



REGELTEX



INSULATING GLOVES

Our full range of insulating gloves for live working complies with the specifications of the European standard EN 60903:2003 and the international standard IEC 60903:2002.

Likewise, our production is subjected to a system for ensuring EC quality of production by means of monitoring to implement article 11b of the 89/686/EEC directive relating to Personal Protective Equipment which classifies insulating gloves for live working in category III (mortal risks).

**Tableau récapitulatif**

Class	Lengths available	Categories	Thickness in mm*	Sizes available	Colour of packaging
00	27 / 36 cm	AZC	0.5	8-9-10-11	Beige
0	36 / 41 cm	AZC	1.0	8-9-10-11	Red
1	36 / 41 cm	AZC	1.5	8-9-10-11	White
2	36 / 41 cm	RC	2.3	8-9-10-11	Yellow
3	36 / 41 cm	RC	2.9	8-9-10-11	Green
4	41 cm	RC	3.6	8-9-10-11	Orange

\* Obtaining the category authorises an additional thickness of 0.6mm

Signification of category letters :

A : Acid    Z : Ozone    H : Oil    C : Very low temperatures    R : A+Z+H

**Electrical requirements (routine test and sampling test in alternating current)**

Class	Max operating voltage (volts)	Proof test voltage (volts)	Withstand voltage (volts)
00	500	2 500	5 000
0	1 000	5 000	10 000
1	7 500	10 000	20 000
2	17 000	20 000	30 000
3	26 500	30 000	40 000
4	36 000	40 000	50 000

1/ In the choice of class, it is important to define the network nominal voltage which must not exceed the maximum operating voltage. For multiphase networks, the network nominal voltage is the voltage between phases.

2/ The test voltage is the one applied to gloves during the individual routine tests.

3/ The withstand voltage is the one applied during the validation tests after the gloves have been conditioned for 16 hours in water and after a 3-minutes test at the proof voltage.

Manufacturer of insulating gloves for live working

### Ageing requirements (sampling test)

Conditioning of the gloves in an air oven at  $70 \pm 2$  °C for 168 hours :

- The elongation at break values must be at least equal to 80% of those of non-conditioned gloves.
- The tension set must not exceed 15%.
- The gloves must pass the proof test voltage and withstand test voltage.

### Thermal requirements (sampling test)

**1 Resistance to low temperature :**  
conditioning of gloves for 1 hour at  $-25 \pm 3$ °C  
The tests are satisfactory if no tearing, breaking or cracking after folding is visible on the cuff and if the gloves pass the proof test voltage and withstand test voltage.

**2 Flame retardancy test :**  
Application of a flame for 10 seconds at a finger tip.  
The test is satisfactory if, after 55 seconds, the flame has not reached the marker located 55mm away at the other end.

