



Barrier masks for consumers - Requirements



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Foreword

In response to a request from the Competition and Consumer Protection Commission ([CCPC](#)) and in the light of many Irish manufacturing companies trying to change their production lines, NSAI has developed this Specification Written in Fast Track (SWiFT) to address an urgent need for a consensus-based specification for non-medical and non-PPE masks (barrier masks) for the general public. Used in conjunction with relevant public health advice, these barrier masks may contribute to the prevention of the spreading viral (e.g. COVID-19) infections.

This project is in line with NSAI's mission of contributing to the competitiveness and safety of companies, their products and services and processes, protection of people, consumers and the environment, integration of people with disabilities, promoting Social Responsibility and improving risk control business, thereby contributing to the achievement of business excellence and the well-being of the society.

As CEO of NSAI, I was more than happy to facilitate this work and committed as much NSAI resources as necessary to meet the very tight development timeline. Normally such work takes from 6 weeks to 3 months. This specification was developed within 10 days using existing specifications from our colleagues in France ([AFNOR](#)), Belgium ([NBN](#)) and Spain ([UNE](#)) and considerable commitment of all parties listed in the acknowledgements. Those involved in the project came from entities from both the private and public sectors, constituting a model case of public-private collaboration. I commend all of those who gave so generously of their time to the project.

AC1 Corrections to this text consists of a corrigendum to this Foreword marked by the TAG AC1 AC1

In parallel to this work, a European specification has been developed in [CEN](#) (the European Committee for Standardization). This new European publication (CEN Workshop Agreement) S.R. CWA 17553:2020 (*Community face coverings - Guide to minimum requirements, methods of testing and use*) was published on 2020-06-22.

The Competition and Consumer Protection Commission (CCPC) recognises that this SWiFT 19:2020 and/or S.R. CWA 17553:2020 can be used by producers to enable them to demonstrate conformity (pursuant to Regulation 5 (3) (b) of S.I. 199 of 2004) with the general safety requirements of S.I. 199 of 2004.

<p>NOTE If the product meets the requirements set out in both publications, it can be marked with the following:</p>
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<p>S.R. CWA 17553:2020 & SWiFT 19:2020</p>
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AC1

Geraldine Larkin

NSAI CEO

Acknowledgements

Standardization is an activity serving the general interest for the purpose of providing reference documents developed on the basis of consensus by all interested parties, concerning rules, characteristics, recommendations and examples of best practices relative to products, services, methods and processes or to organizations.

Please note that this specification was produced, without any physical meeting, in a period of national confinement and in the space of one week. These requirements have been drawn up in an emergency situation, with the collaboration by the experts listed below.

This document will be shared with our counterparts in other European countries, and within the international ISO community, wholly mobilized to fight the pandemic.

NSAI acknowledges the work of the French Standards Body AFNOR and in particular AFNOR SPEC S76-001, which was used in the development of this document. The Belgium document NBN/DTD S 65-001:2020 and Spanish documents, UNE 0064-1 & 2, UNE 0065: 2020 were also used in the development of this document.

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Introduction

A barrier mask is a type of face covering for consumers and is intended for single use or reusable. Used in conjunction with relevant public health advice, a barrier mask may help prevent the spread of viral infection to others.

The barrier masks specified in this document may fall under the remit of Directive 2001/95/EC on General Product Safety Directive (GPSD) as adopted in 2004 under statutory instrument (S.I. 199 of 2004). This specification can be used by a producer to enable them to demonstrate conformity (pursuant to Regulation 5 (3) (b) of S.I. 199 of 2004) with the general safety requirements of S.I. 199 of 2004.

A barrier mask is a non-medical & non-personal protective equipment grade face mask and is not intended to protect the wearer against viral infection.

The barrier masks specified in this document do not fall under Council Directive 93/42/EEC (MDD) or Regulation (EU) 2017/745 (MDR).

The barrier masks specified in this document do not fall under Regulation (EU) 2016/425 adopted in 2018 under statutory instrument (S.I. 136), on Personal Protective Equipment (PPE).

IMPORTANT The barriers masks are not marked with the "CE" mark.

IMPORTANT The barrier mask is not subject to conformity assessment by a notified body. Its design and production in accordance with best practices and production quality controls remains the producer's sole responsibility as prescribed in GPSD.

IMPORTANT The producer is required to conduct verification and validation tests within its facility or in collaboration with a test laboratory that has the appropriate means of testing before placing any product on the market.

IMPORTANT The barrier mask will have maximum effectiveness if it is worn in direct contact with bare skin.

IMPORTANT If children wear a barrier mask, it is recommended that they are supervised. Barrier masks are not suitable for children under 3.

WARNING This barrier mask is not intended to protect the consumer against viral infection. Used in conjunction with relevant public health advice, a barrier mask may help prevent the spread of viral infection to others.

WARNING Other appropriate measure including hand hygiene, proper handling of the barrier mask when donning and doffing and social distancing measures are essential.

NOTE 1 A barrier mask, with some part of it having a clear window, is useful for Deaf users and sign-language interpreters.

NOTE 2 All Annexes in this document are "informative" and some contain optional requirements. There is no need to comply with these requirements to claim compliance with the document.

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1 Scope

This document specifies the minimum requirements for barrier masks intended for consumers, single use or reusable including:

- design,
- manufacture,
- performance,
- packaging,
- marking, and
- information for use,

which, when used in conjunction with relevant public health advice, may reduce the risk of general transmission of a viral infection. The document includes testing methods for performance requirements specified for the barrier masks.

The requirements specified take into account requirements for children over the age of 3 years, adults, older persons and persons with disabilities.

This document is applicable to all producers including artisan producers.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

artisan

skilled person or craftsman producing a product in a traditional or non-mechanised way

NOTE 1 The artisan mask can be made by private individuals.

NOTE 2 In the context of this document such productions are normally in small quantities.

barrier mask

type of face covering for consumers providing a means by which it can be fitted closely over the nose, mouth, chin and sides fitted with a head harness.

NOTE 1 Barrier masks for consumers are also known as community masks, hygiene masks, comfort masks, and textile masks.

NOTE 2 Barrier masks are not a personal protective equipment (PPE) or medical device (MD) as defined under EU law.

breathing resistance

resistance of a barrier mask to the flow of air inhaled (inhalation resistance) or exhaled (exhalation resistance)

exhaled air

air breathed out by the wearer

exhalation valve

non-return valve which allows the escape of exhaled air from the facepiece

head harness

means of holding a barrier mask in place on the head

inhaled air

air breathed in by the wearer

inhalation valve

non-return valve which allows breathable gas to enter the facepiece and prevents exhaled air from leaving via the inlet path

nose bridge support

device that clamps the mask on the nose and thus makes the mask fit better

product

item intended for consumer use or likely, under reasonably foreseeable conditions, to be used by consumers

NOTE See Article 2 of GPSD defining "product"

producer

person or organization that manufactures the product

NOTE See Article 2(e) of GPSD definition of "producer"

3 Designation

The barrier masks that meet the requirements of this document shall be designated as follows:

Barrier Mask for consumers NSAI SWIFT 19

4 Design and construction

4.1 General

Barrier masks for consumers shall be designed to meet the performance requirements in clause 4.2 and test methods in clause 5.

