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RÉPUBLIQUE FRANÇAISE

MINISTÈRE DES ARMÉES



DIRECTION GÉNÉRALE
DE L'ARMEMENT

TECHNICAL DIRECTORATE

Report	Title	Test report
	Reference	RP/20-3691/DGA MNRBC/2000305/NP Version 1
Service	Title	COVID-19 masks
	Reference	2000305
	Recipient	THUASNE

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Classification:	
<input checked="" type="checkbox"/>	Not classified
<input type="checkbox"/>	Restricted Circulation
<input type="checkbox"/>	Industry Confidential
<input type="checkbox"/>	Confidential Technology
<input type="checkbox"/>	Defense Confidential
<input type="checkbox"/>	Military Secret
<input type="checkbox"/>	Special France
<input type="checkbox"/>	NATO
<input type="checkbox"/>	WEU

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

For further information on this test report, please contact

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Notes	Not applicable
Composition of the report	4 pages, including 1 annex

The tests are conducted in accordance with the interministerial information memo dated March 29, 2020 concerning the new categories of masks for non-sanitary use.

According to the terms of this memo, the tests shall be supplemented by a 4-hour wear test to be conducted by the manufacturer. The mask must not have a sagittal seam (vertical seam between the nose and mouth).

Warning: the results cannot be used for certification or certification according to NF EN 149, NF EN 14683, or any other standard or regulation.

Indexing			<p><i>Signed original:</i> Armament Engineer General Raymond Levet, DGA Director, Head of CBRN Defense</p> <p><i>Date: May 8, 2020</i></p>
COVID-19			
Category 1 mask			
Category 2 mask			

1. SAMPLES PROVIDED

Supplier	THUASNE
Date of receipt of samples	5/4/2020
Observations on receipt	Not applicable
IFTH reference	2020-04-27-129_045
Internal reference	MED-1662

Supplier reference	OC 2004-SERIE1-45 LAVAGES
Product reference	
Description of samples delivered	PES/PE fabric washed 45 times

2. TESTS CONDUCTED

The tests were conducted according to the principles set out in the annex and in accordance with the test protocol described in the DGA document dated March 25, 2020.

3. RESULTS

Use		Protection for the mask wearer (1) (asymmetrical material)	Retention of projections (2)
Characteristics		Measurement	Measurement
Air permeability (in L.m⁻².s⁻¹)	at 100 Pa vacuum	Not measured	105
Aerosol protection efficiency (%)	3 µm particles	99	99
	1 µm particles	99	99
	0.2 µm fine particles	Not measured	Not measured

(1) Use for protection of the wearer: flow measured from outside to inside, on inhalation

(2) Use for retention of projections: flow measured from inside to outside, on exhalation

4. CONCLUSIONS

In accordance with the interministerial information memo dated March 29, 2020 concerning the new categories of masks for non-sanitary use, and after 45 washes, THUASNE's mask material has air permeability and aerosol protection efficiency performance of 3 µm compatible with the use of a category 1 mask (individual mask for use by professionals in contact with the general public).

Please note that the DGA is not responsible for approving the mask design.

In accordance with the memo dated March 29, and to prevent leaks at the sides of the mask, the manufacturer must check that it can be adjusted on the face while covering the nose and chin, and that it does not have a sagittal seam (vertical seam between the nose and mouth). Please note that the breathability measurement must be supplemented by a 4-hour wear test conducted by the manufacturer.

Descriptive annex for tests

Air permeability

The breathability of the material is analyzed via a permeability tester.

The sample has a surface area of 20 cm².

The surface flow rate of air (liters m⁻².s⁻¹) through the material is measured at a fixed vacuum (100 Pa or other value).

The interministerial information memo dated March 29, 2020 concerning the new categories of masks for sanitary use requires a minimum flow rate of 96 L.m⁻².s⁻¹.

The breathability measurement indicated above shall be supplemented by a 4-hour wear test conducted by the manufacturer.

Filtration efficiency

The mask or material is die-cut to produce a 48-mm diameter disk. The sample is placed in an airstream containing an aerosol of polydisperse Holi powder. The aerosol concentrations are measured, both in the airstream and in the air that flowed through the sample, from inside to outside. The result is the percentage of 3-µm and 1-µm diameter particles stopped by the material.

$$E = 1 - \frac{C_{downstream}}{C_{upstream}}$$

The interdepartmental information memo dated March 29, 2020 concerning the new categories of masks for non-sanitary use requires filtration efficiency for 3-µm diameter particles emitted from:

- Category 1 (individual mask for use by professionals in contact with the general public) Efficiency > 90%
- Category 2 (protective mask for collective purposes to protect all members of a group wearing these masks)
Efficiency > 70%

Note: Filtration efficiency is only measured if the air permeability is greater than 96 L.m⁻².s⁻¹