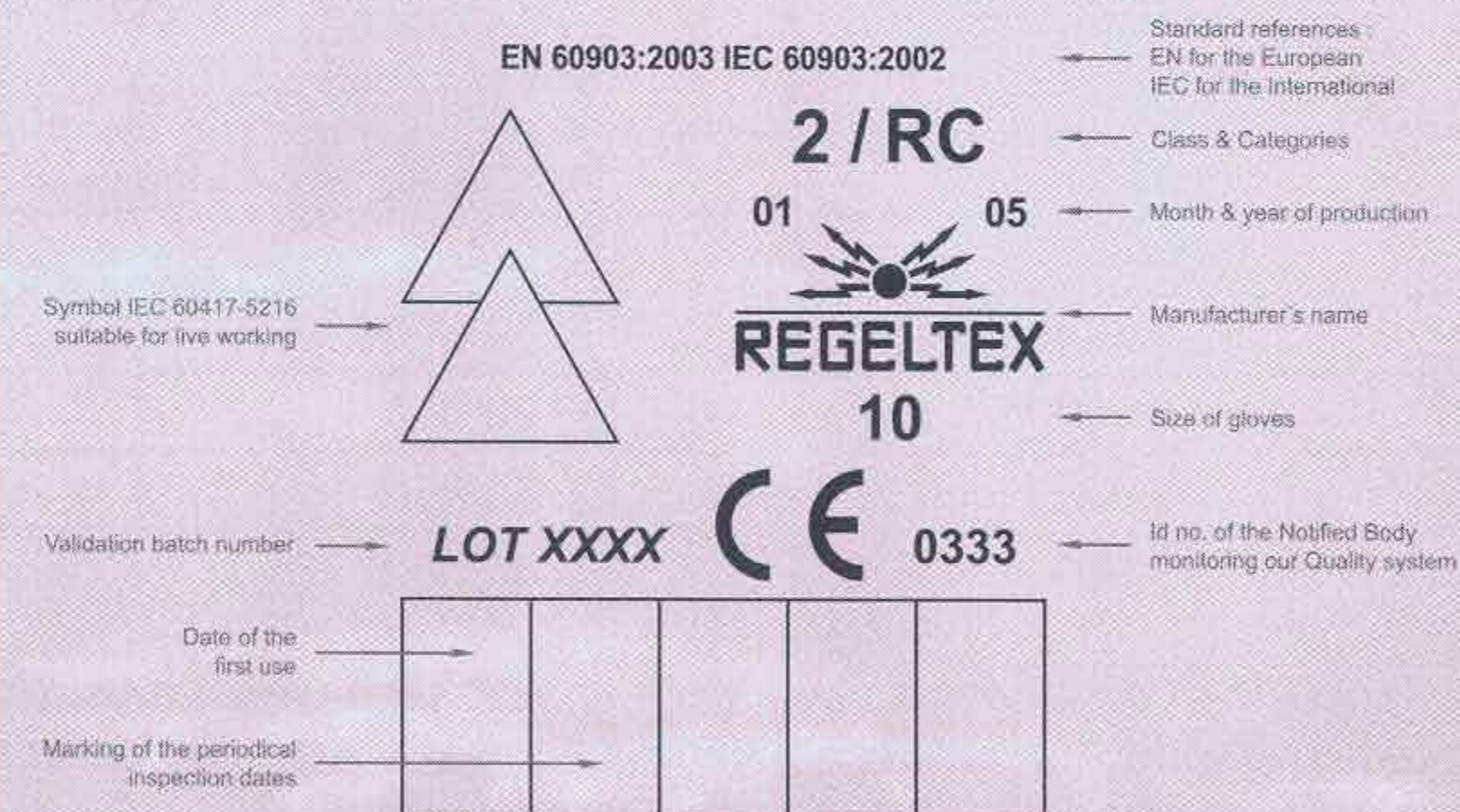
### Mechanical requirements (sampling test)

- Average tensile strength :  $\geq 16$  MPa
- Average elongation at break :  $\geq 600\%$
- Puncture resistance :  $\geq 18$ N/mm
- Tension set :  $\leq 15\%$

### Special properties (sampling test)

- 1 Resistance to acid :**  
conditioning of gloves by immersion for 8hr at  $23 \pm 2$  °C in a sulphuric acid solution at 32° Baume
- The tensile strength and elongation at break values must be at least equal to 75% of those of non-conditioned gloves.
  - The gloves must pass the proof test voltage and withstand test voltage.
- 2 Resistance to oil :**  
conditioning by immersion in oil (liquid 102) for 24 hr at  $70 \pm 2$  °C
- The tensile strength and elongation at break values must be at least equal to 50% of those of non-conditioned gloves.
  - The gloves must pass the proof test voltage and withstand test voltage.
- 3 Resistance to ozone :**  
conditioning of gloves in a chamber for 3 hr at  $40 \pm 2$ °C and in a 1 mg/m<sup>3</sup> ozone concentration
- The gloves must not present any cracking
  - The gloves must pass the proof test voltage and withstand test voltage.
- 4 Resistance to very low temperatures :**  
conditioning of gloves for 24 hours at  $-40 \pm 3$ °C  
The tests are satisfactory if no tearing, breaking or cracking after folding is visible on the cuff and if the gloves pass the proof test voltage and withstand test voltage.

