TEST REPORT

EN 149: 2001 + A1: 2009 Respiratory protective devices – Filtering half masks to protect against particles – Requirements, testing, marking

Report

Report reference No ……..…..:	PPE-20200015
Tested by ……..:	Huanqing Zhang
Checked by……..:	Su Tie
Approved by……:	Bai Yajun
Date of issue……:	2020-03-27
Number of pages (Report)…….:	16

Testing laboratory

Name.....:	Hangzhou Wanve Certification Technology Service Co., Ltd
Address.....:	Building 8-1, No.189 Hongcan Road, Hongken Farm, Xiaoshan Ecnomic & Technological Development Zone, Hangzhou, Zhejiang, 311232, China.
Testing location .....:	Same as above

Client

Name .....:	Jinjiang Baichuan Hygiene Products Co., Ltd
Address.....:	Shuanglong Road, Zhenqu Industrial Zone, Neikeng Town, Jinjiang City, Quanzhou City, Fujian Province, 362200, China

Test specification

Standard.....:	EN 149: 2001 + A1: 2009
Test procedure .....:	/
Procedure deviation.....:	N.A.
Non-standard test method .....:	/

Test report form/blank test report

Test report form No……:	WANVE EN 149: 2001 + A1: 2009
Master TRF……:	Hangzhou Wanve Certification Technology Service Co., Ltd.
Copyright blank test report…..…:	This report is based on a blank test report prepared by WANVE using information obtained from the TRF originator

Test item

Description ……..……..……..:	Disposable Protective Mask
Trademark ……..:	/
Model and/or type reference……:	Adult-GZ1, Kid-GZ1
Manufacturer……..:	Jinjiang Baichuan Hygiene Products Co., Ltd Shuanglong Road, Zhenqu Industrial Zone, Neikeng Town, Jinjiang City, Quanzhou City, Fujian Province, 362200, China

Testing

Date of receipt of test item……..:	2020-03-23
Date(s) of performance of test…..:	2020-03-23 to 2020-03-27

Test case verdicts

Test case does not apply to the test object..... :	N/A (Not Applicable)
Test item does meet the requirement ..... :	P (Pass)
Test item does not meet the requirement ..... :	F (Fail)

General remarks

This test report shall not be reproduced except in full without the written approval of the testing laboratory.

The test results presented in this report relate only to the object tested.

"(see remark #)" refers to a remark appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a comma is used as the decimal separator.

Brief description of the tested sample(s): Disposable Protective Mask

Testing environment ： Ambient temperature : 25.0℃ humidity:40%

This report is only used to apply CE certificate

Product Detail List

3 lyaer

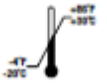
Flat Ear Type / Adult-GZ1, Kid-GZ1

175*93mm, 140*90mm

MARKING

Disposable Protective Mask FFP1 NR				CE
Type:	Adult-GZ1	Standard:	EN 149: 2001 + A1: 2009	
Package:	25 PCS	Expiry Date:	2022/03	

Jinjiang Baichuan Hygiene Products Co., Ltd
Shuanglong Road, Zhenqu Industrial Zone, Neikeng Town, Jinjiang City, Quanzhou City, Fujian Province, 362200, China

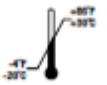

Storage Temperature Range -10℃(14℉)to +40℃(+104℉)


Storage Maximum Relative Humidity ＜80% RH


See information by the manufacturer

Disposable Protective Mask FFP1 NR				CE
Type:	Kid-GZ1	Standard:	EN 149: 2001 + A1: 2009	
Package:	25 PCS	Expiry Date:	2022/03	

Jinjiang Baichuan Hygiene Products Co., Ltd
Shuanglong Road, Zhenqu Industrial Zone, Neikeng Town, Jinjiang City, Quanzhou City, Fujian Province, 362200, China


Storage Temperature Range -10℃(14℉)to +40℃(+104℉)


