



SUBJECT Physical & Microbiological Test

TEST LOCATION TÜV SÜD China

TÜV SÜD Products Testing (Shanghai) Co., Ltd.
B-3/4, No.1999 Du Hui Road, Minhang District
Shanghai 201108, P.R. China

CLIENT NAME Anhui Tiankang Medical Technology Co.,Ltd

CLIENT ADDRESS No.228 Weiyi Road Development Zone Tianchang City 239300 Anhui China

TEST PERIOD 10-Apr -2020~18-Apr-2020

Prepared By

Bella Xu

(Bella Xu)
Report Drafter

Authorized By



(Leo Liu)
Authorized Signatory

Note: (1) General Terms & Conditions as mentioned overleaf. (2) The results relate only to the items tested.(3) The test report shall not be reproduced except in full without the written approval of the laboratory.(4) Without the agreement of the laboratory, the client is not authorized to use the test results for unapproved propaganda.

Chemical/Microbiology Laboratory:
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No.151 Heng Tong Road Shanghai
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TUV[®]

TEST REPORT

Sample Description : Single-use Medical Face Mask
Sample Quantity : 45 pieces
Lot Number/Batch Code : 200308
Specification : With earloop
Size : /
Type of Mask : Type IIR
Brand Name : /

Remark: The above information was provided by applicant.

Summary of Test Results

No.	Test Item	Test Standard	Judgement
1	Bacterial Filtration Efficiency (BFE) Test	EN 14683:2019+AC:2019(E) Annex B	Pass
2	Differential Pressure Test	EN 14683:2019+AC:2019(E) Annex C	Pass
3	Synthetic Blood Penetration Test	ISO 22609:2004	Pass
4	Microbial Cleanliness Test	EN 14683:2019+AC:2019(E) Annex D	Pass

Note: Pass = Meet customer requirements;

Fail = Fail customer requirements;

= No comment;

N.D. = Not detected.

Photo of Samples



Results

No.	Test Item	Test Result
1	Bacterial Filtration Efficiency (BFE) Test	Specimen 1#: 99.4% Specimen 2#: 99.0% Specimen 3#: 99.5% Specimen 4#: 99.5% Specimen 5#: 99.1%
2	Differential Pressure Test	49.8 Pa/cm ²
3	Synthetic Blood Penetration Test	Specimen 1#~13#: None seen
4	Microbial Cleanliness Test	Specimen 1#: <1 CFU/g Specimen 2#: <1 CFU/g Specimen 3#: <1 CFU/g Specimen 4#: <1 CFU/g Specimen 5#: <1 CFU/g

Bacterial Filtration Efficiency (BFE) Test

1. Purpose

For evaluating the bacterial filtration efficiency (BFE) of mask.

2. Sample description was given by client

Sample description : Single-use Medical Face Mask
Specification : With earloop
Lot Number : 200308
Sample Receiving Date : 2020-04-10

3. Test Method

EN 14683:2019+AC:2019(E) Annex B

4. Apparatus and materials

- 4.1 *Staphylococcus aureus* ATCC 6538.
- 4.2 Peptone water.
- 4.3 Tryptic Soy Broth(TSB).
- 4.4 Tryptic Soy Agar(TSA).
- 4.5 Bacterial filtration efficiency test apparatus.
- 4.6 Six-stage viable particle Anderson sampler.
- 4.7 Flow meters.

5. Test specimen

- 5.1 As requested by client, take a total of 5 test specimens.
- 5.2 Prior to testing, condition all test specimens for a minimum of 4 h at (21±5)°C and (85±5)% relative humidity.

6. Procedure

- 6.1 Preparation of the bacterial challenge: Dilute the culture in peptone water to achieve a concentration of approximately 5×10^5 CFU/mL.
- 6.2 Adjust the flow rate through the Anderson sampler to 28.3 L/min.
- 6.3 Deliver the challenge to the nebulizer using a syringe pump. Purge tubing and nebulizer of air bubbles.
- 6.4 Perform a positive control run without a test specimen to determine the number of viable aerosol particles being generated. The mean particle size (MPS) of the aerosol will also be calculated from the results of these positive control plates.
 - 6.4.1 Initiate the aerosol challenge by turning on the air pressure and pump connected to the nebulizer. Immediately begin sampling the aerosol using the Anderson sampler.
 - 6.4.2 Time the challenge suspension to be delivered to the nebulizer for 1 min.
 - 6.4.3 Time the air pressure and Anderson sampler to run for 2 min.
 - 6.4.4 At the conclusion of the positive control run, remove plates from the Anderson sampler.
- 6.5 Place new agar plates into Anderson sampler and clamp the test specimen into the top of the Anderson sampler, with the inside of the specimen facing towards the bacterial challenge (test area: 77cm^2).
- 6.6 Repeat the challenge procedure for each test specimen.
- 6.7 Repeat a positive control after completion of the sample set.
- 6.8 Perform a negative control run by collecting a 2 min sample of air from the aerosol chamber. No bacterial challenge should be pumped into the nebulizer during the collection of the negative control.
- 6.9 Incubate agar plates at $(37 \pm 2)^\circ\text{C}$ for (20 to 52) h.
- 6.10 Count each of the six-stage plates of the Anderson sampler.