### Marking



### Packaging

Each pair of gloves is packaged in a different coloured opaque sachet depending on its class of protection.

The following information is given on the packaging : class, size, categories, type of cuff, length, test date, manufacture batch number and validation batch number

# REGELTEX

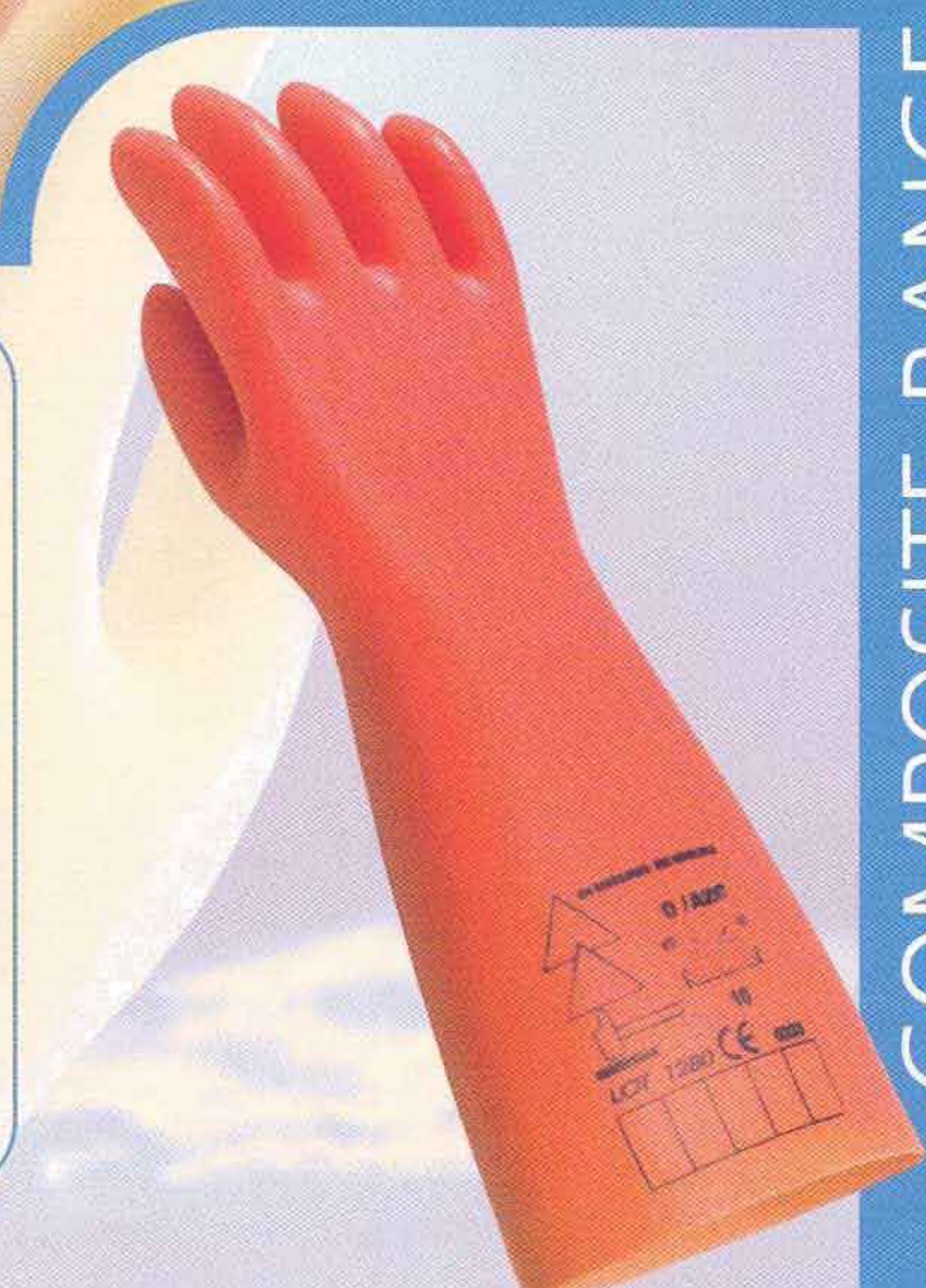


COMPOSITE RANGE

The latest innovation in the REGELTEX range, two-tone composite gloves combine the electrical performances of insulating gloves with reinforced mechanical performances for working in total safety without wearing leather overgloves. To reduce the effects of sweating, the gloves are sold with cotton inner mittens to maintain initial dexterity.

The separate inner gloves may be replaced regularly, thus limiting bacteriological problems associated with residual humidity caused by sweating.

The technical characteristics of composite gloves are defined by the standards IEC 60903 & EN 60903. Performance assessment covers all the tests applicable to insulating gloves with additional tests, establishing the levels of resistance to abrasion, cutting, tearing and perforation.



### Summary table

Class	Lengths available	Categories	Thickness in mm*	Sizes available	Packaging colour
00	36 cm	AZC	1.8	8-9-10-11	Beige
0	36 / 41 cm	AZC	2.3	8-9-10-11	Red

\* Obtaining the category authorises an additional thickness of 0.6mm

Signification of category letters :

A : Acid      Z : Ozone      C : Very low temperatures

### Electrical requirements (routine test and sampling test in alternating current)

Class	Max operating voltage (volts)	Proof test voltage (volts)	Withstand voltage (volts)
00	500	2 500	5 000
0	1 000	5 000	10 000

1/ In the choice of class, it is important to define the network nominal voltage which must not exceed the maximum operating voltage. For multiphase networks, the network nominal voltage is the voltage between phases.

2/ The proof test voltage is the one applied to gloves during the individual routine tests.