A barrier mask for consumers shall:

- cover the, mouth, nose and chin (protection area see Figure 1),
- sufficiently cover the user's face against the ambient atmosphere, when the user's skin is dry or damp or when the user moves their head,

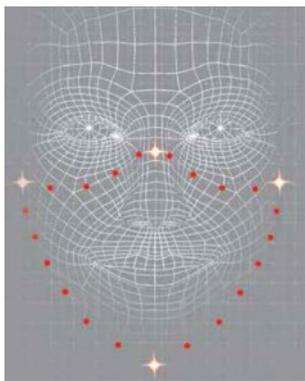


Figure 1 — The barrier mask's protection area

- have a means by which it can be fitted closely over the nose, mouth and chin of the wearer and which ensures that the mask fits closely at the sides,
- not contain inhalation valve(s) and/or exhalation valve(s).

The design of barrier masks intended for use by children and vulnerable consumers, shall take into account the risk of strangulation, choking, and dexterity (see Annex C).

A barrier mask for consumers:

- can be made of fabrics (nonwoven, woven, knit) or other suitable materials, with or without coating (see Annex A),
- can contain a nose bridge support to enhance fit by conforming to the nose contours and improve fit and comfort,
- can have a device for means of adjustment on the user's head (head harness),
- can be produced for single use or reusable,
- can have different designs.

The recommended stitch type is described in ISO 4915.

4.2 Requirements

4.3 General

In order to claim compliance with this document all requirements shall be adhered to.

The producer shall retain all necessary documentation in relation to the materials that are used in the manufacture of the barrier mask.

The producer shall provide information on how to use and maintain the barrier mask (see clause 6).

The use of staples is not permitted as it poses a safety hazard to the wearer.

4.4 Sizing

4.4.1 Adult sizing

The barrier mask shall be designed and manufactured to meet the requirements when intended for use by adults. Face and head size dimension ranges in Figure 2 are provided as guidance.

Bigonial breadth	Menton-sellion length	Interpupillary distance	Bitragion chin arc	Head circumference
98 – 140 mm	104 – 135 mm	56 – 71 mm	280 – 328 mm	527 – 604 mm

Figure 2 — Adult facial and head dimensions [Source: ISO/TS 16976-2:2015 & ISO 7250-1]

4.4.2 Child sizing

The barrier mask shall be designed and manufactured to meet the requirements when intended for use by children. Face and head size dimension ranges in Figure 3 and Figure 4 are provided as guidance.

Age Range	Cheekbone – Cheekbone	Sellium – Chin	Tragion - Tragion	Head Circumference
3 – 5 yrs.	88 – 109 mm	93 – 127 mm	202 – 253 mm	477 - 549 mm
6 – 9 yrs.	94 – 116 mm	105 – 136 mm	220 – 279 mm	500 – 560 mm
10 – 12 yrs.	98 – 121 mm	114 – 146 mm	233 – 290 mm	515 – 580 mm

Figure 3 — Child face and head dimensions [Source: Instituto de Biomecánica de Valencia (IBV): 3D Anthropometry Database of the Child population (2014)]

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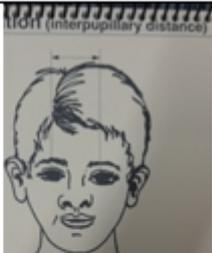
				
Age Range	Face Breadth (Brow Ridges)	Face Height	Eye Separation (Interpupillary Distance)	Head Circumference (Contour)
3 - 5 yrs.	69 - 97 mm	77 - 96 mm	40 - 56 mm	477 - 549
6 - 9 yrs.	75 - 104 mm	80 - 106 mm	45 - 58 mm	500 - 560
10 -12 yrs.	77 - 105 mm	90 - 111 mm	48 - 61 mm	515 - 580

Figure 4 — Child face and head dimensions [Source: CHILDATA: The Handbook of Child Measurements and Capabilities. Data for Design Safety by Beverley Norris & John R. Wilson 1995]

4.5 Visual inspection

The producer shall carry out visual inspection of the barrier mask and any of its components to meet the requirement set out in this clause.

If the material has been pre-tested by the material supplier, verification of the results (suitable certificate/certificate of conformance) shall be carried out.

4.6 Packaging

Barrier masks shall be packaged in such a way as to protect them against any physical damage and any contamination before use. Individual or grouped packaging solutions are at the producer's discretion.

Information required in clause 6.2 shall be placed on the packaging material. The means of opening of any packaging shall take into account the intended user and ease of opening.

4.7 Materials

The materials used shall be able to withstand handling and wear throughout the lifetime of the barrier mask, indicated by the producer.

For those products specified as reusable masks, the materials selected shall be suitable for at least five washing cycles.

The producer shall take into account the following when selecting material:

- a) its breathability,
- b) the ability to absorb moisture to prevent condensation falling on to the user,

NOTE 1 Excess moisture retention can facilitate microbial build up which needs to be managed (see 6.2d).

- c) their antistatic properties (Statically charged masks can attract (contaminated) dust particles and dirt),
- d) known irritants in the material (see 4.10),
- e) for reusable masks - cleaning and drying during its intended life.

NOTE 2 More information about lint-free and anti-static materials can be found in I.S. EN ISO 14644-5.

See Annex A for a list of recommended materials for use in the construction of the barrier mask.

Other materials or combinations of these can be used if they meet the requirements of this specification.

4.8 Surface condition of the parts

The parts of the barrier mask that are in contact with the user shall be free of sharp edges and burrs.

4.9 Penetration and breathing resistance requirements

4.9.1 General

The penetration and breathing resistance requirements apply to barrier masks that are for single use and reusable masks.

For reusable masks the requirements specified below relate to material that have undergone the number of washes indicated by the producer /material supplier.

Other test methods can be used if equivalent to achieve the same performance requirement.

4.9.2 Material penetration

Penetration of the barrier mask for single use and reusable material shall have a filtering capacity of at least 70% for solid or liquid particles with a size of 3 µm. Testing shall be performed by any of the methods described in 5.4.5. Other test methods can be used if equivalent to achieve the same performance requirement.

4.9.3 Material breathing resistance

The single use and reusable mask material shall not present excessive breathing resistance as measured by any of the methods described in 5.4.6.

4.10 Innocuousness of materials

Materials that may come into contact with the user's skin shall not present known risks of irritation or have adverse health effects.

Materials used in the manufacture of the barrier mask shall not release irritants (harmful chemicals and /or dyes) into the inhaled air.

Materials that have been treated with a biocide coating are subject to Regulation (EU) No 528/2012 concerning the placing on the market offering and use of biocides.

4.11 Head harness

The head harness shall be designed:

- to stay attached during of the lifetime of the mask,
- such that the barrier mask can be easily put on and removed (donned and doffed) and suitable for the intended user,
- to be sufficiently robust to hold the barrier mask in place in such a way as to avoid excessive tightness and discomfort when worn.

The preferred design of head harness for young/small children is a loop which is placed around each ear.

Testing shall be performed in accordance with 5.3.

5 Test methods

5.1 General

The producer shall conduct verification and validation tests within its facility or in collaboration with a test laboratory that has the appropriate means of testing before placing any product on the market.

These tests describe how the performance of a barrier mask can be demonstrated against the requirements of this document.