Storage Maximum Relative Humidity ＜80% RH


See information by the manufacturer

PHOTO (Adult-GZ1**)**

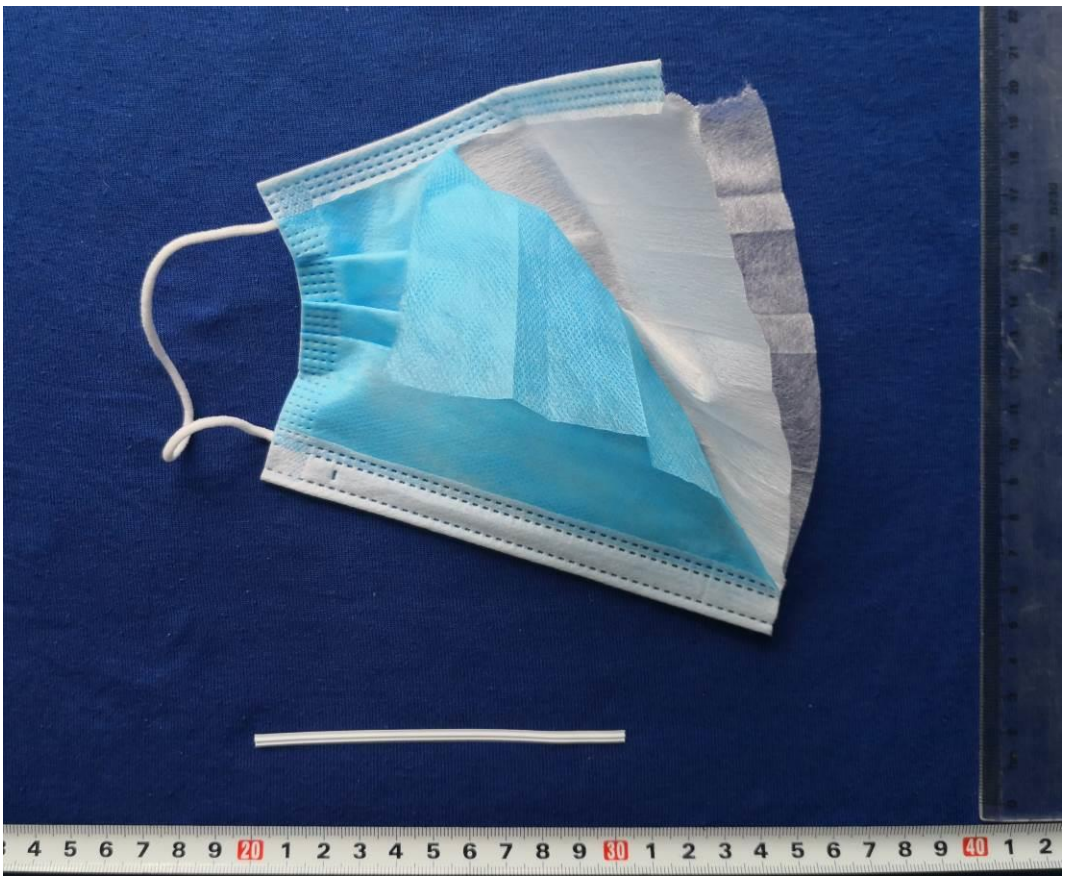
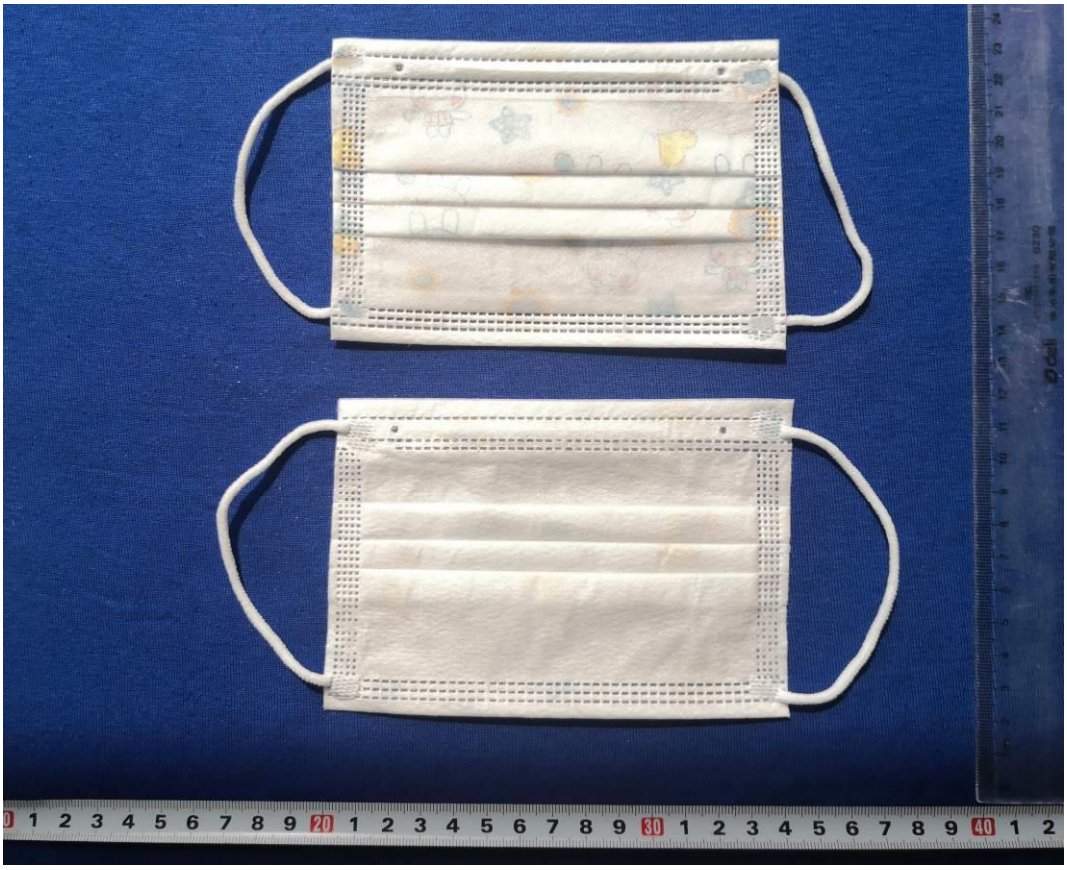
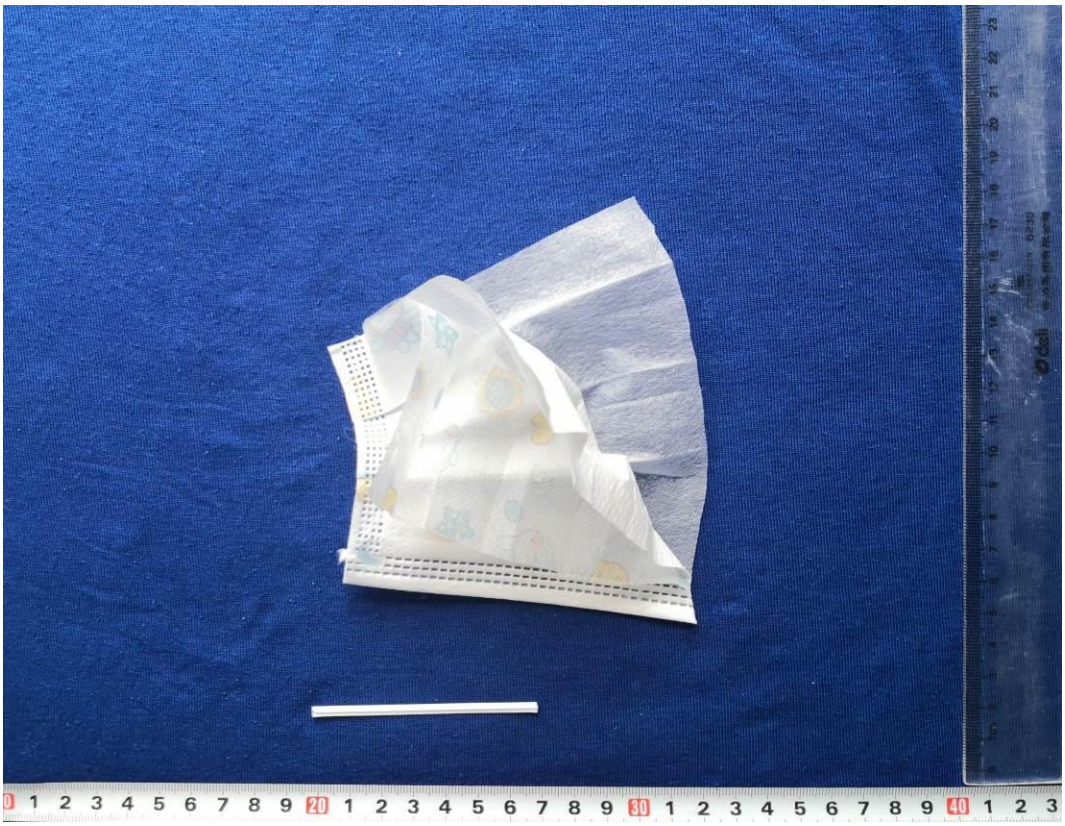


