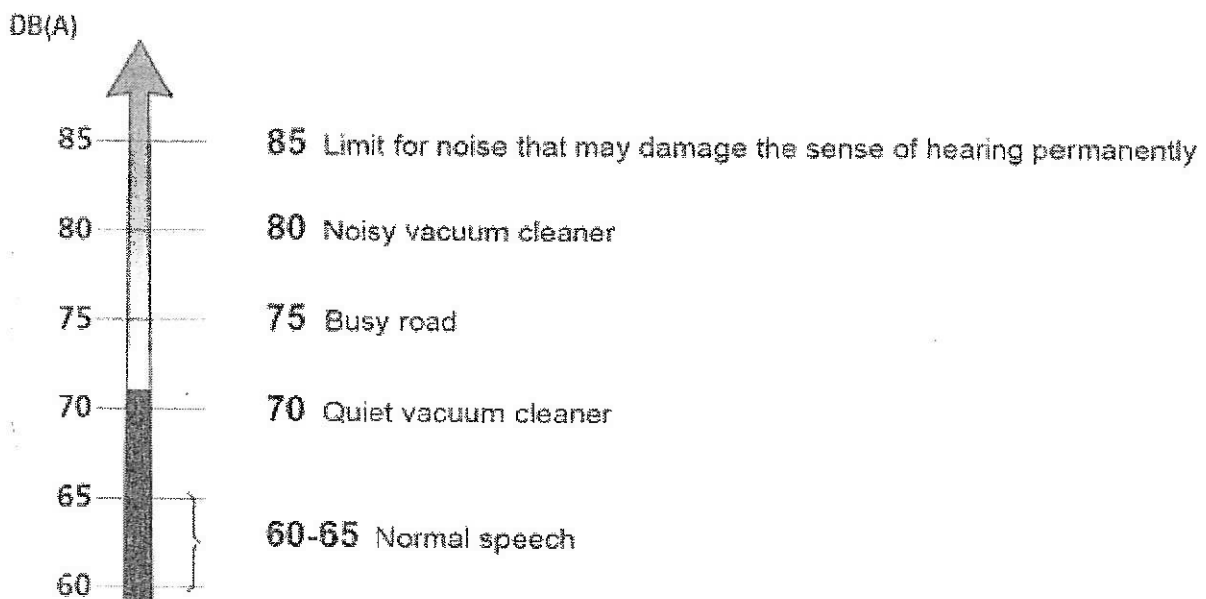
### Noise Level

The noise experienced can be measured in different ways. If you are 5 m away from the vacuum cleaner, it is of course noisier than if you are 20 m away. The acoustics and the reverberation times of the room have an effect too. If the reverberation times are too big there will be an echo effect between the walls of the room, and the noise will be measured and experienced considerably higher.

Noise is to be measured on the basis of DS/EN 60704-2.

### Decibel

The noise level from a vacuum cleaner is measured in dB(A). When measuring, the human ear is replaced by an electronic measuring device. Noise cannot be described objectively. A specific noise is perceived differently by different people/individuals. This is also due to the character of the noise. The noise may vary from 50 up to 85 dB(A). The diagram below shows noise facts generated by different sources of noise.



The statutory requirement according to the Directive on machinery 2006/ 42/EF is that machines are not allowed to have a noise level exceeding 80 dB(A). For machines with a noise level below 70dB(A) you are permitted to write: <70dB(A). If the noise level is higher, you have to write the actual figure.

## **Dust Classes and Application Categories**

### **Application Categories**

Industrial vacuum cleaners for dust hazardous to health are divided into classes depending upon their ability to retain the hazardous dust. Up to 1997 the vacuum cleaners were divided into the application categories U, S, G, C and K1.

Vacuum cleaners in for instance the application category C should retain 99.9% of the material collected. You were allowed to use a category C vacuum cleaner for collection of dust hazardous to health with a marginal value of more than 0.1 mg/m<sup>3</sup>.

The public health authorities have lists of hazardous substances and their marginal values.