The producer shall establish and document routine checks (production control) to ensure the performance of the barrier mask.

Sample size is specified below.

5.2 Visual inspection

Visual inspection shall be carried out by the producer or test laboratory on production samples of the completed barrier mask.

Take 5 samples of each type (or size) and carry out the following inspection:

- ensure the absence of sharp edges and burrs (see 4.8)
- if a nose bridge support is provided, check that it is flexible so that it can conform to the nose contours of the intended users.

For reusable masks, the visual inspection shall be carried out on samples that have been washed to the producer instruction to ensure the performance declared by the producer. If any damage to the barrier mask is detected (less well-fitting, deformation, wear, etc.) the barrier mask is deemed non-compliant.

5.3 Head harness strength (user testing)

The test is carried out using 3 samples of barrier masks with users /individuals with different head morphologies. The verification of the testing of the main attachment is done by putting on and removing (donning and doffing) the barrier mask 5 times.

For reusable masks, the testing shall be carried out on samples that have been washed to the producer instruction to ensure the performance declared by the producer.

If any damage to the barrier mask is detected such as:

- a) the separation of the mask and the head harness,
- b) loss of elasticity of the head harness (where elasticity is required),
- c) less well-fitting, deformation, wear, etc.,

the barrier mask is deemed non-compliant.

5.4 Penetration and breathing resistance tests

5.4.1 General

The penetration and breathing resistance tests shall be performed on the materials used in the manufacture. Test methods are set out below, but equivalent methods can be used to prove compliance to clause 4.9.

5.4.2 Material - untested

All barrier mask material shall be tested.

If the design of the barrier mask includes a number of layers in combination (multilayer composition), the producer is required to test the layers in combination (finished product).

5.4.3 Materials - pre-tested

If the material (1 layer of material) has been pre-tested by the supplier, retesting on that material is not necessary.

If the design of the barrier masks includes a number of layers in combination (multilayer composition), and have been pre-tested in combination, retesting on that material is not necessary.

If the design of the barrier mask includes a number of layers in combination and have not been pre-tested in combination (e.g. material sources different), retesting of the finished product is necessary.

5.4.4 Reusable masks

For masks designated as reusable, the tests shall be carried out on mask material samples that have been washed to the producer's instruction to ensure the retention efficiency declared by the producer. The minimum number of wash cycles for a reusable designation is 5.

NOTE The full wash cycle (wetting, washing, rinsing) is typically 30 minutes (laundry or other) with a wash temperature of 60°C using normal consumer laundry products.

5.4.5 Material penetration test

The mask material shall have a filtration capacity of at least 70% for solid particles or for liquid particles with a size of 3 µm.

The tests are performed in accordance with I.S. EN ISO 16890-2 or I.S. EN 14683. For the purposes of this test these methods are regarded as demonstrating equivalent performance.

- Tests according to I.S. EN ISO 16890-2 shall be performed with KCl or NaCl at an air velocity of 1 m/s. The initial particle fractional efficiency of 3 µm particles shall be greater than 70%.

or

- Tests according to I.S. EN 14683 meet the requirement as a BFE (bacterial filtration efficiency) of more than 70%.

5.4.6 Breathing resistance test

The material used for the barrier mask shall not present excessive breathing resistance tested according to at least one of the following methods

Method 1: Test trial on the material taken from I.S. EN 14683

Differential pressure of the material: ≤ 0.6 mbar/cm². The pressure differential calculation can be taken from a permeability in air as described in I.S. EN ISO 9237.

or

Method 2: dynamic testing at sinusoidal flowrate of the barrier mask derived from I.S. EN 13274-3:2002 clause 7, setting B (20 x 1.5 l/min)

- Resistance to inhalation: <2.4 mbar;
- Resistance to exhalation: <3 mbar.

or

Method 3: testing at constant flowrate of 95 l/min of the barrier mask derived from **[AC1]** I.S. EN 13274-3 clause 6 **[AC1]**.

- Resistance to inhalation: <2.4 mbar;
- Resistance to exhalation: <3 mbar.

or

Method 4: Test trial derived from I.S. EN ISO 9237 on the material. The permeability to air must be at minimum of 96 l/m²/s with a 100 Pa pressure drop.

6 Marking labelling, and information for use

6.1 Marking

The barrier masks shall be clearly and durably marked with the information below, on the smallest marketable package available or shall be legible through the packaging if the packaging is transparent in a language easily understandable by consumers and contain:

- a) The name and address of the producer, trademark or any other means of identification of the producer;

- b) The number of this document and the visible wording:
"Barrier Mask for consumers NSAI SWIFT 19";
- c) The recommended period for the duration of use for the barrier mask;
- d) An indication of the product type i.e. for single use or reusable;
- e) The number of washes (for reusable masks);
- f) The sizing /age (Adult - children), and head harness type;
- g) Labelling as set out in Regulation (EU) No 528/2012, where the barrier mask has been treated with a biocidal;
- h) Age appropriate RESTRICTION WARNING, e.g. "Not suitable for children under 36 months" or "Not suitable for children under three year" i.e. in text or pictogram;



WARNING Children should be supervised at all times during use.

- i) The following warnings:

WARNING This barrier mask is not intended to protect the consumer against viral infection. Used in conjunction with relevant public health advice, a barrier mask may help prevent the spread of viral infection to others.

and either:

WARNING This product is not a medical device (MD) under Regulation (EU) 2017/745 or Directive 93/42/EEC (MDD) nor is it personal protective equipment (PPE) under Regulation (EU) 2016/425."

or

WARNING This is not a personal protective equipment (PPE) or medical device (MD) under EU law

6.2 Information and instructions for the user

Barrier masks shall be supplied with an instruction/user guide which shall be legible in a language easily understandable by consumers.

A statement shall be included that refers to collective measures including social distancing, hand hygiene.

The instruction shall include statements or instructions that address the following:

- a) Any warnings or instructions referred to in clause 6.1;
- b) Producers recommendation on duration of use (e.g. hours);

- c) Information on suitable accessories that can be used with the product (e.g. glasses);
- d) Information regarding cleaning (number of washes, washing and drying method) and where appropriate reuse storage and disposal;
- e) A statement that the materials used in the product do not cause skin irritation or hazards to the user's health;
- f) How to fit, use, put on and removing (donning and doffing) the mask;
- g) A statement to advise the user to retain this information for further reference;
- h) Where the barrier mask has been treated with a biocidal, relevant information as set out in Regulation (EU) No 528/2012 shall apply;

Where appropriate, some of the above can be represented in images or pictograms such as how to fit the how to fit the barrier mask.

NOTE Guidance on the design of information for users can be found in Annex C.

Annex A (informative)

Guidance on suitable materials for barrier masks

A.1 General

Material used in the construction of a barrier mask for either single use or reusable can be composed of two-layer, or multi-layer barrier fabric including one electrostatically charged layer, and other layers of non-woven melt-blown fibres or a nanofiber material or fabric.

Barrier masks are generally multi-layer with two or more layers but can be single layer. Outer layers can be made up of spun bound fabric/bonded fabric with a more open structure and middle filter layer made up of melt-blown fabric with finer pore structure and high surface area for filtration.