PHOTO (Kid-GZ1**)**





EN 149: 2001 + A1: 2009			
Clause	Requirement – Test	Result - Remark	Verdict

EN 149: 2001 + A1 2009			
5	**Classification**		**P**
	Particle filtering half masks are classified according to their filtering efficiency and their maximum total inward leakage. There are three classes of devices: FFP1,FFP2 and FFP3	FFP1	P
6	**Designation**		**P**
	Particle filtering half masks meeting the requirements of this European Standard shall be designated.		P
7	**Requirements**		**P**
7.1	General		P
	In all tests, all test samples shall meet the requirements.		P
7.2	Unless otherwise specified, the values stated in this European Standard are expressed as nominal values. Except for temperature limits, values which are not stated as maxima or minima shall be subject to a tolerance of ± 5%.		P
7.3	Visual inspection		P
	The visual inspection shall also include the marking and the information supplied by the manufacturer.		P
7.4	Packaging		P
	Particle filtering half masks shall be offered for sale packaged in such a way that they are protected against mechanical damage and contamination before use.		P
7.5	Material		P
	Materials used shall be suitable to withstand handling and wear over the period for which the particle filtering half mask is designed to be used.		P
7.6	Cleaning and disinfecting		P
	If the particle filtering half mask is designed for more than a single shift, the materials used shall withstand the cleaning and disinfecting agents recommended by the manufacturer.		P
7.7	Practical performance		P
	The particle filtering half mask shall undergo practical performance tests under realistic conditions. These general tests serve the purpose of checking the equipment for imperfections that cannot be determined by the tests described elsewhere in this standard.		P
7.8	Finish of parts		P
	Parts of the device likely to come into contact with the		P

EN 149: 2001 + A1: 2009			
Clause	Requirement – Test	Result - Remark	Verdict
	wearer shall have no sharp edges or burrs.		
7.9	Leakage		P
7.9.1	Total inward leakage		P
	The laboratory tests shall indicate that the particle filtering half mask can be used by the wearer to protect with high probability against the potential hazard to be expected.		P
	The total inward leakage consists of three components: face seal leakage, exhalation valve leakage (if exhalation valve fitted) and filter penetration. For particle filtering half masks fitted in accordance with the manufacturer's information.		P
	Total inward leakage shall be not greater than: 25% for FFP1 11% for FFP2 5% for FFP3	20.1%	P
7.9.2	Penetration of filter material For FFP1 Sodium chloride test 95 l/min % max. 20 Paraffin oil test 95 l/min % max. 20 For FFP2 Sodium chloride test 95 l/min % max. 6 Paraffin oil test 95 l/min % max. 6 For FFP3 Sodium chloride test 95 l/min % max. 1 Paraffin oil test 95 l/min % max. 1	Sodium chloride: 17.7% Paraffin oil: 16.5%	P
	The penetration of the filter of the particle filtering half mask shall meet the requirements.		P
7.10	Compatibility with skin		P
	Materials that may come into contact with the wearer's skin shall not be known to be likely to cause irritation or any other adverse effect to health.		P
7.11	Flammability		P
	The material used shall not present a danger for the wearer and shall not be of highly flammable nature.	No burn.	P
7.12	Carbon dioxide content of the inhalation air		P
	The carbon dioxide content of the inhalation air (dead space) shall not exceed an average of 1.0 % (by volume).	The carbon dioxide: 0.66%	P
7.13	Head harness		P
	The head harness shall be designed so that the particle filtering half mask can be donned and removed easily.	The head harness is adjustable.	P
7.14	Field of vision		P

