EN

RESPIREX™

ACTIVEAIR AUTOFLOW

CHEMICAL PROTECTIVE HOOD

INSTRUCTIONS FOR USE

Type PB [4]
Type PB [6]

BS/118/B/2024

Contents

General Information

The Respirex ActiveAir AutoFlow Hood is a single use chemical protective splash hood designed for use within certain contaminated environments only. You should carefully read and follow the operating procedures detailed in these instructions.

The hood must be used in combination with breathable air supplied from an external compressed air source that provides positive pressure. Air flowing into the hood must conform to the requirements of EN 12021:2014.

The Hood is divided into two main sections; headtop assembly and air supply belt assembly. Both assemblies meet the lower strength requirements of EN 14594:2018. The product is CE and UKCA marked to indicate compliance with European Regulation 2016/425 on personal protective equipment (PPE) and Regulation 2016/425 on personal protective equipment, as amended to apply in GB and complies with the following European harmonized standards:

- Headtop assembly
  EN 14594:2018 (continuous flow compressed air line breathing apparatus with a hood) - Class 4A
- Air supply belt assembly
  EN 14594:2018 (continuous flow compressed air line breathing apparatus) - Class 4A
- EN 14605:2005+A1:2009 Type PB[4]
  Protective clothing against liquid chemicals - clothing with liquid-tight or spray-tight connections
- EN 13034:2005+A1:2009 Type PB [6]
  Protective clothing offering limited protective performance against liquid chemicals

The European standards above specify the performance requirements for the materials of construction (e.g. resistance to abrasion, tear resistance etc.), and for the hood as a whole (e.g. resistance to penetration by liquids, resistance to inward leakage of gases).

All declarations of conformity: http://www.respirex.co.uk/doc

Hood Features

The ActiveAir AutoFlow Hood is manufactured from a high performance barrier laminate material engineered for use in chemical protective clothing. The combination of the barrier laminate and the polymer provide a particle-tight material with good resistance to penetration and permeation by many liquids and gases.

The barrier laminate offers protection in a wide range of applications including:

- Chemical handling
- Hazardous waste clean-up
- Paint spraying
- Pharmaceutical manufacturing and / or packaging
- Disease and disaster management
- Emergency response services, spill clean-up and accident interventions

Typical Hood features include:

- A **single use**, semi-rigid chemical protective visor, internal breathing hose and the barrier laminate fabric.
- A **reusable** ActiveAir Autoflow Regulator, attached to the hip of the wearer, for connection to the Compressed Air Supply Tube (CAST) and the internal breathing hose in the Hood.

Limitations & Warnings ⚠.

- Before selecting appropriate protective clothing a detailed assessment of the nature of the hazard and the working environment should be undertaken. There are different factors such as concentration, temperature, pressure and other environmental influences that have significant influence on the barrier properties of the ActiveAir Autoflow Hood.
- Only for use by trained competent personnel. The donning procedure shall be carried out strictly in accordance with the information supplied by the manufacturer.