A.2 Synthetic and natural materials used for mask fabrics

The following materials can be considered suitable:

Cotton, Polypropylene, Viscose, Nylon, Polyester, Rayon, Cellulose, Polyester-Cotton, Polyetherurethane (Spandex[®]), Recycled Polyethylene Terephthalate.

A.3 Considerations for the selection of material

The performance requirement for barrier masks are not the same as for medical device and personal protective equipment.

When selecting material for reusable masks it shall perform for a minimum of five washing cycles. This is separate to the declaration referred in 6.1 e).

The materials shall be safe, non-irritant or non-sensitizing and provide comfort against the skin. Consideration should be given to the use of low lint material.

In general, the material should be at least 0.2 mm thick and have a minimum of 50 gsm weight. Materials should have a filtration efficiency which depends on the grams per square meter (gsm) of the nonwoven fabric. The recommended grams per square meter for Polypropylene nonwoven fabric is 25-30 gsm for barrier mask.

Certain engineered single layered materials such as backed melt-blown or calendared fabrics may be considered for use.

A means to ensure the consistency of production, suitable testing of the fabric materials (each roll) can be done using tests such as visual, microscopic, bubble point, and weight.

The following tables provide further guidance.

Table A.1 — Suitable materials and construction layers for barrier masks

Materials	Front layer (s)	Middle layer(s)	Back layer (s)	Remarks
Polypropylene (PP) and Cotton	Spunbound PP	Melt Blown PP	Cotton sun lace	Nonwoven fabric
Rayon and Polypropylene	Pleated rayon	PP	Pleated rayon	Nonwoven
Cellulose, PP, Polyester	Pleated cellulose	PP	Polyester	Nonwoven
Cellulose, PP, Polyester	Blended cellulose fibers	PP	Polyester	Nonwoven
PET, PAN	Polyester	Polyacrylonitrile		Nonwoven
	Polyamide	Polyester	Polyethylene	Nonwoven
Cotton	Quilter cotton			Multiple layers
Cotton	Quilter cotton	Quilter cotton		Multiple layers
Silk	Natural silk			Multiple layers
Silk	Natural silk	Natural silk		Multiple layers up to 4
Chiffon				Multiple layers
Cotton, Chiffon	Cotton	Chiffon		2- layer cloth
Cotton, Silk	Cotton	Silk		2- layer cloth
Cotton, Flannel	Cotton,	Flannel		2- layer cloth

Table A.2 — List of mask materials evaluated by Direction Generale de l'Armement - Army body (DGA), France (Selected list of materials from DGA Test Database Edition 08.05.20)

No	Combination material/structure	Air permeability Vacuum pressure at 100 Pa (breathability)	Droplet protection 3 µm particles Protection between	
			90% and <95%	70%≤ and <90%
1	TOILE100 Cotton 150 gsm Viscose 130gsm TOILE100 Cotton 150gsm	OK	Non-compliant	OK
2	Nonwoven polypropylene 60 gsm (2 layers)	OK	Non-compliant	OK
3	Jersey 100% cotton gauge 28 microns Charged 100% Polyester 130gsm Jersey 100% cotton gauge 28 microns	OK	Non-compliant	OK
4	2-layer material Layer 1: Cotton 30X27 30/30 115gsm Layer 2: Cotton 30X27 30/30 115gsm	OK	Non-compliant	OK
5	3-layer glued material Nonwoven 100% polyester Nonwoven 100% polyamide Nonwoven100%polyester Total weight 280gsm	OK	OK	
6	Nonwoven Polypropylene 35gsm-9340 Nonwoven Polypropylene 70gsm 9750 Nonwoven Polypropylene 35gsm-9340	OK	OK	
7	4 layers of Nonwoven Polypropylene 35gsm-9340	OK	OK	
8	Woven mask washed containing 51% Polyester 48% Cotton 1% Spandex	OK	OK	
9	Nonwoven polyester 88gsm, binder bonded (Freudenberg HH1075 90%recycled polyester with 10% polyester)	OK	Non-compliant	OK
10	Nonwoven, wet laid Reliance DETEX 200 (R345) 57gsm Polypropylene SMS	OK	OK	
11	2-layer material; 2 layers of 100% PES (polyester-cotton) fabric, 285gsm	OK	OK	
12	5-layer material Layer 1: 100% Cotton 115gsm Layer 2,3,4: 100% Polypropylene spun bounded 35gsm Layer 5: 100% cotton 115gsm	OK	OK	
13	Serge 2/2, 100% PES, 120g/m2, 58 thread 83 dtex warp,42 thread 83 dtex weft	OK	Non-compliant	OK
14	Jersey 100% bio cotton 2/28 2 yarn gauge 7 on shima organic cotton yarn made on knitting gauge 16, 2 needles	OK	Non-compliant	OK
15	3 pleats mask PTA EVO 80 PK	OK	Non-compliant	OK

No	Combination material/structure	Air permeability Vacuum pressure at 100 Pa (breathability)	Droplet protection 3 µm particles Protection between	
			90% and <95%	70%≤ and <90%
16	Non-woven SMS 43g/m ² Reliance SMS 200 (R440) 100% PP	OK	OK	
17	Non-woven SMS 50g/m ² Reliance SMS 300, 100% PP	OK	OK	
18	2 layers: Percalé 80 threads non-washed, Ne 40/1x40/1 , 110 threads/inch x 90thread /inch (equivalent to 44x35 thread /cm with Nm 68/1 warp, Nm 68/weft)	OK	Non-compliant	OK
19	2 Layers: Jersey 210 g/cm ² 100 % cotton	OK	Non-compliant	OK
20	2 layers: Cretonne 100% cotton 180 g/cm ² (charvet AHZ150)	OK	Non-compliant	OK
21	2 layers: non-woven Spun Polypropylen 60 g/m ²	OK	OK	
22	2 layers: 100% Polyester fabric 285g / m ²	OK	OK	
23	Woven Cotton/Elastanne 97/3% 80x57 threads/inch Ne50/1 CH et NE 50/ weft - 88g/m ² , not washed	OK	Non-compliant	OK
24	Jersey Milano guage 18 98% Acrylique /2% Elasthane	OK	OK	
25	TG 190 29 100% polyester fabric 210gsm, 0.44mm thick	Non-compliant	Non-compliant	Non-compliant
26	LB Cotton fabric, 100% cotton 280gsm, 1.15mm thick	OK	Non-compliant	Non-compliant
27	MER A700 100% Polypropylene fabric, 400gsm, thickness 0.77mm	OK	Non-compliant	Non-compliant
28	TER A 100% polyester fabric 345gsm, 0.770mm thickness	OK	Non-compliant	Non-compliant
29	Reliance SMS 400 (R460) 60gsm (polypropylene 3 layers)	Non-compliant	Non-compliant	Non-compliant
30	2 layers mask with 100% Jersey cotton 280gsm 100% Jersey cotton 280 gsm	OK	Non-compliant	Non-compliant

For latest material recommendations contained in AFNOR S76-001 go to:

<https://masques-barrieres.afnor.org/les-informations-essentielles#avisautoritessanitaires>

Reference Links:

<https://www.sciencedirect.com/science/article/pii/S0188440920303325>

<https://euramaterials.eu/wp-content/uploads/2020/05/base-de-donnees-matieres-resultats-dga-maj-08052020.pdf>