EN 149: 2001 + A1: 2009			
Clause	Requirement – Test	Result - Remark	Verdict
	The field of vision is acceptable if determined so in practical performance tests.	The vision does not be affected by the sample.	P
7.15	Exhalation valve(s)	Without Exhalation valve	N/A
	A particle filtering half mask may have one or more exhalation valve(s), which shall function correctly in all orientations.		N/A
	If an exhalation valve is provided it shall be protected against or be resistant to dirt and mechanical damage and may be shrouded or may include any other device that may be necessary for the particle filtering half mask.		N/A
	Exhalation valve(s),if fitted, shall continue to operate correctly after a continuous exhalation flow of 300 l/min over a period of 30 s.		N/A
	When the exhalation valve housing is attached to the face-blank, it shall withstand axially a tensile force of 10 N applied for 10 s.		N/A
7.16	Breathing resistance		P
	The breathing resistances apply to valved and valveless particle filtering half masks and shall meet the requirements .		P
7.17	Clogging		P
7.17.1	General		N
	For single-use devices only, the clogging test is an optional test.		N/A
7.17.2	Breathing resistance		P
7.17.2.1	Valved particle filtering half masks		N/A
	After clogging the inhalation resistances shall not exceed: ——FFP1: 4mbar ——FFP2: 5mbar ——FFP3: 7mbar		N/A
7.17.2.2	Valveless particle filtering half masks		N/A
	After clogging the inhalation and exhalation resistances shall not exceed: ——FFP1: 3 mbar ——FFP2: 4 mbar ——FFP3: 5 mbar		N/A
7.17.3	Filter penetration		N/A
	All types (valved and valveless) of particle filtering half masks claimed to meet the clogging requirement shall also meet the penetration requirements after the treatment.		N/A

EN 149: 2001 + A1: 2009			
Clause	Requirement – Test	Result - Remark	Verdict
7.18	Demountable parts		P
	All demountable parts (if fitted) shall be readily connected and secured, where possible by hand.		P
8	**Testing**		**P**
8.1	General		P
8.2	Visual inspection		P
	The visual inspection is carried out where appropriate by the test house prior to laboratory or practical performance tests.		P
8.3	Conditioning		P
8.3.1	Simulated wearing treatment		P
	Conditioning by simulated wearing treatment shall be carried out .		P
8.3.2	Temperature conditioning		P
	Expose the particle filtering half masks to the following thermal cycle: a) for 24 h to a dry atmosphere of (70±3) ℃; b) for 24 h to a temperature of (-30±3) ℃; and allow to return to room temperature for at least 4 h between exposures and prior to subsequent testing.	After test, the sample is still in good condition.	P
8.3.3	Mechanical strength		P
	Conditioning shall be done in accordance with EN 143.		P
8.3.4	Flow conditioning		N/A
	A total of 3 valved particle filtering half masks shall be tested, one as received and two temperature conditioned.		N/A
8.4	Practical performance		P
8.4.1	General		P
	A total of 2 particle filtering half masks shall be tested: both as received. a) head harness comfort; b) security of fastenings; c) field of vision; d) any other comments reported by the wearer on request.	All samples meet the test requirements.	P
8.4.2	Walking test		P
	The subjects wearing normal working clothes and wearing the particle filtering half mask shall walk at a regular rate of 6 km/h on a level course. The test shall be continuous, without removal of the particle filtering half mask for a period of 10 min.	After this test, the subjects still feel comfortable.	P
8.4.3	Work simulation test		P