3/ The withstand voltage is the one applied during the validation tests after the gloves have been conditioned for 16 hours in water and after a 3-minutes test at the proof voltage.

Manufacturer of insulating gloves for live working

### Ageing requirements (sampling test)

Conditioning of the gloves in an air oven at  $70 \pm 2$  °C for 168 hours :

- The elongation at break values must be at least equal to 80% of those of non-conditioned gloves.
- The tension set must not exceed 15%.
- The gloves must pass the proof test voltage and withstand test voltage.

### Thermal requirements (sampling test)

**1 Resistance to low temperature :**  
conditioning of gloves for 1 hour at  $-25 \pm 3$ °C  
The tests are satisfactory if no tearing, breaking or cracking after folding is visible on the cuff and if the gloves pass the proof test voltage and withstand test voltage.

**2 Flame retardancy test :**  
Application of a flame for 10 seconds at a finger tip.  
The test is satisfactory if, after 55 seconds, the flame has not reached the marker located 55mm away at the other end.

### Mechanical requirements (sampling test)

- Average tensile strength :  $\geq 16$  MPa
- Average elongation at break :  $\geq 600\%$
- Tension set :  $\leq 15\%$

The additional tests and performance levels to be obtained are as follows :

- Resistance to abrasion :  $\leq 0.05$  mg/t (no equivalence level according to the EN-388 standard)
- Resistance to cutting :  $> 2.5$  (equivalence level 2 according to EN 388)
- Tearing resistance :  $> 25$  N (equivalence level 2 according to EN 388)
- Puncture resistance :  $> 60$  N (equivalence level 2 according to EN 388)

### Special properties (sampling test)

**1 Resistance to acid :**  
conditioning of gloves by immersion for 8hr at  $23 \pm 2$  °C in a sulphuric acid solution at 32° Baume

- The tensile strength and elongation at break values must be at least equal to 75% of those of non-conditioned gloves.
- The gloves must pass the proof test voltage and withstand test voltage.

