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|  | ΤΕΧΝΙΚΗ ΠΡΟΔΙΑΓΡΑΦΗ GLOVES WITH HIGH PROTECTION AGAINST COLD | CODE: 831008179 |
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They shall be marked with CE mark, which is required by the legislation, with the corresponding pictograms for protection against mechanical hazards and cold, as required by EN 388, 420, 511. The level of protection against mechanical hazards shall be, at least 2, 1, 2, 1.

Levels of protection against cold:

Protection against transmission of cold 1

Protection against contact with cold surfaces 1

Water penetration 0 or 1

Externally they shall be made from leather, which shall be waterproof for at least 30 min, according to EN 420 § 4.2, and they shall have internal lining of a material which does not cause irritations.

Their length shall be at least 27 cm.

All the parts of the gloves shall be free of heavy metals and azocolorants. In particular:

- The concentration of heavy metals, determined by means of ICP-OES or AAS, after an extraction with acidic sweat in accordance with EN ISO 105 E04, shall not exceed the following limits:

| Heavy Metals | Maximum concentration of leather part in mg/kg | Maximum concentration of textile part in mg/kg |
|--------------|--|--|
| Sb | 2.0 | 2.0 |
| As | 0.2 | 0.2 |
| Cd | 0.1 | 0.1 |
| Cr | - | 2.0 |
| Co | 4.0 | 4.0 |
| Cu | 60.0 | 60.0 |
| Pb | 0.8 | 0.8 |
| Hg | 0.02 | 0.02 |
| Ni | 4.0 | 4.0 |

- The concentration of azocolorants shall not exceed the limits of 30 mg/kg, in accordance to EN 14362/2004 (for the textile part) and to CEN ISO/TS 17234/2003 (for the leather part).

Also they shall not have abnormal odours, according to OEKO TEST STANDARD 100, Appendix 4, Part 3.

They shall be delivered packed one by one into a plastic bag, which shall be accompanied by a leaflet in Greek. Every 50-100 pairs shall be packed in cartons marked with the manufacturer's name, the content and number of the contract.

Their size will be 10 and 11, in a ratio that will be defined at the time of the order.

Each offer shall be accompanied by the followings:

- Five (5) pairs of gloves
- Certificates followed by the results of tests conducted in notified bodies for the acquisition of the CE mark.
- Technical leaflets and other informative material.

SAMPLE APPROVAL

If technical evaluation results to minor importance remarks, which won't be related to the performance levels and the quality of the product, but they only improve the ergonomics of the gloves and make little changes to the pattern, the supplier is officially obliged to realize all the remarks. If IPTO decides that it is necessary, the improved sample must be submitted by the underbidder for approval, before the mass production and within

one month from the contract signing. In this case, the contractual delivery time could be increased as much as it is needed till the approval of the above mentioned sample.
Finally IPTO can conduct new tests in every stage of the procedure to confirm the reliability of the material if needed.

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|  | ΤΕΧΝΙΚΗ ΠΡΟΔΙΑΓΡΑΦΗ PROTECTIIVE GLOVES AGAINST FUEL OILS, PVC | CODE: 831000417 |
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They shall be made from PVC with anti-sweating lining and antibacterial protection, which shall be marked.

They shall fulfill the requirements of EN 388, 420, 374 and shall be marked with:

- CE mark.
- The pictograms for protection against mechanical and chemical hazards, and also antibacterial protection.
- The levels of protection against mechanical hazards which shall be at least 3, 1, 2, 1.

Their length shall be 35 cm at least and also they shall have nonslip shape on the whole surface of the palm and the fingers.

The offer shall be accompanied by:

- One sample.
- Certification from a notified body.
- Prospectus.

The sizes shall be defined before the final order.

By 100 gloves shall be delivered packed in cartoons, having mechanical strength and marked with the manufacturer name, the content and the tender number.

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|  | ΤΕΧΝΙΚΗ ΠΡΟΔΙΑΓΡΑΦΗ PROTECTIVE GLOVES AGAINST ORGANIC SOLVENTS | CODE: 831008167 |
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They shall be made from nitrile, or from another material with equivalent properties, with anti sweating lining and a special anti slippery outer shaping.

They shall fulfill the requirements of EN 388, 420, 374 and shall be marked by:

- CE mark.
- The pictograms for protection against mechanical and chemical hazards. The levels of protection against mechanical hazards shall be, at least, 4, 1, 0, 1.
- Their length shall be at least 30 cm and their thickness 0,5 mm max.

The manufacturer shall recommend them for use against organic solvents (perchloroethylene, toluol, gasoline).