EN 149: 2001 + A1: 2009			
Clause	Requirement – Test	Result - Remark	Verdict
	The particle filtering half mask shall be tested under conditions which can be expected during normal use. During this test the following activities shall be carried out in simulation of the practical use of the particle filtering half mask. a) walking on the level with headroom of (1.3±0.2) m for 5 min; b) walking on the level with headroom of (1.3±0.2) m for 5 min; c) filling a small basket with chippings or other suitable material from a hopper which stands 1,5 m high and has an opening at the bottom to allow the contents to be shovelled out and a further opening at the top where the basket full of chippings is returned. The subject shall stoop or kneel as he wishes and fill the basket with chippings. He shall then lift the basket and empty the contents back into the hopper. This shall be done 20 times in 10 min.	After this test, the subjects still feel comfortable.	P
8.5	Leakage		P
8.5.1	General test procedure		P
8.5.1.1	Total inward leakage		P
	A total of 10 test specimens shall be tested: 5 as received and 5 after temperature conditioning. For the test, persons shall be selected who are familiar with using such or similar equipment. A panel of ten clean-shaven persons shall be selected covering the spectrum of facial characteristics of typical users. It is to be expected that exceptionally some persons cannot be satisfactorily fitted with a particle filtering half mask. Such exceptional subjects shall not be used for testing particle filtering half masks.	Samples can fit subjects' faces well after this tests.	P
8.5.2	Method		P
8.5.2.1	Principle		P
	The subject wearing the particle filtering half mask under test walks on a treadmill over which is an enclosure. sampled and analysed during the inhalation phase of the respiratory cycle to determine the NaCl content. The sample is extracted by punching a hole in the particle filtering half mask and inserting a probe through which the sample is drawn. The pressure		P

EN 149: 2001 + A1: 2009			
Clause	Requirement – Test	Result - Remark	Verdict
	variation inside the particle filtering half mask is used to actuate a change-over valve so that inhaled air only is sampled. A second probe is inserted for this purpose.		
8.5.2.2	Test equipment		P
8.5.2.2.1	Aerosol generator		P
	The NaCl aerosol shall be generated from a 2 % solution of reagent grade NaCl in distilled water.		P
	The type described should be used. This requires an air flow rate of 100 l/min at a pressure of 7 bar. The atomizer and its housing shall be fitted into a duct through which a constant flow of air is maintained. It may be necessary to heat or dehumidify the air in order to obtain complete drying of the aerosol particles.		P
8.5.2.2.2	Test agent		P
	The mean NaCl concentration within the enclosure shall be (8 ±4) mg/m3 and the variation throughout the effective working volume shall be not more than 10 %. The particle size distribution shall be 0,02 mm to 2 mm equivalent aerodynamic diameter with a mass median diameter of 0,6 mm.		P
8.5.2.2.3	Flame photometer		P
	A flame photometer shall be used to measure the concentration of NaCl inside the particle filtering half mask. Essential performance characteristics for a suitable instrument are:		P
	a) It should be a flame photometer specifically designed for the direct analysis of NaCl aerosol;		P
	b) It should be capable of measuring concentrations of NaCl aerosol between 15 mg/m3 and 5 ng/m3;		P
	c) The total aerosol sample required by the photometer should not be greater than 15 l/min;		P
	d) The response time of the photometer, excluding the sampling system, should not be greater than 500 ms;		P
	e) It is necessary to reduce the response to other elements, particularly carbon, the concentration of which will vary during the breathing cycle. This will be achieved by ensuring that the band pass width of the interference filter is no greater than 3 nm and that all necessary side-band filters are included.		P
8.5.2.2.4	Sample selector		N/A
	A system is required which will switch the sample to the		N/A