7. Calculation

Total the count from each of the six plates for the test specimens and positive controls, as specified by the manufacture of Anderson sampler. The filtration efficiency percentages are calculated as follows:

$$\text{BFE} = (C - T) / C \times 100$$

T is the total plate count for the test specimen.

C is the mean of the total plate counts for the two positive controls.



8. Test results*

P Value Stage Number	Positive Control (A)	Positive Control (B)	Negative Control	Specimen 1#	Specimen 2#	Specimen 3#	Specimen 4#	Specimen 5#
1	50	234	0	0	0	0	0	0
2	82	116	0	0	0	0	0	0
3	151	406	0	0	0	0	0	0
4	277	644	0	0	0	0	0	0
5	1241	547	0	11	8	5	8	11
6	513	721	0	5	17	7	5	12
Total (T), CFU	2314	2668	<1	16	25	12	13	23
Average (C), CFU	$2.5 \times 10^3 = (P_A + P_B) / 2$							
BFE, %				99.4	99.0	99.5	99.5	99.1
Requirements	≥ 98							
Remarks	<p><i>P</i> is the value of corresponding corrected particle counts as specified by the manufacturer of the cascade impactor. <i>T</i> is the total of <i>P</i> value for the test specimen. <i>C</i> is the mean of the total of <i>P</i> value of the two positive controls.</p>							

Differential pressure Test

1. Purpose

The purpose of the test was to measure the differential pressure of masks.

2. Sample description was given by client

Sample description : Single-use Medical Face Mask
Specification : With earloop
Lot Number : 200308
Sample Receiving Date : 2020-04-10

3. Test Method

EN 14683:2019+AC:2019(E) Annex C

4. Apparatus and materials

Differential pressure testing instrument

5. Test specimen

- 5.1 Test specimen are complete masks or shall be cut from masks. Each specimen shall be able to provide 5 different circular test areas of 2.5 cm in diameter.
5.2 Prior to testing, condition all test specimens for a minimum of 4 h at $(21 \pm 5)^\circ\text{C}$ and $(85 \pm 5)\%$ relative humidity.

6. Procedure

- 6.1 Without a specimen in place, the holder is closed and the differential manometer is zeroed. The pump is started and the flow of air adjusted to 8 L/min.
6.2 The pretreated specimen is placed across the orifice (total area 4.9cm^2 , test area diameter 25mm) and clamped into place so as to minimize air leaks.
6.3 Due to the presence of an alignment system the tested area of the specimen should be perfectly in line and across the flow of air.
6.4 The differential pressure is read directly.
6.5 The procedure described in steps 6.1-6.4 is carried out on 5 different areas of the mask and readings averaged.

Results:

Specimen	Test Results* (Pa/cm ²)	Average (Pa/cm ²)	Requirements	Judgement
1#	48.3	49.8	< 60	Pass
2#	52.4			
3#	46.3			
4#	54.2			
5#	47.7			

Synthetic Blood Penetration Test

1. Purpose

For evaluation of resistance of masks to penetration by a fixed volume of synthetic blood at a high velocity.

2. Sample description was given by client

Sample description : Single-use Medical Face Mask
Specification : With earloop
Lot Number : 200308
Sample Receiving Date : 2020-04-10

3. Test Method

ISO 22609:2004

4. Apparatus and materials

- 4.1 Synthetic blood.
- 4.2 Tensiometer.
- 4.3 Synthetic blood penetration test apparatus;
- 4.4 Targeting plate.
- 4.5 Air pressure source.
- 4.6 Ruler.
- 4.7 Balance.
- 4.8 Controlled temperature and humidity chamber.

5. Test specimen

- 5.1 As requested by client, take a total of 13 test specimens.
- 5.2 Prior to testing, condition all test specimens for a minimum of 4h at $(21 \pm 5)^{\circ}\text{C}$ and $(85 \pm 5)\%$ relative humidity.