- Failure to follow all instructions and/or failure to wear the ActiveAir Autoflow Hood during all times of exposure may be detrimental to the wearer's health.
- At high work rates pressure in the hood may become negative at peak inhalation flow or during bending or squatting.
- The hood may not provide adequate protection in atmospheres that are immediately dangerous to life or health (IDLH). Use only in atmospheres where the oxygen content of the air is 18-23 vol.%.
- The hood must NOT be used with oxygen only or oxygen enriched air.
- Ensure the hood is used with a compressed air supply tube (CAST) of appropriate length and bore size (see page 6); a low airflow may cause a reduced level of protection.
- The ActiveAir Autoflow Regulator is designed to work on a range of air line pressures. Airline pressure must only be set between 2.0 bar and 9.0 bar.
- The ActiveAir Autoflow Hood provides partial body protection to classification PB [4] as defined by the harmonized standard EN 14605:2005+A1:2009. Seek alternative PPE if full body protection is required. Always use compatible PPE, e.g. gloves and safety boots advised by Respirex.
- The ActiveAir Autoflow Hood is manufactured from non-breathable materials; it is likely that the wearer's body temperature will rise during use, particularly throughout periods of intense physical activity. Users who show signs of excessive stress should leave the working environment immediately and remove the hood. Wherever possible operational procedures should be planned to minimize the risk of heat stress occurring. Respirex assumes no responsibility for improper use of the ActiveAir Autoflow Hood.
- If the hood is to be used in low temperatures and misting of the visor occurs, apply Respirex FOG OFF to the inner and outer surfaces of the visor.
- The ActiveAir Autoflow Hood is not designed to be used for abrasive blasting operations or in applications with a high flammability risk. Alternative PPE offering the necessary level of protection should be utilised for such applications.
- The ActiveAir Autoflow Hood DOES NOT provide protection against heat or flame, it should therefore not be worn in potentially flammable or unassessed explosive environments. It is not to be used in the handling of explosives.
- The ActiveAir Autoflow Hood should not be worn in working environments where protection against non-ionizing radiation is necessary.
- Exposure to certain very fine particles, intensive liquid sprays and splashes of hazardous substances may require protective clothing of higher mechanical strength and barrier properties than those offered by the ActiveAir AutoFlow Hood.
- Airline pressure must only be set between 2.0 bar and 9.0 bar.
- The ActiveAir AutoFlow Hood is designed for SINGLE USE only. Respirex cannot guarantee the integrity or performance characteristics of a Hood that has seen multiple cycles of usage.
- If the Hood is heavily contaminated or mechanically damaged in any way it MUST NOT be used and MUST be disposed of.
- Never modify or alter this product.
- Please ensure that you have chosen suitable PPE for your application. The user shall be the sole judge for the correct combination of full body protective coverall and ancillary equipment (gloves, boots, respiratory equipment etc) and how long a limited-use ActiveAir AutoFlow Hood can be worn on a specific application with respect to its protective performance, wearer comfort or heat stress.
- Materials making up the ActiveAir AutoFlow Hood that may come into contact with the wearer's skin are not known to cause allergic reactions to the majority of individuals. These products contain no components made from natural rubber latex.
- The wearer should leave the contaminated zone IMMEDIATELY when the high pitch of the Low Flow warning whistle sounds. The wearer must immediately undergo decontamination and removal of Hood.
- Continuous contact with certain chemicals can adversely effect the field of vision and protection offered by the visor. If the end-user notices any discolouration of the visor the Hood MUST NOT be used.

- All air line hoses should have strong abrasion and chemical resistant qualities, consistent with the air line permanently attached to the suit. Care must be given to the selection of hose and the environment in which it is to be used.
- The moisture content of the breathable air must be controlled within the limits of clause 6.2 of EN 12021:2014, to avoid freezing of the RPD
- Every user connected to the air supply system must check the capacity of the air supply is sufficient for use, before putting on the ActiveAir Autoflow hood (see pages 6 and 7)
- Where appropriate, the marking 'F' indicates that the RPD and the compressed air supply tube can be used in situations where exposure to flame can be a risk.

For any enquiries please contact the Respirex customer services department on Tel : +44 (0)1737 778 600, Fax : +44 (0)1737 779 441 or Email : info@respirex.co.uk.

Storage

Stored in its original packaging the Respirex ActiveAir Autoflow Hood and ActiveAir Autoflow Regulator has a maximum shelf-life of 10 years and should be stored under the following conditions:

In dry conditions above ground level; away from direct sunlight and in an environment free from harmful gases and vapours.

Temperature range of -5°C* to +30°C, < 90% humidity.