EN 149: 2001 + A1: 2009			
Clause	Requirement – Test	Result - Remark	Verdict
	photometer only during the inhalation phase of the respiratory cycle. During the exhalation phase clean air shall be fed to the photometer. The essential elements of such a system are:		
	a) An electrically operated valve with a response time of the order of 100 ms. The valve should have the minimum possible dead space compatible with straight-through, unrestricted flow when open;		N/A
	b) A pressure sensor which is capable of detecting a minimum pressure change of approx. 0,05 mbar and which can be connected to a probe inserted in the cavity of the particle filtering half mask.		N/A
	c) An interfacing system to actuate the valve in response to a signal from the pressure sensor;		N/A
	d) timing device to record the proportion of the total respiratory cycle during which sampling took place.		N/A
8.5.2.2.5	Sample probe		P
	The probe shall be fitted securely in an airtight manner to the particle filtering half mask as near as possible to the centre line of the particle filtering half mask. A multiple hole sampling probe is strongly recommended. Measures shall be taken to prevent the influence of condensation in the sampling probe on the measurement.		P
8.5.2.2.6	Sample pump		P
	If no pump is incorporated into the photometer an adjustable flow pump is used to withdraw an air sample from the particle filtering half mask under test. This pump is so adjusted as to withdraw a constant flow of 1 l/min from the sample probe. Dependent on the type of photometer it may be necessary to dilute the sample with clean air.		P
8.5.2.2.7	Sampling of enclosure concentration		P
	The enclosure aerosol concentration is monitored during the tests using a separate sampling system, to avoid contamination of the particle filtering half mask sampling lines. It is preferable to use a separate flame photometer for this purpose.		P
	However, time will then be required to allow the photometer to return to a clean background.		P
8.5.2.2.8	Pressure detection probe		P
	A second probe is fitted near to the sample probe and is		P

EN 149: 2001 + A1: 2009			
Clause	Requirement – Test	Result - Remark	Verdict
	connected to the pressure sensor.		
8.5.2.3	Expression of results		P
	The leakage P shall be calculated from measurements made over the last 100 s of each of the exercise periods to avoid carry over of results from one exercise to the other.		P
8.6	Flammability		P
	A total of four particle filtering half masks shall be tested: two in the state as received and two after temperature conditioning in accordance with 8.3.2. The single burner test is carried out according to the following procedure.	During the test, the four sample do not burn.	P
	The face piece is put on a metallic dummy head which is motorized such that it describes a horizontal circle with a linear speed, measured at the tip of the nose, of (60 ± 5) mm/s. The head is arranged to pass over a propane burner the position of which can be adjusted. By means of a suitable gauge, the distance between the top of the burner, and the lowest part of the facepiece.		P
8.7	Carbon dioxide content of the inhalation air		P
	A total of 3 particle filtering half masks shall be tested: all 3 as received. The apparatus consists essentially of a breathing machine with solenoid valves controlled by the breathing machine, a connector, a CO_2 flowmeter and a CO_2 analyst. The apparatus subjects the particle filtering half mask to a respiration cycle by the breathing machine.	The carbon dioxide: 0.59%	P
8.8	Strength of attachment of exhalation valve housing		N/A
	A total of three particle filtering half masks shall be tested: one as received, one temperature conditioned in accordance with 8.3.2 and one after the test described for mechanical strength in EN 143. Mount the particle filtering half mask securely to a fixture. Apply an axial tensile force of 10 N to the valve for 10 s, and note the results.		N/A
8.9	Breathing Resistance		P
8.9.1	Test samples and fixture		P
8.9.1.1	Valveless particle filtering half masks		P
	A total of 9 valveless particle filtering half masks shall be		P

EN 149: 2001 + A1: 2009			
Clause	Requirement – Test	Result - Remark	Verdict
	tested:3 as received, 3 after temperature conditioning in accordance with 8.3.2 and 3 after the test for simulated wearing in accordance with 8.3.1.		
8.9.1.2	Valved particle filtering half masks		N/A
8.9.2	Exhalation resistance		P
	Seal the particle filtering half mask on the Sheffield dummy head. Measure the exhalation resistance at the opening for mouth of the dummy head using the adapter and a breathing machine adjusted to 25 cycles/min and 2.0 l/stroke or a continuous flow 160 l/min.	2.0 mbar at 160 l/min	P
8.9.3	Inhalation resistance		P
	Test the inhalation resistance at 30 l/min and 95 l/min continuous flow.	0.3 mbar at 30 l/min 1.5 mbar at 95 l/min	P
8.10	Clogging		N/A
8.10.1	Principle		N/A
	The test aerosol shall be dolomite. A total of 3 particle filtering half masks shall be tested: 1 as received and 2 after temperature conditioning in accordance with 8.3.2. The test consists of subjecting the particle filtering half mask to a sinusoidal breathing simulation.		N
8.10.2	Test equipment		N
	A scheme of a typical apparatus is given. The working area of the test chamber has a suggested square section of 650 mm. The breathing machine has a displacement of 2,0 l/stroke. The exhaled air shall pass a humidifier in the exhaled air circuit, such that the exhaled air temperature, measured at the position of the sample particle filtering half mask is (37±2) ℃ and 95 % R.H. minimum.		N
8.10.3	Test conditions		N/A
	---Dust: DRB 4/15 dolomite The size distribution of dolomite dust is given.		N/A
8.10.4	Test procedure		N/A
	Convey dust from the distributor to the dust chamber where it is dispersed into the air stream of 60 m3/h. Fit the sample particle filtering half mask in a leak tight manner to a dummy head or a suitable filter holder located in the dust chamber.		N/A
8.10.5	Assessment of clogging		N/A
	Following the exposure, measure the breathing resistance of the particle filtering half mask using clean air. Then measure the filter penetration in accordance		N/A