6. Procedure

- 6.1 Prepare the synthetic blood (40~44 mN/m) for the test.
- 6.2 Determine the density of the synthetic blood.
- 6.3 Fill the reservoir with new synthetic blood.
- 6.4 Position the test specimen 30.5 cm (12 in.) from the exit of the canula.
- 6.5 Set the reservoir pressure to the approximate pressure.
- 6.6 Place the targeting plate approximately 1 cm away from the mask.
- 6.7 Set the valve timer to 0.5 s. Collect and weigh the amount of fluid delivered (before the targeting hole).

- 6.8 Set the valve timer to 1.5 s. Collect and weigh the amount of fluid delivered (before the targeting hole).
- 6.9 Calculate the difference in weight of the two spurts. For a test fluid with a density of 1.003, Table 1 gives the target difference in weight plus lower and upper limits for a velocity range within 2% of the target.

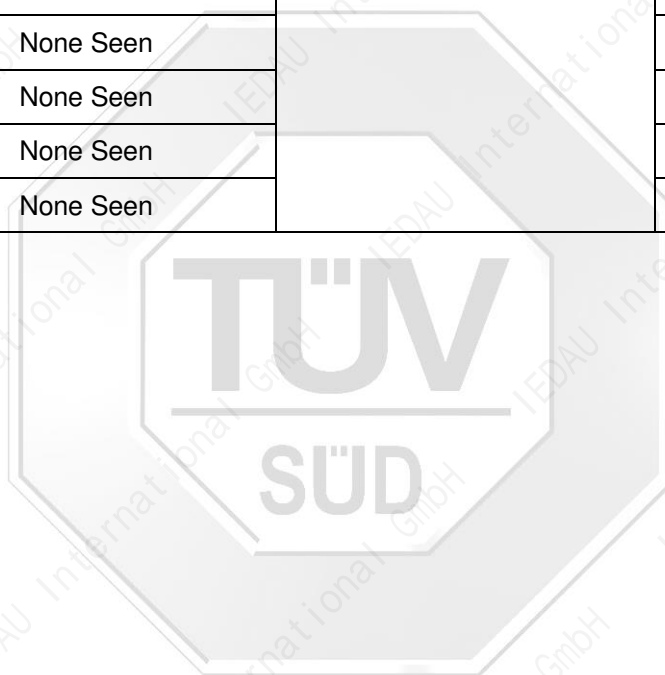
Table 1 Target weight difference

Fluid Pressure (mmHg)	Weight difference for 1 s difference in spurt duration (g)		
	Min.	Target	Max.
120	3.002	3.063	3.124

- 6.10 Adjust the reservoir pressure and repeat steps 6.7 to 6.9 until the weight difference is within the target range.
- 6.11 Record the weight difference for the spurts exiting the nozzle.
- 6.12 Record the pressure in the reservoir.
- 6.13 Set the valve time to 0.5 s. Collect and weigh the amount of fluid passing through the targeting hole.
- 6.14 Set the valve time to 1.5 s. Collect and weigh the amount of fluid passing through the targeting hole.
- 6.15 The difference in weight between the 0.5 s and 1.5 s spurts through the targeting plate shall be within +2 % ~ -5 % of the difference in weight from the nozzle.
- 6.16 If the differential weight is less than 95 % of the weight difference exiting the nozzle, check the aim of the stream to make sure it is passing cleanly through the targeting hole.
- 6.17 If the differential weight is more than 102 % of the weight difference exiting the nozzle, repeat the weight measurements exiting the nozzle (steps 6.7 to 6.11).
- 6.18 For standard synthetic blood, the timer duration can be estimated using the formula:
(p is the density of the test fluid.) $t = 0.5 + (2 \times p - g \text{ at } 0.5 \text{ s}) / (g \text{ at } 1.5 \text{ s} - g \text{ at } 0.5 \text{ s})$.
- 6.19 Record the timer setting to use as the starting point for subsequent testing.
- 6.20 Mount a test specimen on the specimen holding fixture. If the mask contains pleats, spread the pleats out when mounting the mask onto the fixture to present a single layer of material as the target area.
- 6.21 Squirt the synthetic blood onto the test specimen for the calculated time. Ensure that the synthetic blood hits the target area of mask.
- 6.22 Inspect the inside surface for synthetic blood penetration within 10 s of squirting the synthetic blood against the target area.
- 6.23 Report the results (none / penetration) for each test specimen at the test pressure.