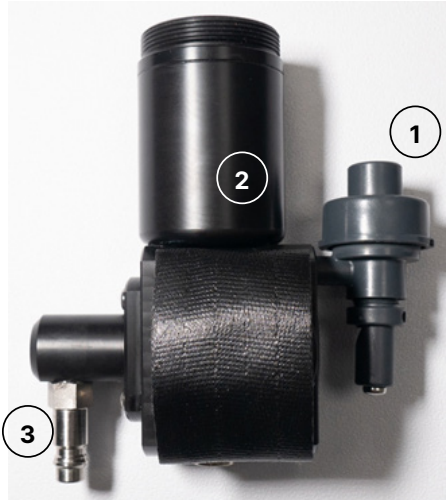
**Care should be taken when storing the hoods at extreme temperatures. At sub-zero temperatures the flexibility of the material may be reduced, resulting in a potential lowering of the protection offered.*

Only remove the single use ActiveAir Autoflow Hood from its original packaging when intending to use.

DO NOT fold or crease the visor, this will help to keep its natural shape

In order to maintain the level of protection offered, care should be taken to minimize the risk of damage occurring to the ActiveAir Autoflow Hoods during transportation between work areas. It is recommended that all ActiveAir Autoflow suits are transported in a suitably sized rigid container resistant to penetration by sharp objects, abrasive surfaces, chemicals, oils, solvents etc.

ActiveAir Autoflow Regulator



View showing the Regulator

1. Warning whistle
2. The silencer, air outlet
3. Compressed Air Supply Tube (CAST) coupling

The Regulator Viewed in its casing

ActiveAir Autoflow Waist Belt Assembly

1. Lay the Regulator on a flat surface with the label facing upwards, Figure A. Next to the Regulator are the buckle clips used to fasten the belt
2. Feed the belt (Part Number: F02030), through the slot of the Regulator casing, Figure B and Figure C.

Figure A

Figure B

Figure C

3. Thread the belt through the buckle clips, Figure D and Figure E.

Figure D

Figure E

4. The completed ActiveAir Autoflow Regulator waist belt assembly ready for use, Figure F.

Figure F

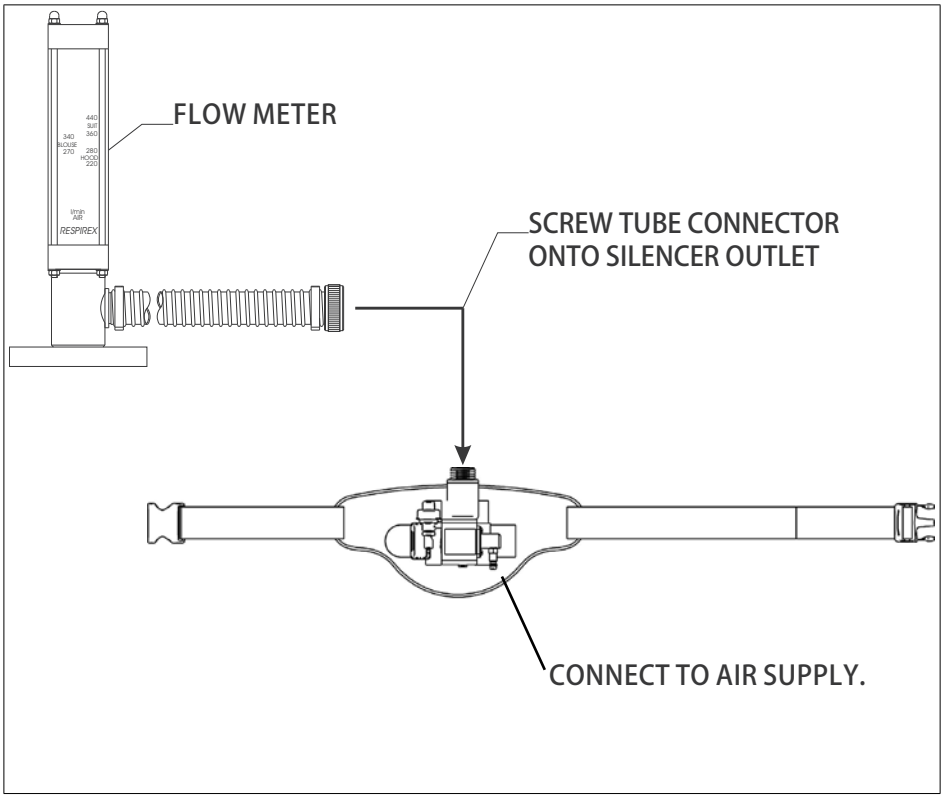
Airflow Assessment

Air supply to the hood must be within the range:

Maximum 9 bar (Airflow rate inside the hood at 9 bar, 363 litres per minute)

Minimum 2 bar (Airflow rate inside the hood at 2 bar, 198 litres per minute)

This must be checked prior to each use. Respirex have supplied an airflow meter to provide a visual check for correct airflow (see below).



Checking Airflow

1. Lay the hood open to allow access to the air system.
2. Unscrew the Hood air supply hose from the Autoflow Regulator silencer outlet.
3. With the Respirex flow meter on a flat level surface, screw the tube connector from the flow meter onto the Autoflow Regulator silencer outlet.
4. Connect the Autoflow Regulator to the CAST air supply and measure the airflow on the meter. The rotameter of the flow meter must be above the indicator mark.
5. Disconnect the flow meter and reconnect the Autoflow Regulator to the Hood air system. The Hood is now ready to be worn.

IMPORTANT: If you are unable to achieve an airflow above the flow meter indicator, an investigation should determine if any blockages are in the air delivery system and the airflow assessment process should be repeated.

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Pre-Checks

1. Visually inspect the suit for any damage that may impair the correct working of the garment.
2. Check the hood is free from contamination both inside and out.
3. Check vision through the visor is not impaired by scratches or heavy scuff marks.
4. The hood materials are free from tears and holes. Pay particular attention to the seam areas.
5. Unscrew the dust cap from the Autoflow Regulator outlet. Check to see the outlet of the silencer is free of dust and contaminants and is undamaged.
6. Check that the Autoflow Regulator is securely attached to the Respirex supplied waistbelt before threading the waist belt straps through the rear belt loops of the rear cape (Figure 1). Securely screw the connector of the Hood air supply hose to the Autoflow Regulator silencer outlet (Figure 2).

Figure 1

Figure 2

An inspection of the compressed air supply tube (CAST) which supplies breathing quality air to the operator should be carried out at least once per month and before each shift cycle and the results recorded.

During the inspection the following should be checked:

1. The CAST is clean externally.
2. The CAST is free from damage (holes, splits, etc.).
3. Air line coupling connections are in good condition and non-return valves are in good working order.

Submerge in water to locate any leaks if any sign of damage is evident. Report any defects to the supervisor and record them. The CAST must NOT be used until the defect has been rectified.

⚠ Ensure that all possible connections to couplings connected to the air supply system are not connected to any other system that supplies gasses other than breathable air. A risk assessment by the user must be taken against possible perilous connections possible at the workplace e.g. Nitorgen

Compressed Air Supply Tube (CAST)

It is recommended that a CAST with a minimum internal diameter bore diameter of 9.5mm (3/8") is used in combination with the ActiveAir Autoflow Regulator. Respirex recommend a maximum CAST length of 10 meters with a maximum of two CASTs joined together to achieve this length. The CAST must meet the requirements of EN 14594:2018. If CASTs and couplings not supplied by Respirex are to be used they should be suitable for the intended purpose and conform to the requirements of EN 14594:2018.

Notes:

To ensure compliance with product type approval, CASTs marked 'A' (indicating suitability for use with Class A devices) should be used with the ActiveAir Autoflow Regulator.

CAST must conform to the strength requirements necessary for a Class 4A device, as specified by EN 14594:2018.

End users shall assure themselves that the pressure range of the air supply to the apparatus is within the limits of a minimum 2.0 bar to a maximum 9.0 bar.