### **Standards and Institutes**

#### *EN 60 335 -2-69*

From 1997 new and stricter requirements for industrial vacuum cleaners for dust hazardous to health were introduced. The requirements can be read in the European standard EN 60 335-2-69. In this standard, the old application categories have been replaced by dust classes.

#### *Dust Classes*

Now there are three dust classes, L, M and H. The dust class H places the heaviest demands on the vacuum cleaner. The exhaust air must not contain more than 0.005% of the material collected, and the filters must not be loaded beyond a pre-set limit.

#### *Filter Load*

The filter load is determined by the quantity of air, which is drawn through the filter,

and by the surface of the filter. The filter load must not exceed 200 cubic metres of air per hour for each square metre of filter area.

#### *Technical Institutes*

Very few manufacturers of vacuum cleaners have testing equipment for approval of filters at their disposal. The majority of manufacturers use an authorized technical institute, when a filter is to be approved for a specific filter class.

#### *DGUV / BIA / IFA*

One of the internationally recognized institutes for approval of filters is the German Berufsgenossenschaftliches Institut für Arbeitssicherheit, abbreviated BIA. BIA is an impartial institute testing the filter and guaranteeing that the filter satisfies the demands of the filter class in question.

#### *SLG*

SLG is a recognized German institute for testing of industrial vacuum cleaners for dust hazardous to health.

At the testing institute tests are made to prove that the vacuum cleaner lives up to the requirements concerning filtration among other things.

#### *LGA*

One of the internationally recognized technical institutes is the German Landesgewerbeanstalt Bayern, abbreviated LGA. LGA is an impartial institute that critically reviews whether the industrial vacuum cleaner lives up to the requirements of the standard. The external sign of fulfilment of the requirements of the standard is the GS-label. GS stands for Geprüfte Sicherheit (i.e. verified safety).

LGA was in 2010 merged with TÜV.

#### *Technical Dust Test*

Both BIA (IFA as from 2010) and SLG and also TÜV are able to carry out technical tests of industrial vacuum cleaners.

The technical dust test will test the filtration capacity of the whole machine – and not only the one of the filter.

If the vacuum cleaner is provided with good filters, but has many leaks, it can be observed and documented by this test.

#### *GS-Label*

Geprüfte Sicherheit (verified safety).

LGA allows you – after completed technical dust test and test with LGA – to use the GS-label in your marketing.

#### *Approved Vacuum Cleaner or Approved Filter*

There is a great difference between buying a vacuum cleaner with approved filters and buying an approved vacuum cleaner.

Class H vacuum cleaners must be equipped with approved filters and have passed through a dust technical test at an accredited test institute.

Class H vacuum cleaners are always equipped with HEPA filters. HEPA filters are available in HEPA 13 and HEPA 14. The figures 3 and 4 indicate the filtration degree (required).

H13 – minimum 99.95 % dust will be filtered (based on technical dust according to EN 60335-2-69)

H14 – minimum 99.995% dust will be filtered (based on technical dust according to EN 60335-2-69)

After H 14 the filters are called U15 and U16 (ULPA).

ULPA filters are mainly used as exhaust filters on clean room machines (CR).

#### **Filters and Filtration**

On its way back through the vacuum cleaner, the air is to pass one or more filters before it leaves the vacuum cleaner again.

#### *Filter Bag*

The first filter can be a filter bag. The filter bag, whether it is made of filter paper or filter fabric, retains the large particles.

#### *Pre-Filter*

Filter No. 2 is a finer filter, which retains the fine particles. This filter is called the pre-filter of the vacuum cleaner. To a large extent it is the mode of operation of the pre-filter that decides how effective the vacuum cleaner is.

An effective pre-filter is self-cleaning during operation so that the filter does not clog up. The filter must have a large surface so that the intervals between the necessary filter cleaning are as long as possible. You can clean a high-quality pre-filter from outside without having to take the vacuum cleaner apart.

#### *HEPA-Filter*

The third filter is often a so-called HEPA-filter. The letters HEPA stand for High Efficiency Particle filter. The HEPA-filter retains the very small particles, down to a

size of 0.003 mm. The particles of that size are so light that they float in the air. They are for instance found in tobacco smoke.