The offer shall be accompanied by:

- One sample.
- Certification from a notified body.
- Declaration of conformity from the manufacturer
- Prospectus.

The sizes shall be defined before the final order.

The gloves shall be delivered packed in resistant cartoons, which will contain 100 each, and they will be marked with the manufacturer name, the content and the tender number.

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|  <p>ΑΔΜΗΕ</p> | <p>ΤΕΧΝΙΚΗ ΠΡΟΔΙΑΓΡΑΦΗ DISPOSABLE GLOVES AGAINST CHEMICAL HAZARDS</p> | <p>CODE: 831009251</p> |
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They shall be made from nitrile, or from another material with equivalent properties. Fingers front part shall have a special anti slippery shaping and their inner part shall be powdered.

They shall be marked by CE (EN 374) and pictograms for protection against chemical hazards and microorganisms.

They shall be packed in 50 pairs boxes.

The offer shall be accompanied by:

- One sample.
- Certification from a notified body.
- Laboratory testing results, in which shall be referred permeation and penetration of chemicals levels.
- Prospectus.

The sizes shall be defined before the final offer.

By 10 boxes shall be delivered packed in cartons, having mechanical strength and marked by the manufacturer name, the content and the tender number.

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|  <p>ΑΔΜΗΕ</p> | <p>ΤΕΧΝΙΚΗ ΠΡΟΔΙΑΓΡΑΦΗ ELECTRICIANS OVERGLOVES</p> | <p>CODES: 831000338 831008775 831008787</p> |
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The gloves shall be made from goat full grain silicon tanned leather and their wrist shall be made from split leather.

A Velcro strap shall be for the best fitting with the insulated gloves. Their sizes correspond to the sizes of insulated gloves.

They shall be marked by CE marking and the marking according EN 388, 420 with the pictograms for protection against mechanical hazards. The levels of protection against mechanical hazards shall be, at least 2, 1, 2, 2.

The leather width shall be 1mm max and the length of the gloves shall be 30±2 cm.

The offer shall be accompanied by:

- One sample.
- Type certification from a notified body and the declaration of conformity from the manufacturer.
- Prospectus.

100 by 100 gloves shall be delivered packed in cartoons, having mechanical strength and marked by the manufacturer name, the content and the tender number.

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|  | ΤΕΧΝΙΚΗ ΠΡΟΔΙΑΓΡΑΦΗ PROTECTIVE GLOVES MADE FROM TEXTILE AND LEATHER CONTENTS | CODE: 831004551 |
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1. SCOPE

The object of this specification is to determine the technical characteristics, the tests, the marking and the acceptance the protective gloves, made from textile and leather.

2. KEY-WORDS

Personal protective equipment, occupational safety, gloves, leather, hands.

3. WORKING CONDITIONS

Those gloves are personal protective equipment for hands for many categories of workers.

Specifically they protect the inside part of the user's palm from mechanical hazards those could cause injuries, such as cuts, pricks, scratches, while they are flexible because of the cotton made outside part of the palm.

These gloves can be used indoor (workrooms, storage rooms) as well as outdoor.

4. REGULATIONS-SPECIFICATIONS

- EN 388/1995 Protective gloves against mechanical risks.
- EN 420/2003 General requirements for gloves.
- ISO 4045/77 Leather-Determination of pH
- EN 13934-1/1999 Textiles - Tensile properties - Determination of maximum force and elongation at maximum force.
- Ministerial decision 4373/1205/1993 (Directive 89/686/EEC)
- IPTO's Technical specification T.K. 0.2.02/10-03-88. "Sampling Process and Indexes for the control of the defective materials by measurements."
- OEKO TEST (OEKO TEX) STANDARD 100
- EN 14362/2004 Textiles – Methods for the determination of certain aromatic amines derived from azocolourants.
- CEN ISO/ TS 17234/ 2003 Leather – Chemical tests - Determination of certain azocolourants in dyed leathers.
- EN ISO 105 - E04/ 2000 Textiles – Tests of color fastness to perspiration.

5. DESCRIPTION-REQUIREMENTS

5.1 FORM AND DIMENSIONS

5.1.1 General description

The gloves shall be of five fingers type. Their size conforming to the EN 420 shall be by occasion 9, 10 or 11, with the following ratio:

No 9: 10%

No 10: 50%

No 11: 40%

The above ratios will probably be modified at the sign of the contract, or when the quantities of every year will be determined.

The shape of the gloves is shown in the attached plan.

5.1.2 Internal Part

The internal part of the palm, full the part of the thumb and the pointer, the internal parts of the other fingers and their external part for length 35-40 mm shall be made from leather.