**2 Resistance to oil :**  
conditioning by immersion in oil (liquid 102) for 24 hr at  $70 \pm 2$  °C

- The tensile strength and elongation at break values must be at least equal to 50% of those of non-conditioned gloves.
- The gloves must pass the proof test voltage and withstand test voltage.

**3 Resistance to ozone :**  
conditioning of gloves in a chamber for 3 hr at  $40 \pm 2$ °C and in a  $1 \text{ mg/m}^3$  ozone concentration

- The gloves must not present any cracking
- The gloves must pass the proof test voltage and withstand test voltage.

**4 Resistance to very low temperatures :**  
conditioning of gloves for 24 hours at  $-40 \pm 3$ °C  
The tests are satisfactory if no tearing, breaking or cracking after folding is visible on the cuff and if the gloves pass the proof test voltage and withstand test voltage.

### Packaging

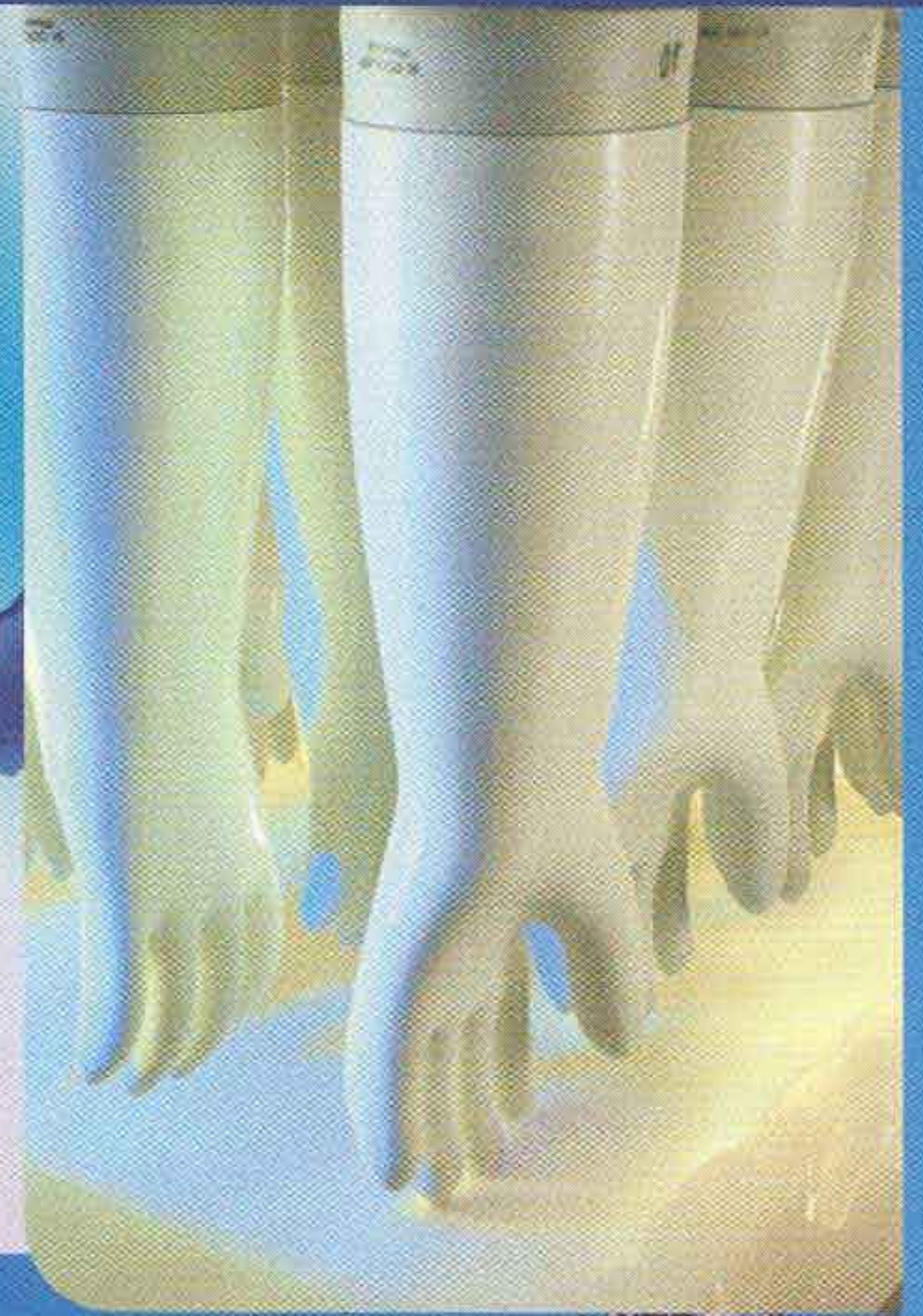
Each pair of gloves is packaged in a different coloured opaque sachet depending on its class of protection.