EN 149: 2001 + A1: 2009			
Clause	Requirement – Test	Result - Remark	Verdict
	with 8.11.		
8.11	Filter penetration		P
	The device shall be mounted in a leak tight manner on a suitable former and subjected to the filter penetration test, ensuring that components of the device that could affect filter penetration values such as valves and harness attachment points are exposed to the challenge aerosol. Testing shall be done in accordance with EN 143.		P
9	**Marking**		**P**
9.1	Packaging		P
	The following information shall be clearly and durably marked on the smallest commercially available packaging or legible through it if the packaging is transparent.		P
9.1.1	The name, trademark or other means of identification of the manufacturer or supplier.		P
9.1.2	Type-identifying marking.		P
9.1.3	Classification: FFP1, FFP2, FFP3.		P
9.1.4	The number and year of publication of this European Standard.		P
9.1.5	At least the year of end of shelf life. The end of shelf life may be informed by a pictogram, where yyyy/mm indicates the year and month.		P
9.1.6	The sentence “see information supplied by the manufacturer”, at least in the official language(s) of the country of destination, or by using the pictogram.		P
9.1.7	The manufacturer’s recommended conditions of storage or equivalent pictogram.		P
9.1.8	The packaging of those particle filtering half masks passing the dolomite clogging test shall be additionally marked with the letter "D".		P
9.2	Particle filtering half mask		P
	Particle filtering half masks complying with this European Standard shall be clearly and durably marked with the following:		P
9.2.1	The name, trademark or other means of identification of the manufacturer or supplier.		P
9.2.2	Type-identifying marking.		P
9.2.3	The number and year of publication of this European Standard.		P
9.2.4	The symbols FFP1, FFP2 or FFP3 according to class.		P
9.2.5	If appropriate the letter D (dolomite) in accordance with		P

EN 149: 2001 + A1: 2009			
Clause	Requirement – Test	Result - Remark	Verdict
	clogging performance. This letter shall follow the class designation		
9.2.6	Sub-assemblies and components with considerable bearing on safety shall be marked so that they can be identified.		P
10	**Information to be supplied by the manufacture**		**P**
10.1	Information supplied by the manufacturer shall accompany every smallest commercial available package.		P
10.2	Information supplied by the manufacturer shall be at least in the official language(s) of the country of destination.		P
10.3	The information supplied by the manufacturer shall contain all information necessary for trained and qualified persons on ——application/limitations; ——the meaning of any colour coding; ——checks prior to use; ——checks prior to use; ——use; ——maintenance (e.g. cleaning, disinfecting), if applicable; ——storage; ——the meaning of any symbols/pictograms used of the equipment.		P
10.4	The information shall be clear and comprehensible. If helpful, illustrations, part numbers, marking shall be added.		P
10.5	Warning shall be given against problems likely to be encountered, for example: ——fit of particle filtering half mask (check prior to use); ——it is unlikely that the requirements for leakage will be achieved if facial hair passes under the face seal; ——air quality (contaminants, oxygen deficiency); ——use of equipment in explosive atmosphere.		P
10.6	The information shall provide recommendations as to when the particle filtering half mask shall be discarded.		P

**********The End**********