There shall be a reinforcement made of the same quality leather, which shall cover the palm from the finger line for a 80-90 mm length (depended on the size of the glove) and the thumb. The reinforcement shall allow the movement (open-close) of the fingers without difficulty.

5.1.3 External Part

The external part of the palm shall be made from textile and shall have a reinforcement made from the same quality leather. The reinforcement shall have the shape of a rectangular strip with a width of 35±2mm, as shown in the picture.

5.1.4 Wrist

The wrist shall be made from leather suede and shall have 70-80mm length (depended on the size of the glove). Also the internal part of the wrist shall have a reinforcement made from the same quality leather with the one of the palm, which shall be 70-80 mm long and 25±2mm wide.

5.1.5 Seams

The leather of the internal part of the palm shall be of one piece without seams. There shall be seams at the tops of the little fingers. The leather of the internal surface of the two middle fingers will be of one piece. The seams at the base of the two middle fingers, and also the seams at the touch of the thumb with the palm, shall be protected with a tape of a 1,5±0,1mm width leather.

The seams shall be internal, except for those of the reinforcement. They shall be distant from the edge of the leather at least 1.5mm and the folds at the seams shall not be hard and pointed. The pitch of the seam shall be 27-33 stitches every 10cm.

5.1.6 Lining

At the internal part of the palm there shall be a woven, cotton lining. It shall be of one piece and it shall cover the internal part of the palm and the fingers. It shall be connected by seam to the connection of the palm and the wrist, at the tops of the fingers, and across the external part of the little finger.

5.1.7 Elastic tightening strip

For the better tightening – fitting of the glove to the user's hand there shall be an elastic strip at the internal part of the textile.

5.2 Technical characteristics

5.2.1 Leather of the main part of the glove

It shall be full grain cow leather, light-colored, without bulges, scratches or anything that reduces its strength. It shall have the following characteristics:

Thickness: 1.2-1.4 mm

Extract's pH: minimum 4.0 maximum 7.5

Fat content: minimum 5%.

5.2.2 Textile

It shall be 100% cotton, type Dock woven with density at least 280 g/m².

5.2.3 Internal lining

It shall be woven with nap, cotton 100%, with density at least 220g/m².

5.2.4 Wrist leather

It shall be split leather with thickness 1.2-1.4 mm.

5.2.5 Seam fiber

It shall have tension strength at least 6 kp.

6. TESTS

6.1 Design tests

Not required.

6.2 Type tests

6.2.1 pH measurement of an aqueous extract

For all the materials that are in contact with the hand, the pH of the aqueous extract shall be between 3,5 and 9,5. The testing shall be performed according to the ISO 4045/77. 6.2.2 Designation of the content in Cr
With the methods that are described in EN 420 §6.1, the content of the leather in Cr VI shall be defined, and it must not be more than 3 mg/kg.

6.2.3 Designation of harmful substances

All the parts of the gloves shall be free of heavy metals and azocolorants. In particular:

- The concentration of heavy metals, determined by means of ICP-OES or AAS, after an extraction with acidic sweat in accordance with EN ISO 105 E04, shall not exceed the following limits:

| Heavy Metals | Maximum concentration of leather part in mg/kg | Maximum concentration of textile part in mg/kg |
|--------------|--|--|
| Sb | 2,0 | 2,0 |
| As | 0,2 | 0,2 |
| Cd | 0,1 | 0,1 |
| Cr | - | 2,0 |
| Co | 4,0 | 4,0 |
| Cu | 60,0 | 60,0 |
| Pb | 0,8 | 0,8 |
| Hg | 0,02 | 0,02 |
| Ni | 4,0 | 4,0 |

- The concentration of azocolorants shall not exceed the limits of 30 mg/kg, in accordance to EN 14362/2004 (for the textile part) and to CEN ISO/TS 17234/2003 (for the leather part).

6.2.4 Odour

The gloves shall not have abnormal odours (OEKO TEST STANDARD 100/ Appendix 4/ Part 3).

6.2.5 Abrasion resistance

After the specimen has been tested with the method described in EN 388 §6.1, it shall resist to at least 2000 cycles (level 3).

6.2.6 Blade cut resistance

After the specimen has been tested with the method described in EN 388 §6.2, it shall have coefficient at least 1.2 (level 1).

6.2.7 Tear resistance

After the specimen has been tested with the method described in EN 388 §6.3, it shall have tear resistance (extension of the tearing) at least 75 N (level 4).

6.2.8 Puncture resistance

After the specimen has been tested with the method described in EN 388 §6.4, it shall have puncture resistance at least 150 N (level 4).