### **Filters with Certificate**

If the manufacturer of the vacuum cleaner has decided to obtain an approval of his filter from a technical institute, a certificate will be issued. The certificate will guarantee to the customer that the filter fulfils the requirements in the filter class in question.

### **Filter Area**

The area of the pre-filter of the vacuum cleaner is specified in  $\text{cm}^2$  or in  $\text{m}^2$ . Generally, you may say that the larger filter area in proportion to the air volume, the better vacuum cleaner. The filter material and the filter structure are also of great importance.

It applies to H vacuum cleaners that the HEPA-filter must **never** be loaded more than  $200 \text{ m}^3 / \text{h} / \text{m}^2$ .

Furthermore it is required that the air velocity in the hose never falls below 20 m/sec. – and if the vacuum cleaner is used for extraction from tools and processes generating dust, it **must** be indicated when the velocity falls below 20 m/sec. This limit has been made to ensure the self-cleaning of the hose and the machine.

## Suction Capacity and Air Velocity

In order to be able to collect material through a suction hose or a pipeline, the air velocity must be adjusted to the material to be collected. The heavier the material to be collected is in proportion to the surface area, the higher air velocity in the suction hose and pipeline is needed.

The Air velocity is measured in metres per second (m/sec.). Below please find the air velocities recommended for collection of the different types of material.

<b>Material</b>	<b>m/sec.</b>	<b>Material</b>	<b>m/sec.</b>
Textile threads	10 - 15	Cement dust	25 - 30
Paper strips	10 - 15	Oil, thin	25 - 30
Fine wood dust	14 - 16	Water	25 - 30
Fine sand	15 - 20	Oil, thick sludge	30 - 40
Glass dust	16 - 20	Coal dust and pieces of coal	30 - 40
Dusty air	16 - 20	Moulding sand, viscous	35 - 45
Fine metal dust	18 - 25	Mineral sandblasting	45 - 50
Large metal shavings	20 - 25	Sandblasting, metal	50 - 55
Stone dust	20 - 25	Coarse sandstone, Ø2 - 3 cm	50 - 60
Flour and similar materials	20 - 25	Pebbles, Ø5 cm	60 - 65
PVC-granulate	20 - 25	Mercury	65 - 70
Grains	25 - 27	Adhesive, Tectyl	65 -

The air velocity is dependent on the air volume that the vacuum cleaner is able to suck and on the diameter of the suction hose.

The greater air volume, which the vacuum cleaner is able to suck, the greater the air velocity becomes.

As to the diameter of the suction hose it is the opposite: The thinner hose, the higher air velocity

### **A Practical Example:**

A vacuum cleaner is able to suck an effective air volume of 150 m<sup>3</sup>/h through an Ø40 mm suction hose. The air velocity in the suction hose can be calculated to 33 m/sec. From the above diagram you can see that the vacuum cleaner is able to collect for instance grains and cement dust.

If you now mount an Ø50 mm suction hose on the vacuum cleaner, the air velocity in the hose will fall to 21 m/sec. With this thicker hose the collection of grains and cement dust will be difficult, whereas textile threads and strips of paper are collected without problems.

## **What is Dust?**

Dust is also often called particles. There are naturally existing particles, and there is the man-made emission of particles, also called anthropogenic emission of particles. A particle is a small limited mass of solid or liquid substance.

The size of the particle is, as the name directly indicates, a specification of the actual size of the particle (diameter) and is typically indicated in the unit [µm]. 1 µm is 0.001 mm.

The man-made emission will most often occur in connection with energy producing systems, traffic and many industrial activities, such as production of grain and feeding stuff, production of cement, wood processing companies etc.

Depending on the activities of the individual company or the individual system, emission of particles with different sizes can occur.

### **The Consequence of Dust**

There is always dust in the indoor air, and consequently also in the air we breathe in. The dust can cause irritation of mucous membranes and respiratory passages.

Several circumstances determine whether dust feels irritating or is a risk to the health. The quantity and the composition of the dust, and also the shape and the size of the individual particles are important. But also the ability of the dust to absorb or catch gaseous air pollution is of importance.