The following information is given on the packaging : class, size, categories, type of cuff, length, test date, manufacture batch number and validation batch number

### Marking

The diagram illustrates the marking requirements for gloves, showing various symbols and their corresponding information:

- Symbol IEC 60417-5216 suitable for live-working:** Represented by a triangle with a smaller triangle inside.
- Standard references:** EN 60903:2003 IEC 60903:2002
- Class & Categories:** 00 / AZC
- Month & year of production:** 01 / 05
- Manufacturer's name:** REGETEX
- Size of gloves:** 10
- Validation batch number:** LOT XXXX
- CE mark:** CE 0333
- Id no. of the Notified Body monitoring our Quality system:** 0333
- Date of the first use:** A box with a horizontal line.
- Marking of the periodical inspection dates:** A box with a horizontal line.



## Electrician gloves take 29 days to manufacture

### STAGE 1 - RECEIPT AND PREPARATION OF RAW MATERIALS 4 days

- Quantitative and qualitative inspections of raw materials : for each latex delivery, samples are sent to an external laboratory for acceptance on the basis of criteria that are more restricting than the standards in force,
- Micronisation of solids for optimum dispersion in the latex base.

### STAGE 2 - PRODUCTION 2 days

- Systematic acid cleaning of porcelain forms,
- Daily verification of manufacturing parameters (pH, density, hygrometry, conductivity, etc.),
- Dipping procedure: from 45 minutes to 4 hours depending on the class of gloves to be produced).