Results:

Specimen	Test Results*	Requirements	Judgement
1#	None Seen	Pass Pressure at 16.0 kPa (120mmHg)	Pass
2#	None Seen		Pass
3#	None Seen		Pass
4#	None Seen		Pass
5#	None Seen		Pass
6#	None Seen		Pass
7#	None Seen		Pass
8#	None Seen		Pass
9#	None Seen		Pass
10#	None Seen		Pass
11#	None Seen		Pass
12#	None Seen		Pass
13#	None Seen		Pass



Microbial Cleanliness Test

1. Purpose

The purpose of the test was to measure microbial cleanliness of mask.

2. Sample description was given by client

Sample description : Single-use Medical Face Mask
Specification : With earloop
Lot Number : 200308
Sample Receiving Date : 2020-04-10

3. Test Method

According to EN ISO 11737-1:2018 to determine the microbial cleanliness of mask material, and refer to the procedure as described in EN 14683:2019+AC:2019(E) Annex D

4. Apparatus and materials

- 4.1 Orbital shaker.
- 4.2 0.45 um filter.
- 4.3 Tryptic Soy Agar (TSA).
- 4.4 Sabouraud Dextrose Ager (SDA) with chloramphenicol.
- 4.5 Formula of Extraction Liquid: 1g/L peptone, 5g/L NaCl and 2g/L Tween 20.
- 4.6 Extraction apparatus.

5. Test specimen

- 5.1 As requested by client, take a total of 5 mask samples.
- 5.2 Mask samples for testing are provided in the original primary packaging.
- 5.3 Condition at (18 to 26)°C and (45 to 65)% relative humidity during testing.

6. Procedure

- 6.1 Five test specimens are selected from the top, bottom and 3 randomly chosen marks.
- 6.2 The mask is aseptically removed from the packaging and placed in a sterile 500 mL bottle containing 300 mL of extraction liquid.
- 6.3 The bottle is laid down on an orbital shaker and shaken for 5 min at 250 rpm.
- 6.4 After extracting, 100mL of the extraction liquid is filtered through a 0.45 um filter and laid down on a TSA plate for the total viable aerobic microbial count. Another 100 mL aliquot of the same extraction liquid is filtered in the same way and the filter plated on SDA for fungi enumeration.
- 6.5 The plates are incubated for 3 days at 30°C and 7 days at (20 to 25)°C for TSA and SDA plates respectively.
- 6.6 Calculate the colonies of each agar plate.

7. Calculation

For each test specimen calculate the microbial cleanliness as follows by counting the total colonies of the TSA and SDA plates.

Results*:

Specimen	Colonies of the TSA Plate	Colonies of the SDA Plate	Microbial Cleanliness, (CFU/g)	Requirements	Judgement
1#	0	0	<1	According to EN ISO 11737-1:2018 the microbial cleanliness of the mask shall be ≤30 CFU/g tested.	Pass
2#	0	0	<1		
3#	0	0	<1		
4#	0	0	<1		
5#	0	0	<1		

Note:

- 1.*denotes this test was carried out by external laboratory assessed as competent.
- 2.This report is for internal use only such as internal scientific research ,education, quality control, product R&D.

-END OF THE TEST REPORT-



Certificate

The Certification Body of
TÜV Rheinland LGA Products GmbH

hereby certifies that the organization
**Anhui Tiankang Medical
Technology Co., Ltd.**
No. 228 Weiye Road
Economic Development Zone
Tianchang City
239300 Anhui
China

has established and applies a quality management system for medical devices
for the following scope:

Manufacture and Distribution of Medical Devices

(see attachment for products and additional site included)

Proof has been furnished that the requirements specified in

EN ISO 13485:2016

are fulfilled. The quality management system is subject to yearly surveillance.

Effective Date: 2018-09-17
Certificate Registration No.: SX 60131062 0001
An audit was performed. Report No.: 15096003 004
This Certificate is valid until: 2021-09-16

Certification Body



Date 2018-09-17



TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

Tel.: +49 221 806-1371 Fax: +49 221 806-3935 e-mail: cert-validity@de.tuv.com <http://www.tuv.com/safety>

1.0 EC Declaration of Conformity

Name: Anhui Tiankang Medical Technology Co., Ltd.