When the dust lands on a moist mucous membrane, for instance in the nose, acid or base may be formed and cause irritation. The risk of inconveniences is also very much connected with the efficiency of the system of each individual person to remove the dust particles from for instance the respiratory passages and the mucous membrane of the eyes.

When you breathe, the dust in the air will follow the breathing air down into the respiratory passages. How far the dust particles come depends on their size. While the smallest particles can reach the lungs, the larger ones will normally stick in the nose and the throat.

### Of what does Dust consist?

House dust often consists of several hundred different ingredients – and, some times, also allergens. Inorganic particles in the dust can give inflammation, but they can also act as carriers of allergens.

The word dust is normally combined with the visible dust you see on horizontal surfaces such as table tops and shelves.

These are the large particles from the indoor air, which have been deposited on the various surfaces. In addition to that there are a number of very small dust particles floating around in the air.

Normally 99% of the total number of dust particles of the indoor air is made up of particles smaller than 1 µm, while the large particles are the main part of the total weight. The smaller the particles are, the longer time they will keep floating in the air.

The number of particles in the air also depends on the activity in the room. In rooms with ventilation, or when persons in the room move about, particles of a few µm keep floating in the air.

Microorganisms:	Bacteria - Virus - Spores
Particles from human beings, animals and insects:	Hair - Scurfs - Faeces
Inorganic materials:	Sand - Stone - Clay - Concrete - Minerals - Ashes - Fibres - Metals
Textiles:	Synthetic fibres – Cotton fibres – Woolen fibres
Vegetable materials:	Dust of wood - Pollen – Vegetable fibres
Sundries:	Particles from smoking – Surface treatments (paint, lacquer) – Products of combustion

## Definitions of Dust!

### *Coarse Particles*

Particles larger than 2.5  $\mu\text{m}$  are typically produced by different mechanical processes. Coarse particles can consist of different substances depending on their origin. As an example of emission of large particles we can mention emission from the concrete products industry, feeding stuff manufacturing companies and various surface treatment processes, including sandblasting. Fly ash from heating with solid fuel and from waste burning and also coal dust from coal-burning power stations are examples of large particles too, just like oil coke from fuel oil-burning systems.

### *Fine Particles*

These particles are a result of a number of conversion processes, among other things in connection with chemical processes between particles and gasses. The fine particles mostly consist of hygroscopic (**hygroscopic** is the name for substances which will easily absorb aqueous vapour from the surroundings), inorganic salts, e.g. sulphates, nitrates or chlorides. The most considerable sources of fine particles are burning of sulphurous fuel and also all burning processes, which give rise to the formation of nitrogen oxides, including among other things traffic, power stations, heating etc. Emission from among other things metal processing companies, including welding smoke, can similarly bring emission of fine particles; and also wood dust from manufacturing processes is an example of emission of fine particles. **Fine particles are defined as particles larger than 0.1  $\mu\text{m}$  and smaller than 2.5  $\mu\text{m}$ .**

### *Ultra-Fine Particles*

Ultra-fine particles are made from vapour state at high temperature, for instance in internal combustion engines and in case of condensation, and grow quickly from a few molecules to ultra-fine particles, typically of the order of 0.001 – 0.1  $\mu\text{m}$ , when the temperature falls at transport through exhaust pipe or flue. The ultra-fine particles mostly consist of organic, hydrophobic substances, e.g. carbon, oil drops, complex organic compounds (PAH) or oxidized organic substances. The most considerable source of emission of ultra-fine particles is the traffic, including especially diesel engines. Emissions from various production processes can also contribute to emission of ultra-fine particles, including for instance the production of asphalt and also the pharmaceutical industry.

### *Dust and Fibres*

Dust in the indoor climate consists of organic and inorganic particles and fibres coming from outside, from persons, animals, clothing, paper, building materials, mould fungus etc.

Therefore the contents of dust in rooms depend on the materials existing or being brought into the rooms, and from the activities going on, but also on the fact whether the dust will be removed by cleaning or ventilation. The dust is found in the air or on surfaces, for instance flooring, which particularly can be dust depots.

