Technical Specification

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Rubber latex coated fabric gloves — Specification

Gants en supports textiles revêtus de latex de caoutchouc — Spécification

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Foreword

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This document was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 4, *Products (other than hoses)*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document has no conflict or overlap with ISO 21420 or ISO 23388. This specific document is relevant to the general use of latex coated fabric glove other than PPE.

Rubber latex coated fabric gloves — Specification

1 Scope

This document specifies the minimum requirements and test methods for rubber latex coated fabric gloves.

This document is applicable for general use fabric gloves which are coated with natural rubber latex and fabric gloves which are coated with acrylonitrile-butadiene rubber latex. Personal protective equipment (PPE) is not included in this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 780, *Packaging — Distribution packaging — Graphical symbols for handling and storage of packages*

ISO 1421, *Rubber- or plastics-coated fabrics — Determination of tensile strength and elongation at break*

ISO 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
rubber latex coated fabric gloves
fabric gloves coated with rubber latex made by dipping process

3.2
air bubble
thin portion, with definite edge, concave or convex, which is created by air in latex coating except for foaming process

3.3
peeling
insufficient bonding of latex coating and base fabric, resulting partial separation or fully detachment in a glove

3.4
damage
visible holes or scratches on latex coating or/and base fabric of a glove

3.5
crack
visible surface splits or tears on latex coating on a glove

3.6
latex migration
latex penetration through base fabric of a glove

3.7
latex flow
excess and irregular shaped latex on the edge of latex coating on a glove

3.8
impurity
other substance on latex coating or/and base fabric of a glove

3.9
flow mark
visible bulged surface that twice as thick as latex coating on a glove

4 Classification

4.1 General

Rubber latex coated fabric gloves are classified by type and finish, as given in 4.2 and 4.3.

4.2 Type

— Type 1: fabric gloves coated by natural rubber latex;

— Type 2: fabric gloves coated by acrylonitrile-butadiene rubber latex.

4.3 Finish

As examples, following coating area can be adopted as finishing for rubber latex coated fabric glove.

— Type A: the gloves partly covered with palm and finger covered with rubber (see Figure 1);

— Type B: the glove fully covered with rubber (see Figure 2).

Figure 1 — Type A gloves

Figure 2 — Type B gloves

5 Sampling and selection of test pieces

5.1 Sampling

For reference purposes, gloves shall be sampled and inspected in accordance with single sampling plans for normal inspection specified in ISO 2859-1. The inspection levels and acceptance quality limits (AQLs) shall conform to those specified in Table 1 for the characteristics listed.

When a lot size cannot be determined, a lot should not be more than 150 000 pairs.

Table 1 — Inspection levels and AQLs

Characteristic	Inspection level	AQL
Appearance	G-I	1,5
Force at break	S-2	4,0
Fingertip wear resistance	S-1	As agreed
Thumb-index tear resistance	S-1	As agreed

5.2 Selection of test pieces

Where test pieces are required, they shall be taken from the palm or back of gloves which are fully coated by rubber latex.

6 Requirements

6.1 Material

Any substances used in the glove shall be non-toxic.

6.2 Appearance

When examined visually, the gloves shall have no typical defect, such as air bubble, peeling, damage, crack, latex migration, latex flow, impurity or flow mark such that it does not compromise the intended propose of the glove. The sample size and allowable number of non-conforming gloves in the sample shall be determined in accordance with the inspection level and AQL given in Table 1.

6.3 Tensile properties

6.3.1 General

Tensile properties shall be measured in accordance with method 1 specified in ISO 1421. Taking 10 mm ± 0,5 mm wide and 100 mm ± 1 mm long test piece each of 10 gloves and using the median value as the test result. Test pieces shall be taken vertical to the cuff from the palm or back of gloves, fully coated by rubber latex.

Table 2 — Tensile properties

Minimum force at break	Requirement N
Before accelerated aging	30
After accelerated aging	20

6.3.2 Force at break before accelerated aging

When determined in accordance with the method 1 specified in ISO 1421, taking 10 mm ± 0,5 mm wide and 100 mm ± 1 mm long test piece each of 10 gloves as one set of test pieces. Test pieces shall be taken vertical to the cuff end from the palm or back of gloves, fully coated by rubber latex. The force at break shall comply with the requirements given in Table 2, using the inspection level and AQL given in Table 1.