Connect the compressed air supply tube (CAST) to the Autoflow Regulator as shown in Figure 3. Reduce the pressure until the Low Flow Warning Whistle starts, then increase the pressure to the normal working pressure (2.0 bar to 9.0 bar). Make sure there is constant air flow in the hood of the suit (Figure 4).

Figure 3

Figure 4

⚠ **Note:** If the ActiveAir Autoflow suit is connected to a mobile compressed air supply system operated by an assistant, care must be taken that when wearing ear defenders the audibility of the Autoflow Regulator warning device may be reduced.

The size of the compressor, food-grade lubricating oil, Grade - D filtration, carbon monoxide (CO) monitor, refrigerated dryer, receiver tank with condensation drain, and air distribution system must be specifically sized for the number of workers and types of respirators in use.

Dressing Procedure

It is good practice for the Hood to be worn with chemical protective clothing that is equivalent to or exceed the protective perfomance of the Hood.

Follow these steps in donning the Hood:

1. Remove all personal affects which may result in damage to the hood (e.g. watches, badges, jewellery etc.).
2. The wearer should lift the hood and place his or her head inside (see Figure 5 and Figure 6). **NB:** If necessary the wearer may don a peakless, size adjustable 52 - 64 cm, helmet conforming to EN 397 before placing the hood over their head. After the hood has been placed over their head, while wearing the helmet, it may be necessary to re-adjust the straps of the helmet for comfort and better fitting. Ensure the knitted neck seal sits evenly around the wearer's neck.

Figure 5

Figure 6

3. Thread the waist belt straps through the integral belt-loops on the front flap (see Figure 7 and Figure 8). It may be that the wearer would prefer to have the belt hidden behind the chemical protective flap. This can be achived by threading the belt straps to allow the belt to be hidden behind the chemical protective flap, either way it is important for the belt to have the front flap secured.

Figure 7

Figure 8

4. A complete fitting of the Hood with the belt on the outside of the chemical protective flap (Fig. 9). Note the way the belt was passed through the belt loops. A view of the hood from the side (see Fig. 10)

Figure 9

Figure 10

Decontamination for Removal of Hood

Because the ActiveAir Autoflow Hood is designed primarily as a SINGLE USE garment, the end-user will be the sole judge for how long it can be worn on a specific task.

Preliminary washing by means of a high pressure shower will remove most of the contaminant from the outer surfaces of the hood sufficient to allow the wearer to undress from the garment.

Should you not have access to a high pressure shower, the hood can be sprayed with copious quantities of water and a suitable detergent and neutralizer for a minimum period of 5 minutes.

If the garment has been used in acid the recommended neutralizer is a solution of bicarbonate of soda and water (6% bicarbonate of soda w/v). Water will neutralize alkali contamination.

Undressing Procedure

It is essential that the hood is decontaminated sufficiently to safely remove it from the wearer. It may be necessary for a dressing assistant to aid the wearer to remove the hood (it is essential that the dressing assistant wears suitable protective clothing).

1. Unclip the belt and feed the belt straps back through the loops of the front flap only. If wearing a helmet, unclip the chin strap.
2. Remove the hood and lay it on a flat surface.

NOTE: It is likely that if a safety helmet is being worn this will automatically come away from the wearer's head space of the hood. The helmet can be recovered from the hood on completion of the doffing procedure.

3. Disconnect the air supply hose from the AutoFlow Regulator and safely remove the waist belt containing the AutoFlow regulator unit from the hood.