6.2.9 Dexterity test

The user shall wear the glove and move a needle with diameter 5mm (level 5), with the method described in EN 420 §6.3.

6.2.10 Measurement of water vapour permeability

The water vapour permeability shall be at least 5 mg/cm²h. The testing shall be performed with the methods described in EN 420 §6.3.

6.2.11 Tension strength of the textile

The fracture force of the textile shall be checked per weft and warp. The minimum required force shall be 600N and 1100N correspondingly (EN 13934-1/1999).

6.3 Sampling tests

During the receipt procedure the type tests shall be repeated by taking samples according to IPTO technical specification 02.02/10.03.88. Also the received samples shall be identified with the one on which CE mark had de given.

6.4 Series tests

Optical and marking check shall be conducted.

7 LABELS-MARKING

The legislation provisions shall be followed and the European Standards for marking must be followed too. Specifically in every glove the following information must exist in a clear, indelible way:

- The CE mark that the legislation imposes
- The name or the symbol of the of the manufacturer
- The code or other identification element of the glove (the code shall be the one mentioned at the test report)
- The size
- The year of production
- The pictogram for the protection against mechanical hazards and the numbers 3, 1, 4, 4, those symbolize the levels of mechanical performance.

8 PACKING

- Each pair shall be packed in a plastic bag, accompanied by the following information in Greek language:
 - The name of the manufacturer and his representative.
 - Information about the gloves and interpretation of the marking's code.
 - Instructions about the usage limits, the maintenance and storing.
 - Especially the affect of cleaning to the mechanical characteristics.
- The gloves shall be packed in boxes of 50-70 pairs in which there shall be markings followed by the manufacturers name, the content and the contract number.

9. Each offer shall be accompanied by the followings:

- Three (3) pairs of gloves.
- Certificates followed by the results of tests conducted in notified bodies for the acquisition of the CE mark.
- Technical leaflets and other informative material.

10. SAMPLE APPROVAL

If technical evaluation results to minor importance remarks, which won't be related to the performance levels and the quality of the product, but they only improve the ergonomy of the gloves and make little changes to the pattern, the supplier is officially obliged to realize all the remarks. If IPTO decides that it is necessary, the improved sample must be submitted by the underbidder for approval, before the mass production and

within one month from the contract signing. In this case, the contractual delivery time could be increased as much as it is needed till the approval of the above mentioned sample.
Finally IPTO can conduct new tests in every stage of the procedure to confirm the reliability of the material if needed.

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|  | <p style="text-align: center;">ΤΕΧΝΙΚΗ ΠΡΟΔΙΑΓΡΑΦΗ PROTECTIVE GLOVES MADE FROM TEXTILE AND NITRILE</p> | <p style="text-align: center;">CODES: 831000111 831000112</p> |
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Manufacture

- The front part of palm, all the fingers (inner and outer part) and a small piece (1-2cm) of the back part of palm shall be made from nitrile, or from another material with equivalent properties.
- The front part shall have a special anti slippery shaping.
- The back part of palm shall be made from cotton.
- The wrist shall be made of elasticized textile.
- There shall be a cotton lining.
- Their length shall be at least 27 cm and their thickness shall be 1 mm, max.

Marking

They shall have

- CE mark
- The pictogram of EN 420 for protection against mechanical hazards in levels 3, 1, 2, 1, at least.

The offer shall be accompanied by:

- One sample.
- Certification from a notified body.
- Laboratory testing results, in which shall be referred permeation and penetration of chemicals levels.
- Prospectus.

The sizes shall be defined before the final offer.

By 100 gloves shall be delivered packed in cartons, having mechanical strength and marked by the manufacturer name, the content and the tender number.

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|  | ΤΕΧΝΙΚΗ ΠΡΟΔΙΑΓΡΑΦΗ PROTECTIVE INDUSTRIAL LEATHER GLOVES | CODES: 831008465 831009007 831009019 |
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The gloves shall comply with the requirements of EN 388, 420 and shall have the following features:

- They shall be of five finger's type.
- They shall be made entirely of water and oil repellent cow full grain leather.
- The leather shall have a maximum thickness of 1,2mm.
- They shall have elastic wrist.
- They shall be marked by CE and the pictogram against mechanical risks, with the following performance levels at least:
 - Abrasion resistance: 3
 - Blade cut resistance: 1
 - Tear resistance: 2
 - Puncture resistance: 2
 - Dexterity: 5
- The gloves shall be free of heavy metals and azocolorants, according to those mentioned in parag. 6.2.3 of the present specification of the gloves made of leather and textile (item 1).
- They also shall not have abnormal odours, according to OEKO TEST STANDARD 100, Appendix 4, Part 3.
- They shall have the following levels of color fastness:
 - In water: 3-4, according to EN ISO 11642/1999
 - In alkaline perspiration: 3-4, according to EN ISO 11641/2004
 - In acidic perspiration: 3-4, according to EN ISO 105-E04/2000.
- The leather shall be waterproof for at least 30 min, according to EN 420 § 4.2.