<https://www.medrxiv.org/content/10.1101/2020.04.07.20045617v1.full.pdf>

https://www.siftex.com/wp-content/uploads/2020/04/SIFTEX_Mask-Box_Bag-Insert-Labels.pdf

<https://www.wazoodle.com/blog/face-mask-fabrics>

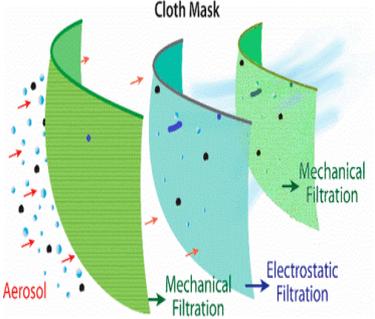
<https://www.ahlstrom-munksjo.com/Media/articles/ahlstrom-munksjo-reliance-sms-and-dextex-wetlaid-nonwoven-receive-validation-from-the-french-government/>

<https://products.halyardhealth.com/surgical-solutions/sterilization-solutions/sterilization-wraps/halyard-sequential-sterilization-wrap.html>

<http://www.comptoir-agricole.fr/wp-content/uploads/2020/04/FT-MasqueLavable.pdf>

A.4 Recommendations for artisanal making

Table A.3 — Guidance on materials

Guidance on material selection	Example	Comment
<p>Multilayer barrier masks offer a greater protection over a range of particle sizes.</p> <p>Tightly woven materials provide a mechanical barrier against larger particles and droplets e.g. Twill cotton,</p> <p>Lighter electrostatic materials can provide protection against smaller particles and droplets e.g. silk, chiffon</p>	 <p>The diagram shows a cross-section of a 'Cloth Mask' with three distinct layers. From left to right: an outer green layer labeled 'Mechanical Filtration' that traps larger particles; a middle light blue layer labeled 'Electrostatic Filtration' that traps smaller particles; and an inner green layer labeled 'Mechanical Filtration' that traps any particles that pass through the middle layer. Red arrows labeled 'Aerosol' point towards the mask from the left.</p>	<p>Ideally make a barrier mask of 3 to 5 layers e.g.</p> <p>Outer barrier layer</p> <p>Middle electrostatic layer</p> <p>Inner barrier layer</p> <p>See guidance below for typical materials that may be available</p>
<p>For Outer and Inner Barrier layer consider Plain weave or twill weave</p>	<p>Cotton: Calico, cambric, chintz, cotton, crepe, light denim, gabardine, flannelette, gingham, long cloth, seersucker.</p> <p>Linen: Cambric, dress linen, hand kerchief linen</p> <p>Wool: Crepe, Flannel</p>	<p>For example: Tablecloth, bedsheets, pillowcases, shirts, light skirts and dresses, trousers</p>
<p>For Middle Electrostatic layer consider silk, chiffon</p>	<p>Silk: finely woven</p> <p>Polyester chiffon: finely woven</p>	<p>For example: Spandex, Flannel, Chiffon scarf, nylon underwear,</p>
<p>Use tightly constructed woven fabrics in preference to knitted fabrics.</p> <p>The tighter the weave, the better the protection.</p>	 <p>The image shows a close-up of a fabric with a circular pattern. A large, thick red 'X' is superimposed over the fabric, indicating that this type of fabric is not recommended for barrier masks.</p>	<p>To test your selected fabric, hold it up against a bright light. If light passes easily through and you can almost see the fibres, it's not a good fabric.</p> <p>It should block the light.</p>
<p>Material combination should allow wearer to breathe easily</p>	<p>Fit the barrier mask material securely to the face and breathe, moving the head up and down, left and right.</p>	<p>Barrier mask should facilitate breathing and not slip during normal use.</p>
<p>Material combination should not be porous</p>	<p>Try to smell some strong-smelling food through the barrier mask, without actually touching the barrier mask.</p>	<p>Smells should not penetrate when barrier mask is fitted closely to the face.</p>
<p>Material combination should be machine washable at 60 degrees C</p>	<p>Choose familiar material combinations</p>	<p>Check carefully after each wash for wear and tear.</p>

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A.4.1 Factors to consider for artisans

Table A.4 — Recommendations to artisans

- Assemble in two or three layers (same fabrics or different fabrics);	- Avoid making a barrier mask with a single thickness of fabric;
- Use fabrics allowing air to pass through when breathing;	- Do not use staples when designing or assembling the barrier mask;
- Use fabrics that are sufficiently soft and supple to apply around the face to ensure sealing;	- Avoid fabrics that are too stiff that would not be appropriate for sealing;
- Use fabrics that are not too warm;	- Avoid warm or irritating fabrics that would make barrier masks difficult to wear;
- Use smooth, non-irritating fabrics;	- Avoid vertical seams, along the nose, mouth and chin;
- Ensure a tight and secure fit especially around the nose and cheek	- Avoid light and loosely constructed fabrics;
- Ensure material combination provides easy breathing	- Avoid fabrics blocking the passage of air when breathing;
- Try to incorporate a nose bridge support to improve effectiveness	- Avoid gaps between the nose and cheek when fitting

NOTE It is well recognized that the “fit” is a critical aspect of a high-performance barrier mask.

Barrier masks worn on the face without nose bridge support, may result in the presence of gaps between the barrier mask and the facial contours. This will result in “leakage” reducing the effectiveness of the barrier masks.

A.5 Useful considerations

The Centre for Disease Control (CDC) suggests using common, low-cost materials at home to create face coverings^[1], but what are the best ones to use? To examine this, one team of researchers from the University of Chicago and other institutions in Illinois investigated the filtration efficiencies of common fabrics, including cotton, silk, and hybrid materials^[3]. They considered aerosol particles 10 nm to 10 µm in size, which are particularly relevant to viral transmission, and found that a layered mask made of 2 materials was highly effective. In fact, its performance was similar to that of an N95 mask^[3].

The hybrid mask contained 1 layer of high-thread-count cotton and 2 layers of natural silk or chiffon (90% polyester and 10% Spandex). “Higher threads per inch cotton with tighter weaves resulted in better filtrations efficiencies,” wrote the researchers. They suggested that the use of multiple materials likely allowed for both mechanical and electrostatic filtering from the cotton and silk or chiffon layers, respectively. “Materials such as silk and chiffon are particularly effective (considering their sheerness) at excluding particles in the nanoscale regime (<~100 nm),” they added. The researchers also found that an

experimental mask made from a quilt, which sandwiched a cotton-polyester layer between 2 cotton layers, performed well.

It is important to note that gaps between the mask edge and facial contours degraded the performance of the masks significantly (by approximately 50% or more). Leakage of exhaled air is an important component of mask effectiveness; the close fit of N95 masks is a major reason why they are so effective when properly worn.^[3] As such, the researchers emphasized the importance of mask fit and leakage, but concluded that the cloth masks used by large sections of the public during the COVID-19 public health emergency “can potentially provide significant protection against the transmission of particles in the aerosol size range.”^[3] Overall, masks made from cotton with higher thread counts, natural silk, and chiffon performed well.

