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RÉPUBLIQUE FRANÇAISE

MINISTÈRE DES ARMÉES

DGA
DIRECTION GÉNÉRALE DE L'ARMEMENT

DIRECTION TECHNIQUE

Report	**Title**	**Test report**
	Reference	**RP/20-5276/DGA MNRBC/ 2000305/NP Version 1**
Item	**Name**	**COVID-19 masks**
	Reference	**2000305**
	Submitter	**PHARMAOUEST**

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Classification:	
X	Unprotected
	Restricted
	Industry Confidential
	Confidential Technology
	Confidential Defence
	Top Secret
	France Specific
	NATO
	UEO (WEU)

Tests carried out in the context of the COVID-19 health crisis, under the supervision of the General Directorate of Enterprises.

For further information on this test report, contact

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Remarks	Not applicable
Report composition	4 pages, including 1 annex

The tests are carried out in application of the interministerial information note of March 29, 2020 relating to the new categories of masks reserved for non-sanitary uses.

According to the terms of this note, they must be completed by a test carried out for 4 hours, to be carried out by the manufacturer. The mask must not have a sagittal seam (vertical nose to mouth).

Warning: the results do not allow certification or homologation according to standards NF EN 149, NF EN 14683, or according to any other standard or regulation.

Indexing		
COVID-19		
Category 1 mask		
Category 2 mask		

Original signed:
Armament General Engineer
Raymond Levet
Director of DGA Maitrise NRBC
Date: 08 June 2020

1. TRANSMITTED SAMPLES

Provider	PHARMAOUEST
Date of receipt of samples	30/04/2020
Observations at receipt	Not applicable
IFTH reference	2020-04-16-121_003
Internal reference	MED-1648

Supplier reference	POI S1
Product sheet reference	
Description of the sample delivered	Layer 1: 100% cotton 245 g / m² black 36 x 18 Layer 2: White Tencel 70% lyocell 30% viscose 120 g / m² Washed 10 times

2. TESTS CARRIED OUT

The tests were carried out according to the principles presented in the appendix and in accordance with the test protocol described in the DGA document of March 25, 2020.

3. RESULTS

Use cases		Carrier protection (1) (if asymmetrical material)	Retention of projections (2)
Characteristics		Measured	Measured
Air permeability (in $L.m^{-2}.s^{-1}$)	at vacuum 100 Pa	Not measured	219
Protection effectiveness with aerosols (in%)	Particles 3 µm	Not measured	86
	Particles 1 µm	Not measured	68
	Fine particles 0.2 µm	Not measured	Not measured

(1) Wearer protection use: measurement flow from outside, on inspiration

(2) Use retention of projections: measurement flow from the inside to the outside, at the expiration

4. CONCLUSIONS

In accordance with the interministerial information note of March 29, 2020 relating to the new categories of masks reserved for non-sanitary uses, the material of the POI S1 mask washed 10 times by the company PHARMAOUEST has air permeability as well as protection efficiency with 3 µm aerosols compatible with use of category 2 mask type (protective mask with collective aim to protect an entire group wearing these masks).

It is reminded that the DGA does not validate the design of the masks.

In accordance with the note of March 29, to avoid leaks at the edges of the mask, the manufacturer must verify that it allows an adjustment on the face with a cover of the nose and chin and that it does not have a sagittal seam (vertical nose-mouth). We also draw your attention to the fact that the measurement of breathability must be supplemented by a test carried out for 4 hours, to be carried out by the manufacturer.

Descriptive annex to the tests

Air permeability

The breathability of the material is analyzed using a permeabilimeter.

The sample has an area of 20cm².

The surface air flow (liters $m^{-2}.s^{-1}$) passing through the material is measured at a fixed pressure (at 100 pa or other value).

The interministerial information note of March 29, 2020 relating to the new categories of masks reserved for sanitary uses imposes a minimum flow of 96 $L.m^{-2}.s^{-1}$.

The above breathability measurement must be completed by a test carried out for 4 hours, to be carried out by the manufacturer.

Filtration efficiency

The mask or the material is cut with a cookie cutter to make a 48mm diameter disc. The sample is placed in a vein containing an aerosol of polydisperse Holi powder. The aerosol concentrations in the vein and in the flow passing through the sample in the interior to exterior direction are measured. The announced result is the percentage of particles of diameters 3µm and 1µm stopped by the material.

$$E = 1 - \frac{C_{aval}}{C_{amont}}$$

The interministerial information note of March 29, 2020 relating to the new categories of masks reserved for non-sanitary uses imposes an efficiency of filtration of particles of diameter 3 µm emitted from:

- Category 1 (individual mask for use by professionals in contact with the public)

Efficiency > 90%

- Category 2 (protective mask aimed collectively to protect an entire group wearing these masks)

Efficiency > 70%

Note: The filtration efficiency is only measured if the air permeability is greater than 96 $L.m^{-2}.s^{1}$