The gloves shall be delivered packed one by one into a plastic bag, which shall be accompanied by a leaflet in Greek. By 50-100 pairs shall be packed in cartons marked by the manufacturer name, the content and the contract number.

Each offer shall be accompanied by the followings:

1. Three (3) pairs of gloves.
2. Certificates followed by the results of tests conducted in notified bodies for the acquisition of the CE mark.
3. Technical leaflets and other informative material.

SAMPLE APPROVAL

If technical evaluation results to minor importance remarks, which won't be related to the performance levels and the quality of the product, but they only improve the ergonomoy of the gloves and make little changes to the pattern, the supplier is officially obliged to realize all the remarks. If IPTO decides that it is necessary, the improved sample must be submitted by the underbidder for approval, before the mass production and within one month from the contract signing. In this case, the contractual delivery time could be increased as much as it is needed till the approval of the above mentioned sample.

Finally IPTO can conduct new tests in every stage of the procedure to confirm the reliability of the material if needed.

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|  | ΤΕΧΝΙΚΗ ΠΡΟΔΙΑΓΡΑΦΗ INSULATING GLOVES CLASS 00 | CODES: 831009070 831009081 |
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1. SCOPE

The object of this specification is to determine the technical characteristics, the tests, the marking and the way of taking delivery of the goods.

2. KEY-WORDS

Personal protective equipment, occupational safety, gloves, hands, live working.

3. WORKING CONDITIONS

Those gloves are personal protective equipment for hands for live working at maximum 500 V and they will be worn with outer protective gloves.

4. REGULATIONS-SPECIFICATIONS

1. IEC 903/88 Specification for gloves and mitts of insulating material for live working
2. EN 60903/2003 Live working - Gloves of insulating material
3. EN 420/2003 General requirements for gloves
4. Directive 89/686/EEC

5. DESCRIPTION-REQUIREMENTS

a. FORM AND DIMENSIONS

i. General description

The offered gloves should be of five-finger type. The shape of the fingers is to be curved and seamless. Their size shall be 8, 9, 10 or 11 (as per EN 60903) and their length 360mm + 15 mm.

A anti perspiration lining, which won't cause allergic reaction to the human skin and according to the up to date known elements shall be in the inner part.

ii. Technical characteristics:

They should be made from high quality synthetic material.

They should also be clear of natural unevenness and defects, which could affect the protection they provide (holes, fissures, cuttings, conductible particles, blisters, folds, gaps) according to the 5.4 of IEC 903.

The technical characteristics of the gloves will be the followings according to the EN 60903:

- Class: 00 (for maximum 500 volt working).
- Category: RC (Higher level mechanical resistance, resistance to acid, oil, ozone and extreme low temperatures).
- Elastomer thickness: 1,8 mm maximum.

6. TESTS

a. Design tests

Not required.

b. Type tests

The followings are going to be executed according to the §6.1 of IEC 903 and EN 60903:

i. Visual, dimensional, marking and packing check.

The shape will be checked and the dimensions will be measured, (depth, length) which must be compatible with the §5.1 provision.

The surface will be checked for the existence of any unevenness and imperfections according to §5.2, also the marking of the durability of the glove according to §7, as well as the packing according to §8 of the specification.

6.2.2 Dielectric test (IEC 903 §6.4 & EN 60903 §8.4)

The gloves will be placed in a water tank according to the method that the IEC 903 at the §6.4 describes. Alternative voltage will be applied at a 1 kV/s rate up to 2,5 kV and they will remain for 3min. The leakage

current should not exceed the 14 mA. Afterwards the voltage will be raised in the same rate up to 5 kV, so that no perforation should appear.

The test will carry out at $23^{\circ}\pm 2^{\circ}\text{C}$. Before the test the gloves should be conditioned by immersion in water for $16\pm 0,5\text{h}$.

6.2.3 Mechanical tests (IEC 903 §6.3 & EN 60903 §8.3)

Test will be performed on samples which have been conditioned for 24h in $23^{\circ}\pm 2^{\circ}\text{C}$ and in relative humidity $50\pm 5\%$. The tests will be regarded successful as long as there is:

- Tensile strength greater than 20MPa.
- Elongation at breaks greater than 600%. The previous tests will be performed on 4 samples and the average will be taken under consideration.
- Tension set, after 400% lengthening, less than 7% for the three samples, which have been tested.
- Mechanical puncture resistance greater than 30N/mm for both of the samples that will be under tests.