### STAGE 3 - VALIDATION OF PRODUCTION BATCHES 21 days

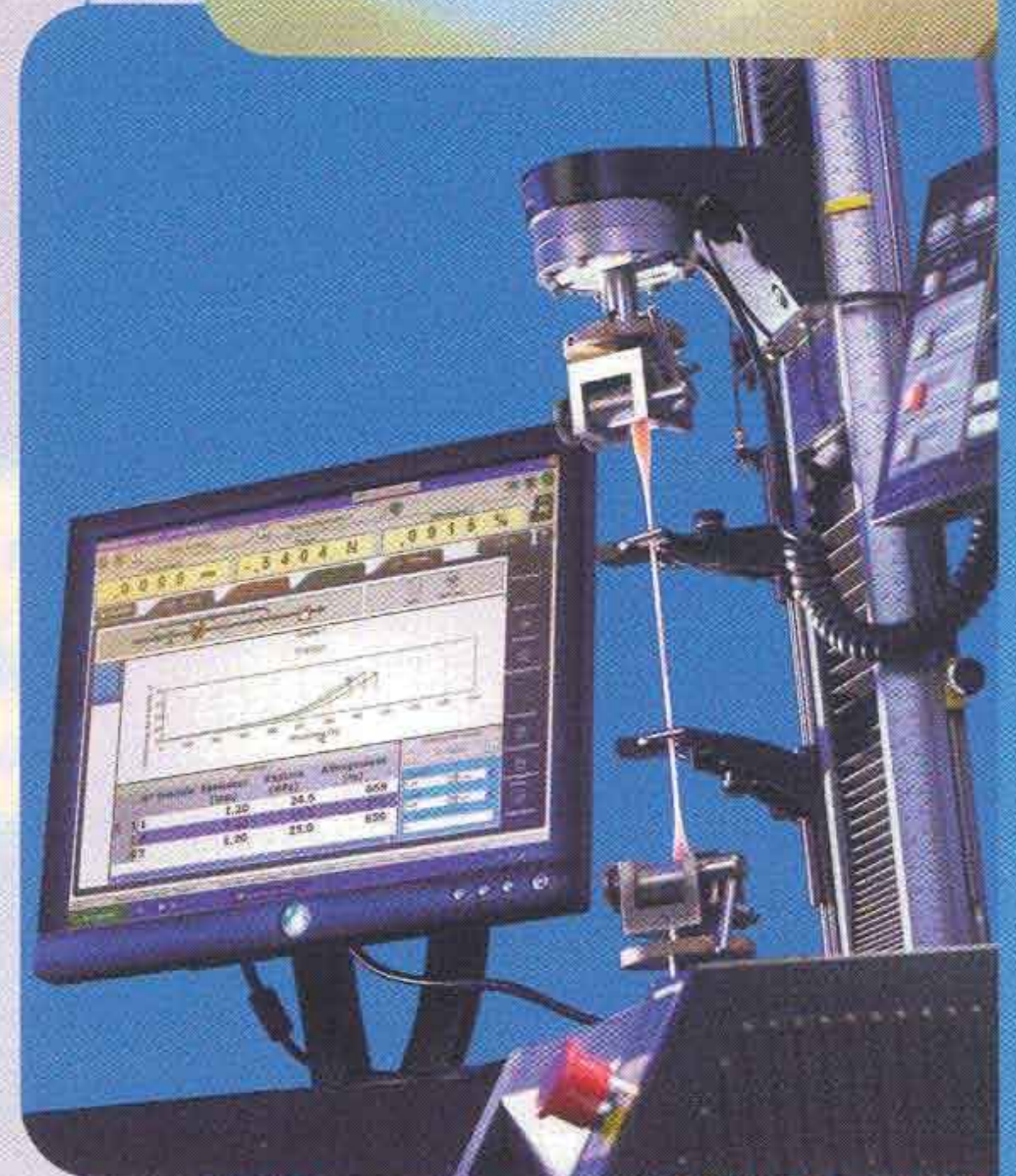
In accordance with the normative requirements, each production batch must be validated in order to be marketed. This validation involves the implementation of the aforementioned tests : it may consist in the sampling of 200 gloves for one batch and require two people to be working full time.

### STAGE 4 - HANDLING ORDERS 3 days

Orders are integrated into the production timetable and started with the electrical test to the proof voltage, which completes the production process of the insulating gloves and allows for the application of the following stages :

- Cut,
- Marking,
- Sealed packaging.

All the manufacturing and inspection stages are documented by means of instruction in accordance with the quality management system ISO 9001:2000 in place.



# REGELTEX



On the European level, Personal Protective Equipment (PPE) is governed by the Directive 89/686/CEE, which classifies it depending on the risks covered :

- category I : minor risks,
- category II : intermediary risks,
- category III : major risks (mortal risks).

For each category, the directive defines the procedures to be adopted for product certification and thus allows for the affixing of the "CE" mark.

For category III (in which our insulating glove range for live working is classed), the directive provides for :

- product certification by a notified body who delivers the EC type examination certificates,
- the setting up of a manufacture monitoring system, either through an EC quality control system for the final product (procedure 11a), or through a system for ensuring EC quality of production by means of monitoring (procedure 11b).