The concentration and composition of the dust being inhaled or deposited in the eyes or on the skin are different from the ones in the air or on surfaces. The dust being measured most often is therefore only to be considered as an indicator of the influences.

The limiting values of the different kinds of dust in the air are all normally much higher than the concentrations in the indoor climate.

### *Airborn Dust*

During normal activity the content of dust in the air vary from  $0.05 \text{ mg/m}^3$  to  $1 \text{ mg/m}^3$ . The high concentrations are normally brief because of brisk activity or smoking. In dirty indoor climates with high activity, such as schools, average values of  $0.5 \text{ mg/m}^3$  have been measured during several hours.

The average concentration of airborne dust can in clean surroundings without much activity be under  $0.1 \text{ mg/m}^3$ . It ought to be under  $0.15 \text{ mg/m}^3$  in offices. In schools and day-care centres it is often larger than  $0.2 \text{ mg/m}^3$ .

The limiting values for places of work are from  $3 \text{ mg/m}^3$  for organic dust to  $5 \text{ mg/m}^3$  for inorganic dust.

The part of the dust breathed in and reaching the lungs is usually much smaller than the total quantity of dust.

### *Deposited Dust*

An indicator of the dust load or the cleaning is dust deposited on floors and other surfaces.

If you are able to collect more than  $0.5 \text{ g dust / m}^2$  floor with an ordinary vacuum cleaner, after having cleaned, the cleaning is not sufficient.

You can express a dust concentration in per cent dust covered area. Less than 1 per cent dust on for instance table surfaces reflects a clean surface. More than 5 per cent is considered to be unacceptable high in an office environment, but no connection has been found between these figures and inconveniences or symptoms.

## Mineral Wool Fibres

Mineral wool fibres are found in almost all buildings, but it is only critical where not enclosed mineral wool has been present or is present.

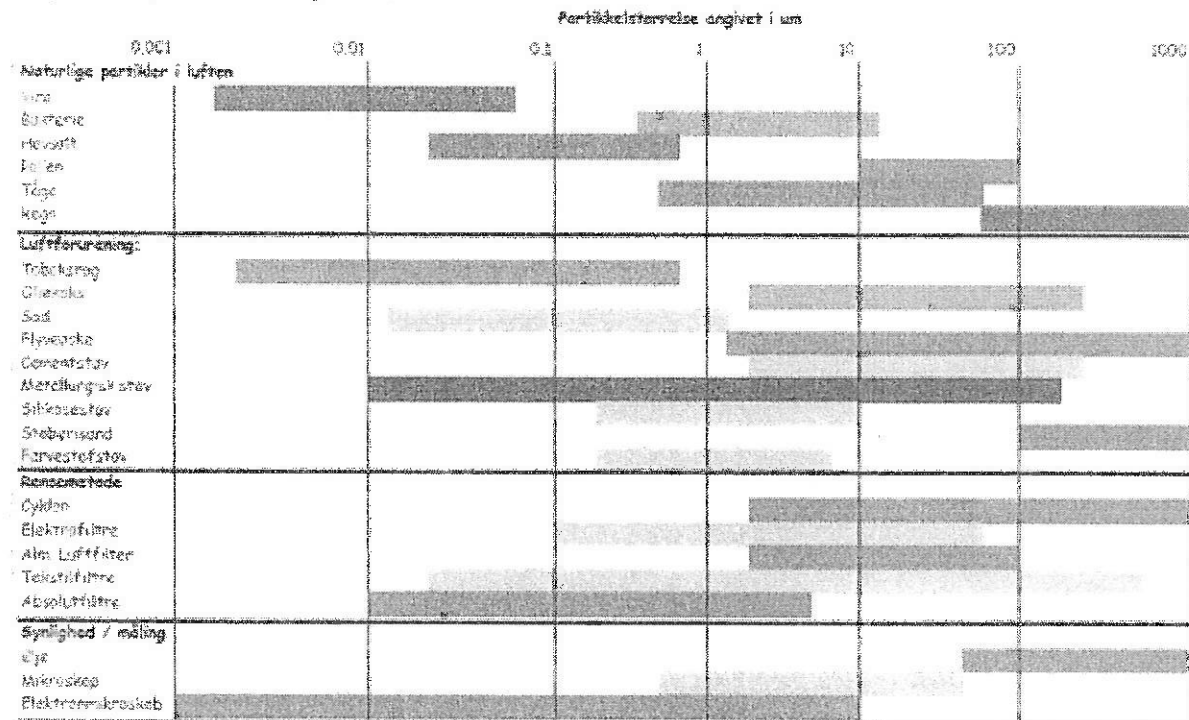
Recommended values for acceptable concentrations are 1000 fibres per m<sup>3</sup> air and 30 fibres per cm<sup>2</sup> on cupboards and tables, but often there is only one third of these values.