6.3.3 Force at break after accelerated aging

The accelerated ageing condition shall be (72 ± 2) h at (70 ± 2) °C. After hot air accelerated aging test, the period of conditioning is at least 16 h. There should be no penetration, cracking, peeling, dissolution, no obvious expansion, shrinkage and hardening and other defects on the surface of the glove.

When determined in accordance with the method 1 specified in ISO 1421, taking 10 mm ± 0,5 mm wide and 100 mm ± 1 mm long test piece each of 10 gloves as one set of test pieces. Test pieces shall be taken vertical to the cuff end from the palm or back of gloves, fully coated by rubber latex. The force at break shall comply with the requirements given in Table 2, using the inspection level and AQL given in Table 1.

6.4 Fingertip wear resistance

If verification is required of the fingertip wear resistance of the glove, the method given in Annex A should be used. It should be no less than 16 cycles of rotation before the surface breakthrough.

6.5 Thumb-index tear resistance

If verification is required of the thumb-index tear resistance of the glove, the method given in Annex B should be used. When gloves are tested for thumb-index tear resistance in accordance with Annex B, it should be no less than 1,5 kg before the breakage.

7 Package, mark, transportation, and storage

7.1 Package

7.1.1 All packaging materials shall have sufficient strength and be free of substances that may negatively affect the quality of the gloves.

7.2 Mark

7.2.1 Each package shall have quality certificate which shall be marked with the following content:

a) name of product;

b) size, type and finish, quantity;

c) name of manufacturer, address;

d) this document no.:

e) date of production (batch code), storage period.

7.2.2 Outer package shall be marked with the following content:

a) name of product;

b) size, type and finish, quantity;

c) name of manufacturer, address;

d) this document no.;

e) date of production (batch code), storage period;

f) outer package dimension;

g) the logo shall conform to ISO 780;

h) country of origin.

7.3 Transportation and storage

7.3.1 During the transportation, the gloves should be covered and kept dry, not wet and not be heated.

7.3.2 Gloves should be stored in a warehouse, its relative humidity is 25 % to 75 %, temperature is not more than 35 °C, the store rack be over more than 200 mm from the ground. Avoid strong sunlight or artificial UV components in direct sunlight, it should not be any device for generating ozone in the warehouse.

7.3.3 Gloves should not be exposed to oil, acids, alkali, copper, manganese and other substances harmful to latex during storage. The storage period of gloves is specified by the producer to assure the quality from the date of manufacture. If stored for more than 36 months, inspection is needed according to 5.1 and Table 1.

Annex A
(informative)

Fingertip wear resistance

A.1 Principle

Press the finger part of the glove close to the sandpaper roller with a certain pressure and record the number of rotation cycles when the surface breakthrough.

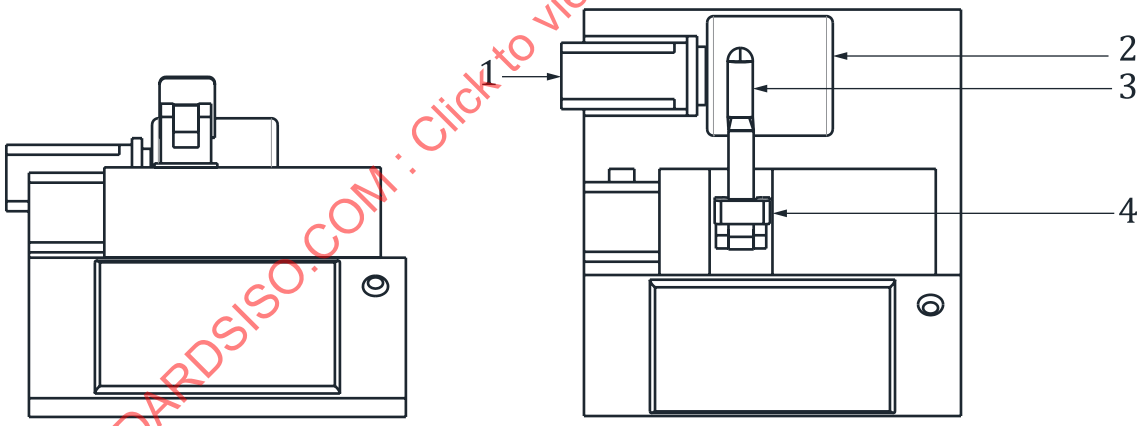
A.2 Test equipment

The fingertip wear resistance test equipment (see example in Figure A.1, Figure A.2 and Figure A.3) consists of