Additional information on materials can be found in the following studies:

[1]. Study and development of nonwoven fibrous structures dedicated to air filtration of fine particles, Julien Payen. <http://www.theses.fr/2009VALE0037> (thesis);

2. Antibacterial functionalization of nonwoven filter media, Gwladys Bénistant. <http://www.theses.fr/2010VALE0051> (thesis)

[3]. Centers for Disease Control and Prevention. Cloth face coverings: questions and answers. April 4, 2020. Accessed April 24, 2020 <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cloth-face-cover-faq.html>

4. Javid B, Weekes MP, Matheson NJ. Covid-19: should the public wear face masks? *BMJ*. 2020;369:m1442.

5. Konda A, Prakesh A, Moss GA, Schmoldt M, Grant GD, Guha S. Aerosol filtration efficiency of common fabrics used in respiratory cloth masks [published online April 24, 2020]. *ACS Nano*. doi:10.1021/acsnano.0c03252

NSAI does not make any commitment on the performance of the materials cited by the different sources. It is recommended that the manufacturer consults the source concerning use of the materials and that supplies of materials are accompanied by certificates of origin

Annex B (informative)

List of laboratories able to conduct tests on barrier masks to AFNOR SPEC S76-001 – 2020-03-27

B.1 French labs

The following list contains laboratories in France who are able to conduct the tests as described in clause 5 of this document. (The laboratories cited do not all have ISO 17025 accreditation.)

Tests that can be conducted

Laboratory name	Contact	Penetration of the single layer or multi-layer composite (§ 5.1.7.)			Breathing resistance (§ 5.1.10.)	
		Method 1 EN 13274-7 §6 Sodium chloride test method	Method 2 EN 13274-7 §7 Paraffin oil test method	Method 3 DGA procedure	Method 2 Dynamic sinusoidal flow test	Method 3 Constant flow test
APAVE EUROPE	Ms Marjorie SAINT GENIS https://www.apave.com/accueil-site-apave	×	×		×	×
HONEYWELL	Ms Ewa MESSAOUDI https://www.honeywell.com/en-us/global/fr-fr				×	(temporary support)
IRSN	Mr Victor MOCHO https://www.irsn.fr/EN/Pages/Home.aspx	×				
LNE	Mr François GAIE-LEVREL https://www.lne.fr/en/services/certification	×	×	×		
MATISEC	Mr Benoit BOUTILLIER http://www.matisec.com/accueil				×	

Annex C (informative)

Barrier mask – Design guidance

C.1 General

This annex provides:

- 1) General design considerations for Barrier Masks,
- 2) Design considerations for consumers with diverse needs,
- 3) Examples of different design of Barrier Masks,
- 4) Guidance on formative usability testing,
- 5) Guidance on fit and extended use testing,
- 6) Task analysis,
- 7) Resources for further guidance and maker patterns.
- 8) Guidance for design information,
- 9) Resources for further guidance.

C.2 General design considerations for barrier masks

A barrier mask that can easily be fitted or adjusted to fit the user's size and shape and worn comfortably can help meet the performance requirements specified in clause 4.

Face and head size dimensions to inform the size and shape of the pieces of the barrier mask (and if applicable head harness and nose bridge) is listed at 4.4.1 for adults and 4.4.2 for children.

Annex A provides information in relation to guidance on selection of materials.

Good design of the barrier mask can maximise comfort and minimise irritation at contact areas of the face, particularly at the nose and cheeks. A mask design that is comfortable and maintains its intended position on the face is expected to meet the producers intended performance.

Stitching, seams, hems etc. can be done in such a way as to maximise comfort for the wearer. Ear or head loops (head harness) should be preferable to be adjustable.

During manufacture hygiene conditions should be controlled such as to reduce risks of contamination.

Considerations for design options can help to reduce costs and environmental impact of the barrier mask.

C.3 Design considerations for consumers with diverse needs

Some users can experience difficulties using barriers mask. Users with the more diverse characteristics and capabilities can have needs that could inspire design ideas for niche markets and sometime improved features preferred by most users.

Considerations for barrier masks to address diverse user needs can include:

- Strap ties head harness can be difficult for users with:
 - o One hand function (amputee, stroke),
 - o Arthritis with stiff finger reduced dexterity,
- Ear loops can be difficult for users with crossover one arm reach limitations.
- Users can have hypersensitive skin reactions to some materials.
- User with cognitive difficulties can have challenges with the use of a masks because of:
 - o Literacy and non-native language,
 - o Behavioural,
 - o Autism,
 - o Dementia,
- User with different hair styles could have difficulty with around the head harness elastic.
- User with facial hair.
- Poor fit/seal at nose bridge area can cause fogging of user's glasses.
- Ear loops can interfere with user's:
 - o Eye glasses,
 - o Behind the ear hearing aids,
 - o Ear rings or similar jewellery,
- Deaf lip readers and sign language users can't see mouth behind barrier mask.
- User with visual difficulties can have problems seeing information related to instructions for use which has small font and poor colour contrast.

[ISO Guide 71:2014](#) offers producers design guidance for accessibility and usability based on the WHO-ICF including information on functional impairments and design considerations for older persons and persons with disabilities.

[I.S. EN 17161:2019](#) Design for All – Products and Services, encourages prioritising the needs of the most diverse users - to help inform designs for the mainstream.

