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 via certification

your delivery of 2010-02-12	your reference	our reference PVH/3176	date Zwijnaarde, 2010-04-02
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**Analysis Report 72927**

Required tests :

- Determination of the whole glove integrity
- Determination of the seam strength on existing seam
- Determination of the puncture resistance
- Determination of the blade cut resistance
- Determination of the gloved finger dexterity
- Determination of the time for the removal of gloves
- Washing and drying
- Determination of the use of banned azo dyes (HPLC-DAD)
- Protective gloves for firefighters
- Burning behaviour

Identification number	Information given by the client	Date of receipt
T001578	B0901 gloves	2010-02-12

Pros Van Hoeyland  
 order responsible

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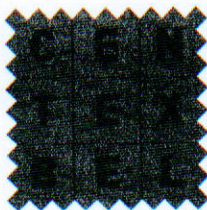
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Reference : T001578 - B0901 gloves

Determination of the whole glove integrity

**1. Method:**

Applied standard : EN 511 5.3 (year: 2006)  
ISO 15383 6.4.3 annex A (year: 2001)

Deviations of the standard : -

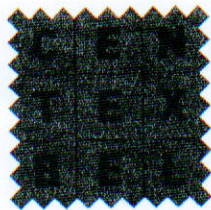
Pretreatment : according ISO 15383 5.4.1 was not carried out

Number of specimens : 3 pair of gloves

**2. Results:**

Date of ending the test: 22-02-2010

specimen	does the glove do fulfil the requirements of the test?
1. left hand (size 9)	yes
2. right hand (size 9)	yes
3. left hand (size 9)	yes
4. right hand (size 9)	yes
5. left hand (size 10)	yes
6. right hand (size 10)	no



Reference : T001578 - B0901 gloves

Determination of the seam strength on existing seam

**1. Method:**

Applied standard : EN ISO 13935-2 (year: 1999)  
on conditioned material (20°C and 65% rel. humidity)

Deviations from the standard : -

Apparatus : Instron, type CRE, class 0,5 - cell of 1 kN

Distance between the jaws : 100 mm

Number of test specimen : 5

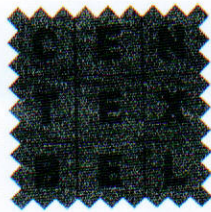
**2. Results:**

Date of ending the test: 01-04-2010

test specimen	force (in N)
1	377 (2)
2	921 (2)
3	972 (4)
4	531 (2)
5	365 (2)
average	630 N

Remarks:

- (1) fabric tear
- (2) fabric tear at the jaws
- (3) fabric tear at seam
- (4) sewing threads breakage
- (5) threads pull-out
- (6) any combination of (1) up to (5)



Reference : T001578 - B0901 gloves

Determination of the puncture resistance

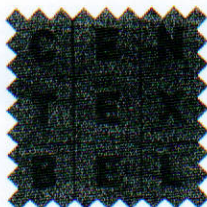
1. Method:

Applied standard : EN 388 part 6.4 (year: 2003)  
on conditioned material (23°C and 50% rel. humidity)  
Deviations of the standard : the test hasn't been carried out in the standard atmosphere,  
but as soon as possible after conditioning  
Apparatus : Instron, type CRE, class 0,5 - cell of 1 kN  
Perforation speed : 100 mm/min.  
Used spike : test spike of steel with rounded top  
Number of specimens : 4

2. Results:

Date of ending the test: 22-02-2010

specimen	force (N)
1	158
2	291
3	250
4	175
minimum	158 N



Reference : T001578 - B0901 gloves

Determination of the blade cut resistance

1. Method:

Applied standard : EN 388 §6.2 (year: 2003)  
on conditioned material (23°C and 50% rel. humidity)  
Deviations of the standard : the test hasn't been carried out in the standard atmosphere,  
but as soon as possible after conditioning  
Apparatus : coupetest with circular blade  
Number of specimens : 4

2. Results:

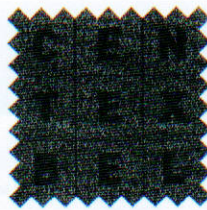
Date of ending the test: 23-02-2010

ref. fabric	T001578 ↗ palm of the glove	ref. fabric	index
1,2	150*	9,4	29,3
1,3	150	10,3	26,9
1,4	155*	9,4	29,7
			average index: 28,6

ref. fabric	T001578 ↖ palm of the glove	ref. fabric	index
1,2	96,1	9,2	19,5
1,3	150*	9,3	29,3
1,4	83,3	6,4	22,4
			average index: 23,7

Remark: If there is more than half a turn difference between the results of the reference fabric before and after the cutting on the tested sample, on performed only 3 trials each time with a new knife.

\* = manual stop



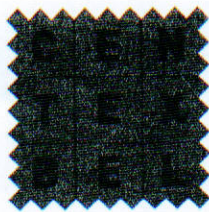
Reference : T001578 - B0901 gloves

## 2. Results:

Date of ending the test: 23-02-2010

ref. fabric	T001578 ↗ back of the glove	ref. fabric	index
1,3	10,1	1,3	8,8
1,3	8,2	1,3	7,3
1,3	8,2	1,3	7,3
1,3	7,3	1,3	6,6
1,3	6,4	1,3	5,9
			average index: 7,2

ref. fabric	T001578 ↖ back of the glove	ref. fabric	index
1,3	6,3	1,3	5,9
1,3	7,3	1,4	6,4
1,4	8,2	1,4	6,9
1,4	10,1	1,4	8,2
1,4	14,1	1,4	11,1
			average index: 7,7



Reference : T001578 - B0901 gloves

Determination of the gloved finger dexterity

1. Method:

Applied standard : EN 420 part 6.2 (year: 2003)  
The used pins have a length of 40 mm and a diameter of respectively 5 mm, 6,5 mm, 8 mm, 9,5 mm and 11 mm.