a) a test bench providing rotation on the sandpaper roller to the test specimen, at the speed of 72 r/min,

b) a sandpaper roller which is an inflatable pressurized rubber wheel under a 180-mesh standard sandpaper with the pressure of 120 kPa ± 10 kPa, each sandpaper should be used only once for each test specimen, and

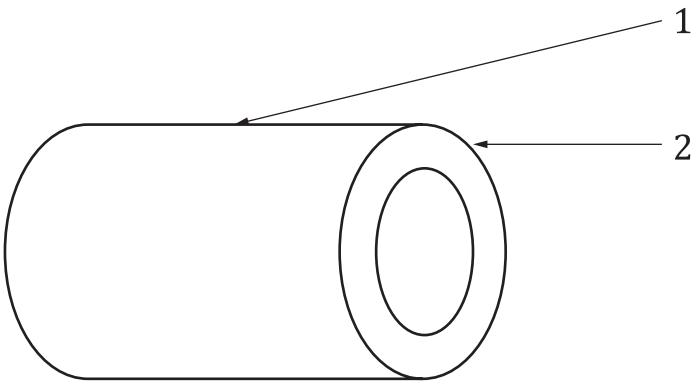
c) a finger mould contains a rubber patch attached to the holder expanded from the test bench which can fill into the test specimen, with other end above the upper side of the sandpaper roller. the surface of the rubber patch should be intact without wear, edge warping and firmly pasted. A 100 g weight load is also required on the finger mould to make sure the proper friction between the finger mould and the sandpaper.



Key

1 motor
2 sandpaper roller
3 finger mould
4 load

Figure A.1 — Fingertip wear resistance test equipment

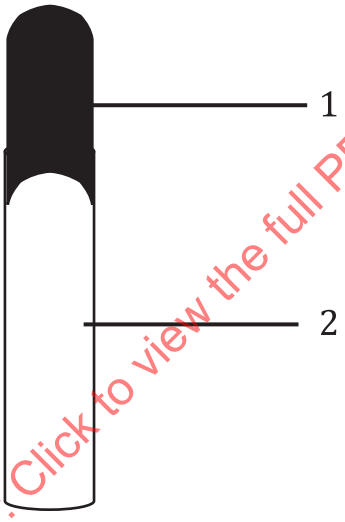


Key

1 sandpaper

2 inflatable pressurized rubber wheel

Figure A.2 — Sandpaper roller



Key

1 rubber patch

2 rubber patch holder

Figure A.3 — Finger mould

A.3 Test procedure

A.3.1 Cut off the finger of the sample glove to be tested from finger root with scissors.

A.3.2 Install the finger test specimen of the sample glove to be tested on the finger mould, clamp and fix it, and the test surface should be close to the finger mould.

A.3.3 Put the cylindrical sandpaper used for the test on the inflatable pressurized rubber wheel. After installation, the sandpaper should be located in the middle of the wheel without deviation or inclination.

A.3.4 Inflate and pressurize the sandpaper roller with an air pump or small air pump to ensure that the final test air pressure is 120 kPa ± 10 kPa.

A.3.5 Put the finger mould with the test sample upside down on the inflatable wheel covered with sandpaper and apply the corresponding load.

A.3.6 Turn on the motor and recoding the rotation cycles, when inspection is required during the test, press the stop key in advance, and lift the finger mould to check the wear of the sample after the machine stops running, stop when the surface of the finger have a breakthrough.

A.4 Test report

The test report should include the following information:

a) the temperature and the humidity in the workplace;

b) a reference to this document, i.e. ISO/TS 5462:2024;

c) the product name, quantity, size and batch;

d) the number of rotation cycles;

e) the name of the inspector and reinspect;

f) the test date.