## The Rest of the Ingredients of the Dust

The dust contains bacteria, virus, spores and other allergens, and organic gasses and vapours may be on the dust. It might be relevant to measure the existence of allergens, but the best way to do this is to analyze dust collected from the floors or other places.

## Survey of Different Particles and Cleaning Methods

Survey of different particles and cleaning methods<sup>1</sup>



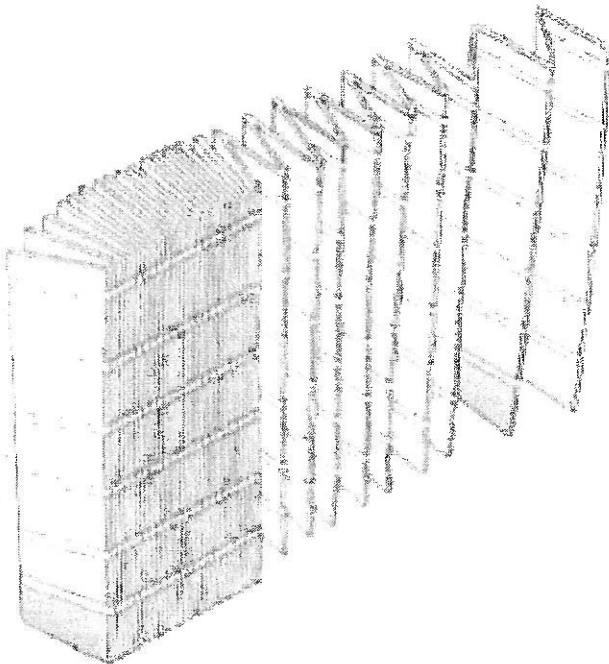
## Filtration

Besides collecting dust or liquid the purpose of the vacuum cleaner is to hold back the dust so that it will not be blown back into the room. Besides the bag the vacuum cleaner is equipped with one or more filters.

The purpose of the pre-filter is – besides holding back the particles that may escape

from the bag – to act as a safety filter, if the bag for some reason should break. In this way the motor is protected.

Before the air is blown out into the room again or after the pre-filter you have a last possibility to clean the air by means of an **exhaust filter** or a **motor filter**. These filters can have different names and efficiencies. Micro filter, electrostatic micro filter or HEPA-filter.



#### High Efficiency Particulate Arresting

(HEPA) filter came into existence many years ago. In the nineteen fifties the US nuclear research should use a filter to remove small radioactive particles. Since then the HEPA- filter has been used for many things. HEPA-products are also recommended by the "Asthma and Allergy Association" for vacuum cleaning.

BUT what is a HEPA-filter, and when is it a HEPA-filter?

The Danish Working Environment Service describes a HEPA-filter as follows:

*Absolute filtration will typically be in the form of a HEPA-filter, which holds back particles down to approx. 0.1  $\mu\text{m}$ . The filter will not hold back gasses and other pollution. The filters are divided up into classes by the percentage of small particles held back, for instance H13 has an efficiency of 99.95% and H14 an efficiency of 99.995% (the figure after H1 states the number of nines).*

A HEPA-filter is to remove at least 99.97% of all airborne particles larger than 0.3  $\mu\text{m}$  which is 1/300 of the diameter of a human hair.

*A HEPA filter is according to the DS/EN60335 standard to be mechanically protected and therefore mounted in a casing with grating or the like.*

The de-inking degree shows how efficient the filter is to hold back fine particles (0.4 my – 1.0 my).