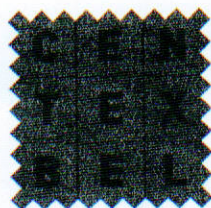
Deviations of the standard : -  
Number of specimens : 4 gloves

2. Results:

Date of ending the test: 22-02-2010

size of the glove	right hand
7	Ø 9,5
7	Ø 9,5
7	Ø none
7	Ø none
smallest pin	Ø 9,5 mm

Result: the diameter of the smallest pin that could be taken: 9,5 mm



Reference : T001578 - B0901 gloves

Determination of the time for the removal of gloves

**1. Method:**

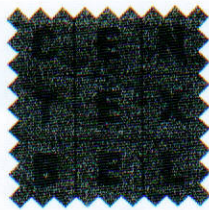
Applied method : EN 659 (year: 2003)  
 Deviations of the standard : -  
 Number of specimens : 3 pairs of gloves  
 Conditioning : - dry at 20°C and 65% rel. humidity  
                   : - wet conditioning at 20°C for 2 min.  
   (gloves first filled with water prior to immersion)  
 Draining time : 5 min.  
 Number of operators : 1

**2. Results:**

Date of ending the test: 22-02-2010

time for the removal of one pair of gloves		
glove size	pair	wet
9	1	2,4
9	2	2,2
10	3	2,4
	mean value	2,3 s
	final result	2 s





Reference : T001578 - B0901 gloves

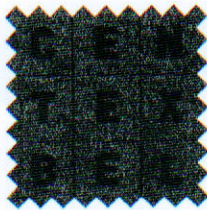
Washing and drying

1. Method:

Applied standard : ISO 6330 (year: 2000-2008): washing procedure method: 5A  
Deviations of the standard : -  
Washing machine : Wascator type FOM 71  
Number of washing cycles : 5  
Detergent used : ECE - detergent  
Temperature : 40°C  
Drying method : flat dry (after each wash cycle)  
Total mass (test specimens + load) : 2 kg  
Mass of the test specimens : 280 g

2. Results:

Date of ending the test: 05-03-2010



Reference : T001578 - B0901 gloves

Determination of the use of banned azo dyes (HPLC-DAD)

**1. Method**

Standard used : EN 14362-1

Reductive cleavage : The sample is treated with sodium dithionite, in a closed vessel containing a citrate buffered aqueous solution (pH 6) at 70°C. The released amines are transferred using Extrelut columns into a tert-butylmethylether phase. Concentration and transfer to methanol.

Analysis : HPLC with diode array detection, confirmation : UV spectrum

Traced aryl amines : 2,4,5-Trimethylaniline, 2,4-Diaminoanisole, 2,4-Toluyldiamine, 2-Amino-4-nitrotoluene, 2-Naphthylamine, 3,3'-Dimethoxybenzidine, 3,3'-Dimethyl-4,4'-diaminobiphenylmethane, 3,3'-Dimethylbenzidine, 3,3'-Dichlorobenzidine, 4,4'-Diaminobiphenylmethane, 4,4'-Methylene-bis-(2-chloroaniline), 4,4'-Oxydianiline, 4,4'-Thiodianiline, 4-Aminobiphenyl, 4-Chloro-o-toluidine, Benzidine, o-Aminoazotoluene, o-Toluidine, p-Chloroaniline, p-Cresidine  
4-Aminoazobenzene (°), o-Anisidine  
(°) Actual scientific knowledge does not allow to identify those dyes that may split off 4-aminoazobenzene.

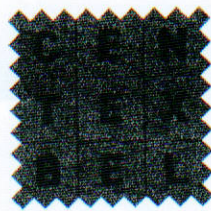
**2. Results**

Date of ending the test : 2010-02-24

Tested colour(s) : blue, orange

Determination limit : 20 ppm

Results : There are no carcinogenic aryl amines present in a concentration higher than the determination limit.



Reference : T001578 - B0901 gloves

Protective gloves for firefighters  
Burning behaviour

1. Method:

Test Method - EN 407 § 6.3 (2004)  
Standard - EN 659 (2003)  
Deviations from the standard - /

2. Results:

End of tests: 19 February 2010

*Flame on the thumb*

	3s	15s
afterflame time (s)	0	0
afterglow time (s)	0	0
dripping	no	no
seam destroyed	no	no
melting of innermost layer	no	no

*Flame on top of the finger*

	3s	15s
afterflame time (s)	0	0
afterglow time (s)	0	0
dripping	no	no
seam destroyed	no	no
melting of innermost layer	no	no

*Flame on the other seams*

	3s	15s
afterflame time (s)	0	0
afterglow time (s)	0	0
dripping	no	no
seam destroyed	no	no
melting of innermost layer	no	no

Requirements in accordance with EN 659 (2003) § 3.7

- afterflame time  $\leq 2$  s
- afterglow time  $\leq 5$  s
- no dripping
- seams shall not be destroyed (test 15 s)
- no melting of the innermost layer (visual inspection)