REGELTEX has chosen the second solution with the establishment of a quality management system ISO 9001:2000, certified and verified annually by «AFAQ-AFNOR Certification», the notified body by the European Commission for monitoring procedure 11b.

The European directive provides a legislative framework for the free distribution of PPE in Europe.

Compliance with harmonised European standards (EN) proves conformity with this directive.

Our products meet the specifications described in the standard EN 60903:2003 and in the IEC international standard IEC 60903:2002 which specify the performances of gloves of insulating material for live working.

Designation of tests	Routine tests	Sampling tests
<i>Visual inspections</i>		
Shape, Workmanship & Finish .....	✓	✓
Dimensions & Thicknesses .....	✓	✓
Marking & Packaging .....	✓	✓
<i>Electrical tests</i>		
Proof test voltage test .....	✓	✓
Measure of leakage currents during electrical tests .....	✓	✓
Withstand test voltage after conditioning for 16 hr in water .....		✓
<i>Mechanical tests</i>		
Tensile strength .....		✓
Elongation at break .....		✓
Puncture resistance .....		✓
Tension set .....		✓
<i>Ageing test</i> .....		✓
<i>Thermal tests</i>		
Flame retardancy .....		✓
Low temperature .....		✓
<i>Categories</i>		
Resistance to acid .....		✓
Resistance to oil .....		✓
Resistance to ozone .....		✓
Resistance to very low temperatures .....		✓

LEGISLATIVE AND NORMATIVE REGULATIONS

Manufacturer of insulating gloves for live working



To meet our customers' expectations, REGELTEX has chosen a range of accessories that are directly complementary to the good use or storage of electrician gloves.


### Leather overgloves

Overgloves must be worn over insulating gloves to protect against mechanical risks and, when necessary, against electric arc risks.

These leather cowhide gloves with webbed thumbs have a 10 cm cuff in cow split with a tightening velcro strap on the back of the hand.

The cowhide leather is treated with silicone to increase its waterproof characteristics.



Reference	sizes	mechanical resistances	length	type of leather	packing*
RGX SG A	8	 EN-388 abrasion 2 blade cut 1 tear 2 puncture 2	300 mm	waterproofed	10
RGX SG B	9		310 mm	cowhide	10
RGX SG C	10		320 mm	& cuff in	10
RGX SG D	11		330 mm	cowsplit	10

\*with technical leaflet

### Transport bag

This accessory is made from waterproof PVC canvas, with a reinforced edge, equipped with a clasp and loop so that it can be fixed to a belt. The bag is ideal for carrying gloves during work on site.

Dimensions : 160x39x50 (in mm)

Reference : RGX SAC



### Pneumatic tester

Before using insulating gloves for live working, the EN 60903 and IEC 60903 standards recommend a visual inspection by inflating the gloves with air to detect any possible leakages.

The pneumatic tester is a pump system optimising inflation and thus visual inspection, especially at the cuff level.

*NB* : in view of the thickness of the gloves class 1, 2, 3 and 4, inflation by the tester is not appropriate. For these gloves, inspection of the inside and outside surfaces must be done. An electric test every six months is strongly recommended.

Reference : RGX VP





### Storage box

For better maintenance, it is essential that the gloves are stored flat, away from light, and unfolded. This injected plastic box, with its closing system using clips and equipped with a handle to make it easier to carry thus optimises the storage conditions, particularly in vehicles used on site.

In view of its dimensions (170x470x50 mm), this box is suitable for gloves of classes 00 and 0.

Reference : *RGX CP*

For the other classes, metal wall boxes are available on request.

Reference : *RGX CM*



### Talc bottle

100 ml bottle of Luzenac 2 talc. Talc makes the insulating gloves more comfortable to wear by limiting the effects of sweating.

Reference : *RGX FT*

### Inner mittens

Wearing these inner gloves also limits the effects of sweating: their mitten form means that maximum dexterity can be maintained.

Reference : *RGX MC*