C.4 Examples of types of different designs of barrier masks

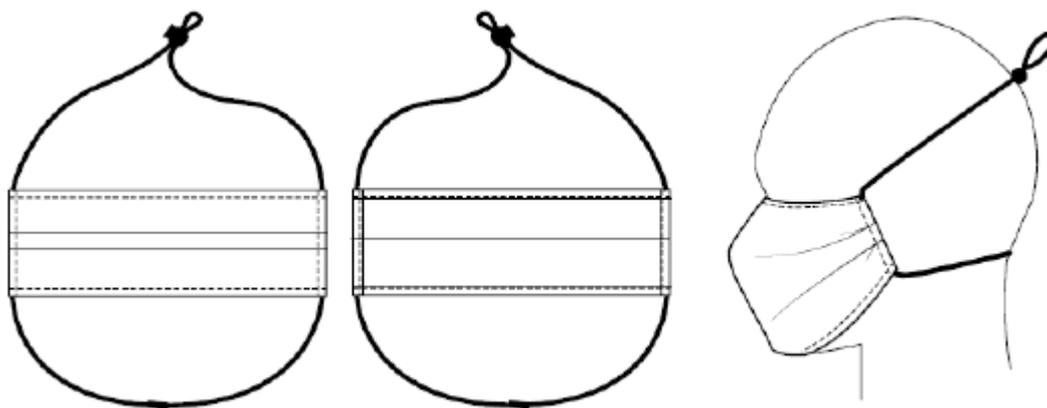


Figure C.1 — Example 1

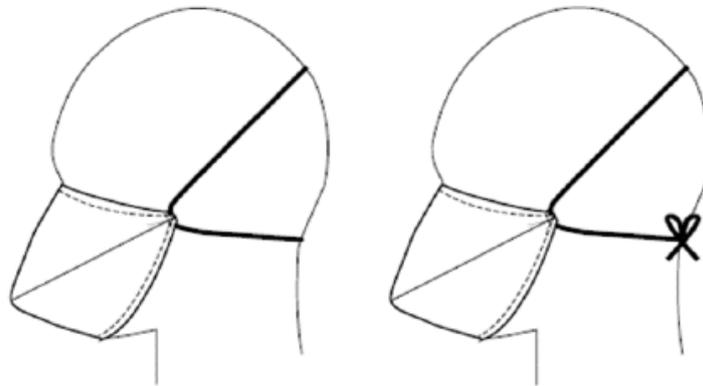


Figure C.2 — Example 2

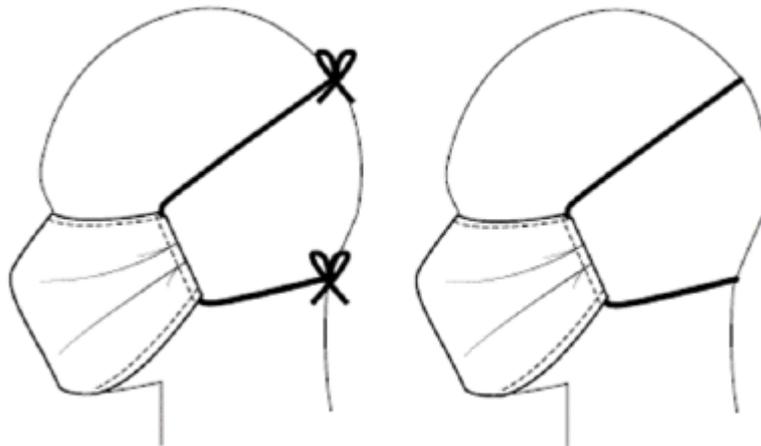


Figure C.3 — Example 3

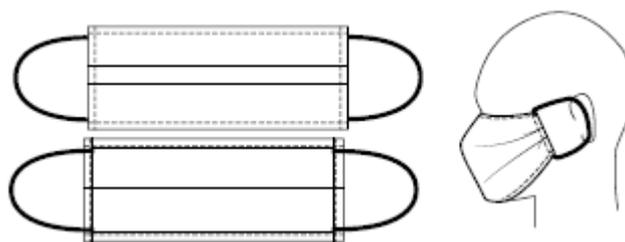


Figure C.4 — Example 4

C.5 Guidance on formative usability testing

When designing a new mask, it is recommended that a range of early prototypes are produced for formative usability testing. Formative testing is intended to explore whether fit and other usability objectives are attainable but does not have strict acceptance criteria.

Testing should be performed on a range of users with variations in size age and abilities. A group of 5 to 8 users is appropriate for a formative usability test. It is best if the users have little or no prior knowledge of the product.

It is important that user testing encompasses:

- the fit of the mask,
- extended use while performing typical tasks intended to be undertaken while using the masks
- detailed analysis of unpacking, putting on, adjusting to fit and taking off the mask

NOTE An Information Sheet about Testing is available at:
<http://universaldesign.ie/Products-Services/Guidelines-on-Body-Size>

C.6 Guidance on fit and extended use testing

In order to ensure a good product fit a visual fit test should be carried out on range (age or head size) of intended users. Wearer tests of the final model should be carried out over proposed use period as determined by producer.

The following should be checked during fit and wearer tests:

- Elastic and head harness length and suitability of materials
- Strength of attachment of head harness pieces
- Comfort level of seams or hem stitch across nose / sides of face
- Comfort levels of nose bridge piece (if applicable)
- Breathing comfort and moisture issues

C.7 Task analysis

Along with the fit of the mask it is important to test all other user interactions with the mask and associated packaging and instructions. These interactions include unpacking the mask, putting it on, adjusting to fit and taking it off.

Poorly designed products can result in errors of perception, cognition and action. Diversity among users also means that a well-designed mask needs to accommodate a range of perceptual, cognitive and physical abilities.

To prevent these errors user tests should be recorded and broken down into detailed task steps. Each step should then be analysed to ascertain the users:

Perception - What does the user see, hear and feel?

Cognition - What does the user interpret, know, compute and decide?

Action - What does the user need to touch, press, fold and apply force in order to complete the task.

Insights from the user testing and task analysis can be then be used to improve the design of the mask and allow the design to accommodate the broadest range of users.

C.8 Guidance for the design of information to address accessibility

Information and instructions for the users of barrier masks can be designed so that it is easy for the user to access, understand and use. Good design of information can help increase the range of users. It can also reduce difficulties with information. Extracts from design guidance for information from customer communication guidance, is listed below.

The user information can be made available in multiple forms of communication so that all users may access it. Accessible and usable information are:

- simple and clear language;
- relevant and accurate;
- and offers detail how the user can get further information or clarification.

Examples of good design of communication include:

- digital form, such as in writing on an accessible webpage (so a person with a visual impairment can access it using a screen reader) or through a video with closed captioning and a transcript;
- spoken form, through a telephone voice-recording, or trained customer support personnel;
- Irish Sign Language, through a video on a webpage or through telephone using a remote sign language interpreter;
- written form presented in a legible font using a suitable colour contrast with a clear layout;
- upon request, alternative written formats such as Easy to Read, Large print and Braille.

Additional practical guidance can be found in the Customer Communications Toolkit at:
<http://universaldesign.ie/Products-Services/Customer-Communications-Toolkit-for-the-Public-Service-A-Universal-Design-Approach/>

C.9 Resources for further guidance and maker patterns

European Centre for Disease Control (ECDC) website:

<https://www.ecdc.europa.eu/sites/default/files/documents/COVID-19-use-face-masks-community.pdf>

USA Centre for Disease Control (CDC) website:

<https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/diy-cloth-face-coverings.html>

Health Line website:

<https://www.healthline.com/health/how-to-make-a-mask-out-of-fabric>

Annex D (informative)

Example of information/guidance on using single use barrier masks

D.1 General

Always follow the Covid-19 recommendations of the Government (<http://www.gov.ie/health-covid-19>), the HSE (www.HSE.ie) and the Health Protection Surveillance Centre (www.hpsc.ie).

Hand hygiene and social distancing are the primary source of protection and prevention of viral transmission.

For the safe use of a barrier mask, it is to be used correctly as indicated below.

The placement of, use, and removal of children's masks shall be supervised continuously by an adult.

D.2 Putting on the barrier mask

To avoid contamination when putting on a mask, the following steps should be followed:

1. Wash your hands with soap and water (or use a hand sanitizer) before handling the mask.



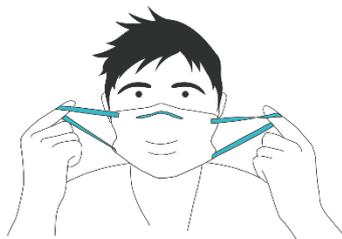
2. Touching the outside or harness only, remove the mask from its packaging;



3. Locate the top of the mask.
4. Place the barrier mask on the face and adjust the nose-bridge clip to the nose, where applicable.



5. Hold the mask from the outside and fasten the headgear or straps behind the head or the ears, as appropriate.



6. Lower the bottom of the mask to the chin



7. Check that the mask covers the chin.



8. Pinch the nose-bridge support with both hands to adjust it to the nose.
9. Check that the mask is correctly positioned. Ensure that (a) there is no breathing discomfort, and (b) there are no gaps remaining between the barrier mask perimeter and face.