Note: Extreme care should always be taken when handling contaminated hoods

Disposal

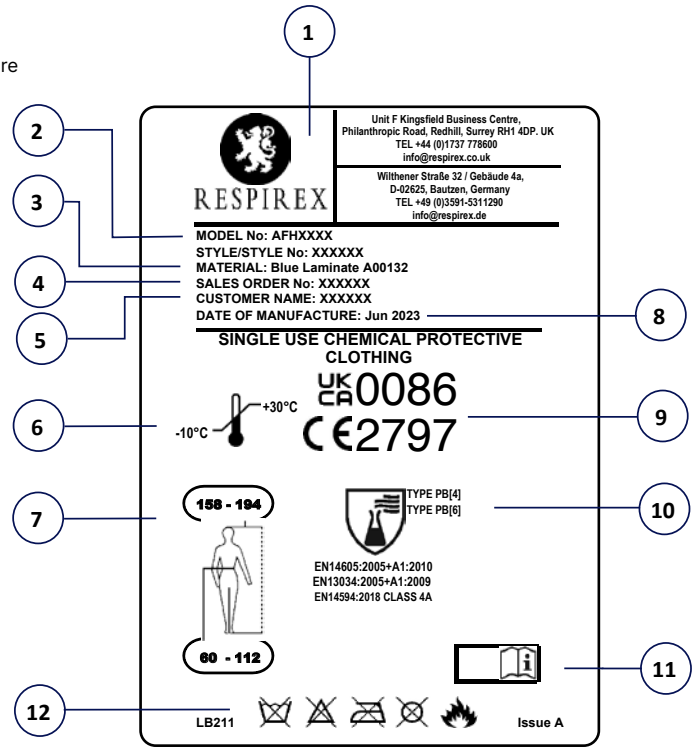
Contaminated garments should be handled as contaminated waste in accordance with local and national regulations.

Incineration is acceptable as no halogens are present or used in manufacture of **Chemprotex™300**. The calorific value is the same as oil; however uncontrolled combustion can lead to noxious fumes and un-burnt hydrocarbons. All components are thermoplastic and can be recycled as mixed polyolefin where facilities exist.

Chemprotex™300 is comprised mainly from ethylene gas which is a by-product of oil production and refining which was once flared. No formal carbon footprint has been made on **Chemprotex™300**, however provided it is not incinerated overall carbon dioxide release to the atmosphere during production and disposal will be low.

Product Labelling

1. Manufacturer of garment;
   Respirex International Ltd.
2. Manufacturer's Model number
3. Material of Manufacture.
4. Manufacturer's Order No.
5. Customer Name.
6. Storage Temperature
7. Garment Size.



Body Height (cms)	Waist Girth (cms)
158 - 194	60 - 112

8. Date of manufacture; Day/Month/Year.
9. CE and UKCA mark including Notified Body and Approval Body code.
10. Protection against liquid chemicals
11. "Open Book Pictogram"; wearer must refer to the "Instructions for use" for further information.
12. Five care pictograms indicating that clothing is not suitable for cleaning and reuse.
    - Pictogram 1 Do not wash
    - Pictogram 2 Do not bleach
    - Pictogram 3 Do not iron
    - Pictogram 4 Do not dry clean
    - Pictogram 5 Flammable

Chemical Permeation Testing

Respirex will test their own materials against any chemical that the customer requires. In this way, the customer can be advised and recommended the most suitable material to use against any challenging chemical encountered in the workplace.

Permeation is the process by which a chemical moves through protective clothing material on a molecular level. The permeation tests are carried out according to both the European standard ISO 6529 and the American standard ASTM 739. The clothing material is exposed to the challenging chemical in a permeation cell so that breakthrough times and permeation rates can be measured. Breakthrough time is the time taken for the chemical to permeate through the material after continuous contact with the outer surface of a chemical safety suit. Permeation rates, measured in µg (min.cm²), are an indication of the amount of chemical reaching the person inside the suit after breakthrough occurs.

For advice on chemical permeation or decontamination contact Respirex on Tel : +44 (0)1737 778600, Fax : +44 (0) 1737 779441 or Email: info@respirex.co.uk, where our qualified staff will be happy to help you. Contact outside of normal working hours (9.00am-5.00pm) on Tel : +44 (0)1737 778600 answer phone, leave details of your enquiry and we will deal with your query with the minimum of delay.