*The filtering degree for different type of fine filters:*

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Micro-filters	H10	Min. 85%	De-inking of particles (0.0
HEPA (H)	H11	Min. 95%	
	H12	Min. 99.5%	
	H13	Min. 99.95%	
	H14	Min. 99.995%	
ULPA (U)	U15	Min. 99.9995%	
	U16	Min. 99.99995%	
	U17	Min. 99.999995%	

### **Filter Efficiency**

A filter will typically change filtration capacity as the filter is loaded with dust. The filtration capacity will always grow to begin with and will usually gradually fall. Therefore it will often be necessary to take the filtration capacity TO BEGIN WITH and DURING THE PERIOD into consideration. The filter classes are only based on the AVERAGE filtration capacity.

At the same time the pressure drop above the filter will rise as the filter is filled with dust. Please note that there are different development curves for the rise in the loss of pressure depending on the filter material used.

## Filter Classes

Source: BGIA / DGUV.

Geeignet für trockene, gesundheitsgefährliche, nicht brennbare Stäube	Bis 1998 (Übergangsfrei bis 2003) nach ZH 1/487		geltende Staubklassen nach DIN EN 60335-2-69 Anh. AA und E DIN IEC 61 J/74/CD	
	Verwendungs-kategorie	Max. Durchlassgrad	Staubklasse	Max. Durchlassgrad
mit MAK-Werten $\leq 1 \text{ mg}^3\text{m}^{-3}$	<b>Mindestens U</b> (S,G,C,K1,K2)	$\leq 5\%$	<b>Mindestens L</b> (M,H)	$\leq 1\%$
mit MAK-Werten $> 0,1 \text{ mg}^3\text{m}^{-3}$	<b>Mindestens S</b> (G,C,K1,K2)	$\leq 1\%$	<b>Mindestens M</b> (H)	$\leq 0,1\%$
mit MAK-Werten $\leq 0,1 \text{ mg}^3\text{m}^{-3}$	<b>Mindestens G</b> (C,K1,K2)	$\leq 0,5\%$	<b>H *)</b>	$\leq 0,1\%$
mit MAK-Werten $\leq 0,1 \text{ mg}^3\text{m}^{-3}$ + von krebserzeugenden Stoffen (§35 GefStoffV)	<b>Mindestens C</b> (K1,K2)	$\leq 0,1\%$	<b>H</b>	$\leq 0,005\%$
mit MAK-Werten $\leq 0,1 \text{ mg}^3\text{m}^{-3}$ + von krebserzeugenden Stoffen (§35 u. §15a GefStoffV)	<b>K1,K2</b>	$\leq 0,03\%$	<b>H</b>	$\leq 0,003\%$
mit MAK-Werten $\leq 0,1 \text{ mg}^3\text{m}^{-3}$ + von krebserzeugenden Stoffen (§35 u. §15a GefStoffV) inkl. Asbest	<b>K1,K2 + Eignung für Einsatz gemäß TRGS 519</b>	$\leq 0,003\%$	<b>H + Eignung für Einsatz gemäß TRGS 519</b>	$\leq 0,003\%$
Zusätzliche Eignung für brennbare Stäube aller Staubexplosionsklassen (ausgenommen Stäube mit extrem niedriger Mindestzündenergie $MIE \leq 1 \text{ mJ}$ )	<b>Mindestens S</b> Mit <b>B1</b> (zusätzlich)		<b>Mindestens M</b> Mit <b>B1</b> (zusätzlich)	

\*) Gemäß Empfehlung des internationalen Normungsausschusses soll eine Änderung der Norm erreicht werden, so dass bei Stoffen mit einem MAK-Wert von  $0,1 \text{ mg}^3\text{m}^{-3}$  die Staubklasse M ausreicht.

The filter classes are defined in standard DS/EN60335-2-69 Annex AA.

This standard deals with: Vacuum cleaners for industrial use – Annex AA dust hazardous to health.

IT is important that the vacuum cleaner has been classified and not the filter only.  
(Vacuum cleaner with approved filter).