10. Once secured, no longer touch the mask with your hands. If the user needs to touch the mask, they should first wash your hands with soap and water or rub them with a hand sanitizer.



D.3 Removing the mask

To avoid contamination when removing a mask, the following steps should be followed:

1. wash your hands with soap and water or rub them with a hand sanitizer;



2. Untie or unhook the straps or head harness. Do not handle the front of the mask.
3. Place the mask into a secure air-tight bag.
4. Clean the outside of the container with a cleaning product and place in the bin.
5. Wash your hands with soap and water or rub them with a hand sanitizer



D.4 Period of use of the barrier mask

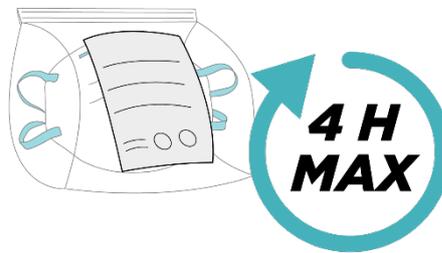
This is a single-use disposable barrier mask. It should be worn as new and disposed of thereafter.

The barrier mask shall be disposed of where it becomes wet or moist or is in any way poorly positioned on the face.

Never put the barrier mask on the forehead or below the chin, either in a waiting position during use or after use.



The wearing period shall be compliant with the manufacturers' instructions for use, where available, up to a maximum of 4-hours.



D.5 Disposing of a barrier mask

The barrier masks shall be disposed of in a bin fitted with a plastic bag (preferably with a lid and non-hand operation). Double bagging is recommended to retain the contents of the first bag in the case of tearing of the outer bag during collection.



D.6 Visual-only instructions (disposable masks only)

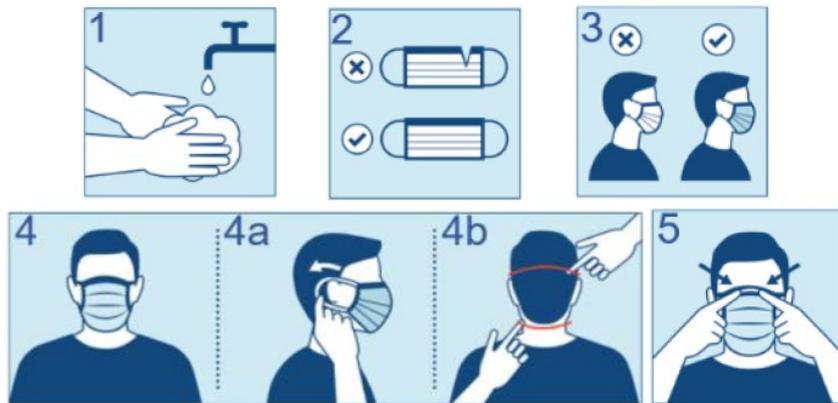


Figure D.1 — Instructions for wearing (donning) the single barrier mask



Figure D.2 — Instructions for removal (doffing) of the single barrier mask

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Annex E (informative)

Example of information /guidance on reusable barrier masks

E.1 General

Always follow the Covid-19 recommendations of the Government (<http://www.gov.ie/health-covid-19>), the HSE (www.HSE.ie) and the Health Protection Surveillance Centre (www.hpsc.ie).

Hand hygiene and social distancing are the primary source of protection and prevention of viral transmission.

For the safe use of a barrier mask, it is to be used correctly as indicated below.

The placement of, use, and removal of children's masks shall be supervised continuously by an adult.

E.2 Putting on the barrier mask

To avoid contamination when putting on a mask, the following steps should be followed:

1. Wash your hands with soap and water (or use a hand sanitizer) before handling the mask.



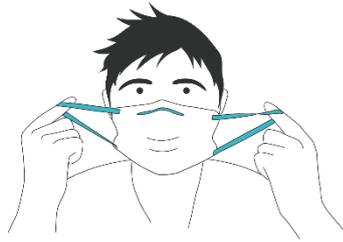
2. For reuse of the mask, ensure that it has been properly washed beforehand (see washing and drying instructions below)



3. Touching the outside or harness only, locate the top of the mask.
4. Place the barrier mask on the face and adjust the nose-bridge clip to the nose, where applicable.



5. Hold the mask from the outside and fasten the headgear or straps behind the head or the ears, as appropriate.



6. Lower the bottom of the mask to the chin



7. Check that the mask covers the chin.



8. Pinch the nose-bridge support with both hands to adjust it to the nose.
9. Check that the mask is correctly positioned. Ensure that (a) there is no breathing discomfort, and (b) there are no gaps remaining between the barrier mask perimeter and face.



10. Once secured, no longer touch the mask with your hands. If the user needs to touch the mask, they should first wash your hands with soap and water or rub them with a hand sanitizer.

E.3 Removing the mask

To avoid contamination when removing a mask, the following steps should be followed:

- a) wash your hands with soap and water or rub them with a hand sanitizer;



1.

- b) Untie or unhook the straps or head harness. Do not handle the front of the mask.
 c) Place the mask into a secure air-tight bag.
 d) Clean the outside of the container with a cleaning product.



- e) wash your hands with soap and water or rub them with a hand sanitizer



- f) wash and dry as outlined in E.4 and E.5
 g) dispose as outlined in E.7.

E.4 Washing reusable barrier mask

Washing of the barrier mask shall be in accordance with the producer's instructions, and the following principles should be observed:

- 1) Before commencing a wash, those responsible for washing should protect themselves (with protective gloves or washed hands) and minimise handling of used barrier masks.
- 2) Any contact between a used barrier mask (to be washed) and clean items of clothing should be avoided.
- 3) Surface areas of the washing machine and laundry room should be wiped using a disinfectant cleaning product.
- 4) A visual inspection shall be carried out before each wash cycle. If any damage to the barrier mask is detected (less well-fitting, deformation, wear, etc.) the barrier mask shall be thrown away.
- 5) Washing of barrier masks should be done as part of a household's normal hygiene wash, for example, with bed linen, towels or other items.
- 6) It is recommended that you follow the mask producer instructions when choosing a wash programme, and use your normal domestic detergent if possible.
- 7) Use full programme (with wet, wash, rinse, spin stages), as high temp as producer instruction allows, load washer to normal levels to maximize mechanical action, ensure Full detergent dosage. Do NOT use Economy washing cycles and do not remove product from the wash until full programme completes

E.5 Drying reusable barrier mask

Drying of the barrier mask shall be in accordance with the producer's instructions, and the following principles should be observed:

- 1) Barrier masks shall be dried completely, including component layers, within 2-hours after washing is finished
- 2) This may be done by air drying or using a tumble dryer.
- 3) DO NOT put a barrier mask in the microwave.

E.6 Period of use of the barrier mask

The barrier mask shall be washed after each use, where it becomes wet or moist, or is in any way poorly positioned on the face.

Never put the barrier mask on the forehead or below the chin, either in a waiting position during use or after use.



The wearing period shall be compliant with the producers' instructions for use, where available or as a general guide, up to a maximum of 4-hours.



E.7 Disposing of a barrier mask

The barrier masks shall be disposed of in a bin fitted with a plastic bag (preferably with a lid and non-hand operation). Double bagging is recommended to retain the contents of the first bag in the case of tearing of the outer bag during collection.



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