The tests will be executed according to the methods that are described at the §6.3 of the IEC 903.

6.2.4 Aging test (IEC 903 §6.5 & EN 60903 §8.5)

Four samples will be cut from the gloves according to the provisions of IEC 903 § 6.5 and three of them will be conditioned for 168h in $70^{\circ}\pm 2^{\circ}\text{C}$ and relative humidity less than 20% and afterwards they will be laid aside to freeze for 16h.

Mechanical tests will be performed on the four samples (the three aged and the ageless) and will be regarded successful as long as:

- Tensile strength is not less than the 80% of the corresponding values of the ageless.
- Tension set after the 400% lengthening will not exceed 15%.

6.2.5 Flame retardacy test (IEC 903 §6.6 & EN 60903 §8.6)

A test piece from the gloves will be tested according to the methods that are described at the IEC 903 §6.6 and should not permit the propagation of the flame up to the predetermined limit.

6.2.6 Acid resistance test (IEC 903 §7.2 & EN 60903 §8.7.1)

The external surface of the gloves will be exposed for $8\pm 0,5\text{h}$ into a solution of H_2SO_4 32. Be at $23^{\circ}\pm 2^{\circ}\text{C}$. Afterwards they will be rinsed into water and be dried for $2\pm 0,5\text{h}$ at 70°C . Later they should:

- Cope with the dielectric test successfully (§6.6.2 of the present specifications).
- Come up to the 75% of the value of the elongation and tension tests they had before the conditioning.

6.2.7 Oil resistance test (IEC 903 §7.3 & EN 60903 §8.7.2)

The gloves will be pre-conditioned for $3\pm 0,5\text{h}$ at $23^{\circ}\pm 2^{\circ}\text{C}$ with relative humidity $50\pm 5\%$, afterwards they will be conditioned for $24\pm 0,5\text{h}$ by immersing them into oil No 1 (IEC 903 annex D) at $70^{\circ}\pm 2^{\circ}\text{C}$, so that only their external surface will be exposed to it. Afterwards they will be dried using a dry cloth. Later they should:

- Cope with the dielectric test successfully §6.6.2.
- Achieve the 50% of the values of the elongation and tension tests point they had before the conditioning.

6.2.8 Ozone resistance test (IEC 903 §7.4 & EN 60903 §8.7.3)

According to the B method that is been described in the IEC 903 §7.4 the gloves will be conditioned into an atmosphere of $1\pm 0,01\text{ mg/m}^3$ ozone concentration and they should cope with the dielectric test.

6.2.9 Extreme low temperature test (IEC 903 §7.7 & EN 60903 §8.7.4)

The gloves will be conditioned at $-40^{\circ}\pm 3^{\circ}\text{C}$ for $24\pm 0,5\text{h}$ along with two plates from polyethylene of 200 mm x 200 mm x 5 mm. 1 min after their conditioning the gloves will be fold up in the wrist, they will be placed between the discs and pressure of 100N will be exerted for 30s.

The test will be regarded successful as long as there will be no chinks, breaks or cracks and the gloves cope with the dielectric test for 2.5 kV for 3 min successfully with leakage current at most 14 mA, without any previous conditioning for the humidity absorption.

6.2.10 Water absorption (EN 420 §6.5)

The sample after been tested according to the method that is been described in the for 8h. EN 420 §6.5 should present absorption of steams at least 0,6 mg/cm

6.3 Sampling tests

While the receipt the sampling type tests will be repeated according to the anticipations of annex E of the IEC 903 (EN 60903 annex C).

6.4 Series tests

The dielectric test, optical test and check of the marking will be conducted.

7. LABELS-MARKING

The legislation provisions shall be followed as well as the European Standards for marking. Specifically in each glove the following information must exist in a clear, indelible way:

- The CE mark that the legislation imposes.
- The code of the laboratory that made the approval.
- The name or the symbol of the manufacturer.
- The year and the month of manufacture.
- The symbol 00 (class).
- The symbol R C (category).
- The pictogram of the double triangle that symbolizes protection against electric dangers.
- The size (8, 9, 10 or 11).
- The number of the lot.
- Rectangle shape, at the wrist, for the marking of the accomplished inspections.

Note: The marking must not distort the quality of the glove. Any other symbol that could confuse the user is prohibited (e.g. the voltage of the test).