Material Performance Data

Unless otherwise stated, all data shown indicates performance characteristics of the barrier laminate material in accordance with the requirements of EN 14605:2005+A1:2009 and EN 14325:2018, plus additional standards. EN 13034:2005+A1:2009 states, Type PB [6] partial body protection has not been tested to the whole suit test (5.2).

Resistance to Permeation by Chemicals

Tests carried out under laboratory conditions by independent accredited laboratories in accordance with ISO 6529. Table shows average breakthrough times in minutes.

Chemical	Result Barrier laminate material	Visor	EN Class*
Sodium Hydroxide 40%	> 480 mins	> 480 mins	6 of 6

* EN class specified by EN 14325:2018, the higher the class number the better the performance.

Repellency to liquid chemicals

Tests carried out under laboratory conditions by independent accredited laboratories in accordance with EN ISO 6530.

Chemical	Repellency index	EN Class*
Sulphuric acid 30%	> 90%	3 of 3
Sodium Hydroxide 10%	> 90%	3 of 3
o-Xylene 99.9%	> 90%	3 of 3
Butan-1-ol 99.9%	> 90%	3 of 3

* EN class specified by EN 14325:2018, the higher the class number the better the performance.

Resistance to penetration by liquid chemicals

Tests carried out under laboratory conditions by independent accredited laboratories in accordance with EN ISO 6530.

Chemical	Penetration index	EN Class*
Sulphuric acid 30%	< 1%	3 of 3
Sodium Hydroxide 10%	< 1%	3 of 3
o-Xylene 99.9%	< 1%	3 of 3
Butan-1-ol 99.9%	< 1%	3 of 3

* EN class specified by EN 14325:2018, the higher the class number the better the performance.

Physical Properties

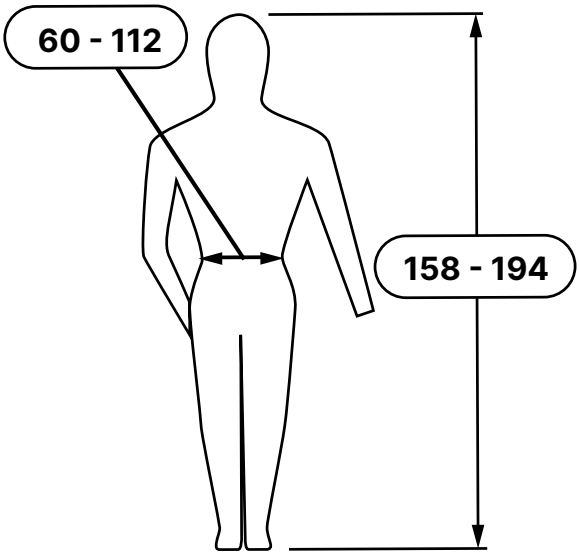
Tests carried out under laboratory conditions by independent accredited laboratories.

Test Method	Property	EN Class*
EN 530 Meth 2	Abrasion resistance	6 of 6
EN ISO 7854 Meth B	Flex cracking resistance	1 of 6
EN ISO 7854 Meth B	Flex cracking resistance (-30^{0}C)	2 of 6
EN ISO 9073-4	Trapezoidal tear resistance	4 of 6
EN ISO 13934-1	Tensile strength	3 of 6
EN 863	Puncture resistance	2 of 6
EN 13274-4 Meth 3	Resistance to ignition	Pass
EN 1149-1	Electrostatic properties	≤ 2.5 × 10^{9} Ω

* EN class specified by EN 14325:2018, the higher the class number the better the performance.

Sizing

The following table designates the range of height & chest sizes suitable for the ActiveAir Autoflow Hood; check your body measurements to make sure you are suitable. Body measurements in cm (inches).



Body measurements in cm

Waist Girth	Body Height
60 - 112	158 - 194

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