Manufacturer: Add: No. 228 Weiyi Road, Economic Development Zone, Tianchang City, 239300 Anhui, China

European Name: MedPath GmbH

Representative: Add: Mies-van-der-Rohe-Strasse 8, 80807 Munich, Germany

Product Name: Single-use Medical Face Mask
(Type I, Type II, Type IIR)

Object of the declaration: Types/Sizes With earloop or with earloop(flat earloop) or with earloop(folded earloop) or with tie coverall: 12.5cm x 9cm, 14.5cm x 9cm, 16.5cm x 9cm, 17cm x 8cm, 17cm x 9cm, 17cm x 9.5cm, 17cm x 10cm, 17.5cm x 8cm, 17.5cm x 9cm, 17.5cm x 9.5cm, 17.5cm x 10cm, 18cm x 8cm, 18cm x 9cm, 18cm x 9.5cm, 18cm x 10cm, 19.5cm x 8cm, 19.5cm x 9cm, 19.5cm x 9.5cm, 19.5cm x 10cm

UMDNS Code: 12-447

Classification (MDD, Annex IX): I, rule 1

Conformity Assessment Route: Annex VII

We herewith declare in sole responsibility that the above mentioned products meet the transposition into national law, the provisions of the following EC Council Directives and Standards such as EN 14683:2019+AC:2019 etc. All supporting documentations are retained under the premises of the manufacturer. We are exclusively responsible for the declaration of conformity.

DIRECTIVES

General applicable directives:

Medical Device Directive: COUNCIL DIRECTIVE 93/42/EEC

Start of CE Marking: 2020-03-25

Place of Issue: Tianchang, CHINA

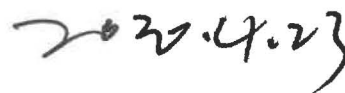
Date of Issue: 2020-04-23

Signature:



Mr. Baodong Bai

Position: General Manager





MedPath

EC-Registration Certificate

Directive 93/42/EEC on Medical Devices (MDD), Article 14

No. R A001 29 Rev. 01

Manufacturer: Anhui Tiankang Medical Technology Co., Ltd.

No. 228 Weiyi Road, Economic Development Zone,
Tianchang City, 239300 Anhui, China

Product

See Appendix A

Category(ies):



This is to certify that, in accordance of the Medical Device Directive 93/42/EEC (amended by 2007/47/EC), MedPath GmbH agrees to perform all duties and responsibilities as the Authorized Representative for the aforementioned manufacturer as stipulated and demanded by the aforementioned Directive. The German Competent Authority is notified of the manufacturer's medical device(s) and has allocated registration numbers shown in Appendix A. The manufacturer has provided MedPath GmbH with the appropriate Declaration(s) of Conformity confirming that the medical device(s) fulfills/fulfill the applicable requirements of the aforementioned Directive.

MedPath GmbH

Mies-van-der-Rohe-Strasse 8 · D-80807 München
Tel. 089-189174474 · Fax 089-54858884



Date, 2020-03-28

MedPath GmbH



MedPath

Appendix A: Product Category(ies)

No.	Name	Class	UMDNS Code	Form No.	Registration No.
1	Single-use Medical Face Mask	I	12-447	00297923	to be issued
2	Non-woven Coveralls	I	15-223	00297925	to be issued
3	Non-woven Isolation Gowns	I	15-037	00297927	to be issued



MedPath GmbH
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BfArM - Bundesinstitut für Arzneimittel und Medizinprodukte[zurück](#) in der Dokumentausgabe blättern [weiter](#)**4 von 9 BfArM: MP Anzeigen (MPA) © DIMDI**

Dokumentnummer	00159181
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Anzeige

Registrierdatum	2020-05-13
Registriernummer	DE/CA61/1M50/121
Typ der Anzeige	Erstanzeige
Anzeigender nach § 25 MPG	Bevollmächtigter
Formularnummer	00297923

Angaben zum Anzeigenden

Code	DE/0000047823
Bezeichnung	MedPath GmbH
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Ort	München
Postleitzahl	80807
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Land	Bayern
Telefon	089 189174474
E-Mail	info@medpath.pro

Zuständige Behörde

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Bezeichnung	Regierung von Oberbayern
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Land	Bayern
Ort	München
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Telefax	+49-89-21762914
E-Mail	medizinprodukteanzeigeverfahren@reg-ob.bayern.de

Hersteller

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Telefon	+86 13705505106
E-Mail	zy@tkmedical.com

Medizinprodukt

Produkttyp	nichtaktives Medizinprodukt
Klasse	I
App (Software auf mobilen Endgeräten)	Nein
Handelsname	Single-use Medical Face Mask
Nomenklaturcode	12-447
Nomenklaturbezeichnung	Maske
Kategorie	10 Produkte zum Einmalgebrauch

[zurück](#) in der Dokumentausgabe blättern [weiter](#)