8. PACKING

Each pair shall be packed in an opaque bag for protection against ultraviolet radiation and mechanical hazards.

Exteriorly (at the packing) should be inscribed the followings:

- At the front the name of the manufacturer, the protection class, the size and the category of the glove.
- At the back or in a leaflet the instructions of use, preservation and storing in Greek language.

Apart from the individual packing per pair, they will be packed per 50-70 pairs in a box of sufficient mechanical durability for piling up to 2,5m. At the box there will be marking with the data of the manufacturer, the content and the contract number.

9. DATA SUBMITTED ALONG WITH THE OFFER

Each candidate provider shall submit along with the offer

- Two (2) pairs of gloves.
- Certificates followed by the results of tests conducted in laboratories certified for the acquisition of the CE mark.
- Technical leaflets and other informative material.

IPTO can conduct new tests in every stage of the procedure to confirm the reliability of the material if needed.

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|  | ΤΕΧΝΙΚΗ ΠΡΟΔΙΑΓΡΑΦΗ INSULATING GLOVES CLASS 02 | CODES: 831000040 831000387 831000162 |
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1. SCOPE

The object of this specification is to determine the technical characteristics, the tests, the marking and the way of taking delivery of the goods.

2. KEY-WORDS

Personal protective equipment, occupational safety, gloves, hands, live working.

3. WORKING CONDITIONS Those gloves are personal protective equipment for hands for live working at maximum 17 kV and they will be worn with outer protective gloves.

4. REGULATIONS-SPECIFICATION S

1. IEC 903/88 Specification for gloves and mitts of insulating material for live working
2. EN 60903/2003 Live working - Gloves of insulating material
3. EN 420/2003 General requirements for gloves
4. Directive 89/686/EEC

5. DESCRIPTION-REQUIREMENTS

5.1 FORM AND DIMENSIONS

5.1.1 General description

The offered gloves should be of five-finger type. The shape of the fingers is to be curved and seamless. Their size shall be 8, 9, 10 or 11 (as per EN 60903) and their length 360mm + 15 mm.

5.1.2 Technical characteristics:

They should be made from high quality synthetic material which won't cause allergic reaction to the human skin and according to the up to date known elements shall be in the inner part.

They should also be clear of natural unevenness and defects, which could affect the protection they provide (holes, fissures, cuttings, conductible particles, blisters, folds, gaps) according to the 5.4 of IEC 903.

The technical characteristics of the gloves will be the followings according to the IEC 903:

- Class: 2 (for maximum 17 kV working).
- Category: RC (Higher level mechanical resistance, resistance to acid, oil, ozone and extreme low temperatures).
- Elastomer thickness: 2,9 mm maximum

6. TESTS

6.1 Design tests

Not required.

6.2 Type tests

The followings are going to be executed according to the §6.1 of IEC 903 (& EN60903 §6.1):

6.2.1 Visual, dimensional, marking and packing check.

The shape will be checked and the dimensions will be measured, (depth, length) which must be compatible with the §5.1 provision. The surface will be checked for the existence of any unevenness and imperfections, according to the §5.2, the marking also and the durability of it, according to the specification of §7 as well as the packing.

6.2.2 Dielectric test (IEC 903 §6.4 & EN60903 §8.4)

The gloves will be placed in a water tank according to the method that the IEC 903 at the §6.4 describes. Alternative voltage will be applied at a 1 kV/s rate up to 20 kV and they will remain for 3min. The leakage current should not exceed the 14 mA. Afterwards the voltage will be raised in the same rate up to 30 kV, so that no perforation should appear.

The test will carry out at 23° ±2°C. Before the test the gloves should be conditioned by immersion in water for 16±0,5h.

6.2.3 Mechanical tests (IEC 903 §6.3 & EN60903 §8.3)

Test will be performed on samples which have been conditioned for 24h in $23\pm 2^{\circ}\text{C}$ and in relative humidity $50\pm 5\%$. The tests will be regarded successful as long as there is:

- Tensile strength greater than 20MPa.
- Elongation at breaks greater than 600%. The previous tests will be performed on 4 samples and the average will be taken under consideration.
- Tension set, after 400% lengthening, less than 7% for the three samples, which have been tested.
- Mechanical puncture resistance greater than 30N/mm for both of the samples that will be under tests.

The tests will be executed according to the methods that are described at the §6.3 of the IEC 903.

6.2.4 Aging test (IEC 903 §6.5 & EN60903 §8.5)

Four samples will be cut from the gloves according to the provisions of IEC 903 §6.5 and three of them will be conditioned for 168h in $70\pm 2^{\circ}\text{C}$ and relative humidity less than 20% and afterwards they will be laid aside to freeze for 16h. Mechanical tests will be performed on the four samples (the three aged and the ageless) and will be regarded successful as long as:

- Tensile strength is not less than the 80% of the corresponding values of the ageless.
- Tension set after the 400% lengthening will not exceed 15%.

6.2.5 Flame retardancy test (IEC 903 §6.6 & EN60903 §8.6)

A test piece from the gloves will be tested according to the methods that are described at the IEC 903 §6.6 and should not permit the propagation of the flame up to the predetermined limit.

6.2.6 Acid resistance test (IEC 903 §7.2 & EN60903 §8.7.1)

The external surface of the gloves will be exposed for $8\pm 0,5\text{h}$ into a solution of H_2SO_4 32. Be at $23\pm 2^{\circ}\text{C}$. Afterwards they will be rinsed into water and be dried for $2\pm 0,5\text{h}$ at 70°C . Later they should:

- Cope with the dielectric test successfully (§6.6.2 of the present specifications)
- Come up to the 75% of the value of the elongation and tension tests they had before the conditioning.

6.2.7 Oil resistance test (IEC 903 §7.3 & EN60903 §8.7.2)

The gloves will be pre-conditioned for $3\pm 0,5\text{h}$ at $23\pm 2^{\circ}\text{C}$ with relative humidity $50\pm 5\%$, afterwards they will be conditioned for $24\pm 0,5\text{h}$ by immersing them into oil No 1 (IEC 903 annex D) at $70\pm 2^{\circ}\text{C}$, so that only their external surface will be exposed to it. Afterwards they will be dried using a dry cloth. Later they should:

- Cope with the dielectric test successfully §6.6.2.
- Achieve the 50% of the values of the elongation and tension tests point they had before the conditioning.

6.2.8 Ozone resistance test (IEC 903 §7.4 & EN60903 §8.7.3)

According to the B method that is been described in the IEC 903 §7.4 the gloves will be conditioned into an atmosphere of $1\pm 0,01\text{ mg/m}^3$ ozone concentration and they should cope with the dielectric test.

6.2.9 Extreme low temperature test (IEC 903 §7.7 & EN60903 §8.7.4)

The gloves will be conditioned at $-40\pm 3^{\circ}\text{C}$ for $24\pm 0,5\text{h}$ along with two plates from polyethylene of 200 mm x 200 mm x 5 mm. 1 min after their conditioning the gloves will be fold up in the wrist, they will be placed between the discs and pressure of 100N will be exerted for 30s.

The test will be regarded successful as long as there will be no chinks, breaks or cracks and the gloves cope with the dielectric test for 2.5 kV for 3 min successfully with leakage current at most 14 mA, without any previous conditioning for the humidity absorption.

6.3 Sampling tests

While the receipt the sampling type tests will be repeated according to the anticipations of annex E of the IEC 903 (EN 60903 annex C).

6.4 Series tests

The dielectric test, optical test and check of the marking will be conducted.

7. LABELS-MARKING

The legislation provisions shall be followed as well as the European Standards for marking.

Specifically in each glove the following information must exist in a clear, indelible way:

- The CE mark that the legislation imposes.
- The code of the laboratory that made the approval.
- The name or the symbol of the manufacturer.
- The year and the month of manufacture.
- The symbol 2 (class).
- The symbol R C (category).
- The pictogram of the double triangle that symbolizes protection against electric dangers.
- The size (8, 9, 10 or 11).
- The number of the lot.
- Rectangle shape, at the wrist, for the marking of the accomplished inspections.

Note: The marking must not distort the quality of the glove. Any other symbol that could confuse the user is prohibited (e.g. the voltage of the test).

8. PACKING

Each pair shall be packed in an opaque bag for protection against ultraviolet radiation and mechanical hazards.

Exteriorly (at the packing) should be inscribed the followings:

- At the front the name of the manufacturer, the protection class, the size and the category of the glove.
- At the back or in a leaflet the instructions of use, preservation and storing in Greek language.

Apart from the individual packing per pair, they will be packed per 50-70 pairs in a box of sufficient mechanical durability for piling up to 2,5m. At the box there will be marking with the data of the manufacturer, the content and the contract number.

9. DATA SUBMITTED ALONG WITH THE OFFER

Each candidate provider shall submit along with the offer

- Two (2) pairs of gloves.
- Certificates followed by the results of tests conducted in laboratories certified for the acquisition of the CE mark.
- Technical leaflets and other informative material.

IPTO can conduct new tests in every stage of the procedure to confirm the reliability of the material if needed.