INRICHTING ERKEND BIJ TOEPASSING VAN DE BESLUITWET VAN 30 JANUARI 1947 / ETABLISSEMENT RECONNU PAR APPLICATION DE L'ARRÊTE-LOI DU 30 JANVIER 1947

**Klopman International Srl**
**Mr. Sergio Palazzi**
**Via Vona Armando no 34**
**03100 FROSINONE**
**Italië**

| **Your notice of** | **Your reference** | **Date** |
|---|---|---|
| 11-01-2019 | | 20-02-2019 |

# Analysis Report 19.00182.01

Required tests :

| | |
|---|---|
| **ISO 15797 (2018)** | **Industrial washing and drying** |
| **ISO 6530 (2005)** | **Protection against liquid chemicals** |
| **ISO 13934-1 (1999)** | **Determination of the breaking strength and elongation** |
| **ISO 9073-4 (1997)** | **Determination of tearing resistance - method of trapezoid** |
| **EN 530-2 (2010)** | **Determination of the abrasion resistance on Martindale** |
| **EN 863 (1995)** | **Determination of the puncture resistance** |
| **EN 368 (1992)** | **Protection against liquid chemicals** |

| Identification number | Information given by the client | Date of receipt |
|---|---|---|
| T1900681 | INDESTRUCTIBLE ROYAL BOX - Pes/Co 65/35%, twill, ± 245 gsm | 11-01-2019 |

Hilde Rubben
Order responsible

This report may be reproduced, as long as it is presented in its entire form, without written permission of Centexbel.
The results of the analysis cover the received samples. Centexbel is not responsible for the representativeness of the samples.
In assessing compliance with the specifications, we did not take into account the uncertainty on the test results.

ISO 17025 BELAC 056-TEST
ilac-MRA
**CENTEXBEL • textile competence centre • www.centexbel.be • www.vkc.be**
GENT • Technologiepark 70 • BE-9052 Zwijnaarde, Belgium • phone +32 9 220 41 51 • fax +32 9 220 49 55 • gent@centexbel.be
GRÂCE-HOLLOGNE • Rue du Travail 5 • BE-4460 Grâce-Hollogne, Belgium • phone +32 4 296 82 00 • g-h@centexbel.be
KORTRIJK • Etienne Sabbelaan 49 • BE-8500 Kortrijk, Belgium • phone +32 56 29 27 00 • fax +32 56 29 27 01 • info@vkc.be
VAT BE 0459.218.289 • IBAN BE44 2100 4729 6545 • BIC GEBABEBB

INRICHTING ERKEND BIJ TOEPASSING VAN DE BESLUITWET VAN 30 JANUARI 1947 / ETABLISSEMENT RECONNU PAR APPLICATION DE L'ARRÊTE-LOI DU 30 JANVIER 1947

**Reference:** **T1900681 - INDESTRUCTIBLE ROYAL BOX - Pes/Co 65/35%, twill, ± 245 gsm**

***Industrial washing and drying***

| | |
|---|---|
| Date of ending the test | 06-02-2019 |
| Standard used | ISO 15797 (2018) |
| | |
| Deviation from the standard | - |
| Apparatus | IPSO HF 234 |
| Used detergent | 20 g without optical brightener / kg dry material |
| Washing method | Table 4.2 |
| Temperature | 75°C |
| Drying method | A = tumble dry (80°C) after each washingcycle |
| Final treatment | Impregnation after each washing cycle |
| Number of washing cycles | 5 |
| Mass of the test specimens | 1650 g |

Sample generated: T1900681_01d

INRICHTING ERKEND BIJ TOEPASSING VAN DE BESLUITWET VAN 30 JANUARI 1947 / ETABLISSEMENT RECONNU PAR APPLICATION DE L'ARRÊTE-LOI DU 30 JANVIER 1947



**Reference:** **T1900681_01d - INDESTRUCTIBLE ROYAL BOX - Pes/Co 65/35%, twill, ± 245 gsm**

***Protection against liquid chemicals***

| | |
|---|---|
| Date of ending the test | 15-02-2019 |
| Standard used | ISO 6530 (2005) |
| Product standard | EN14325 (2018) |

| | |
|---|---|
| Deviation from the standard | Execution at room temperature |
| Number of test samples | 6 samples of 360 x 235 mm<br>Fabrics : direction 1 = warp - direction 2 = weft<br>Non-woven : direction 1 = production - direction 2 = perpendicular to it<br>Manufactured: direction 1 = length - direction 2 = width<br>Leather and gloves: 1 direction |

Results

| | |
|---|---|
| Temperature in °C | 22 |
| Average mass per unit in g/m² | 252.0 |
| Evaporation correction | None |

H2SO4, 30%

| Sample | Direction 1 | | | Direction 2 | | |
|---|---|---|---|---|---|---|
| | P | R | A | P | R | A |
| 1 | 0.0 % | 99.7 % | 0.0 % | 0.0 % | 99.7 % | 0.0 % |
| 2 | 0.0 % | 99.6 % | 0.0 % | 0.0 % | 99.7 % | 0.0 % |
| 3 | 0.0 % | 99.7 % | 0.0 % | 0.0 % | 99.6 % | 0.0 % |
| Average | 0.0 % | 99.6 % | 0.0 % | 0.0 % | 99.6 % | 0.0 % |

NaOH, 10%

| Sample | Direction 1 | | | Direction 2 | | |
|---|---|---|---|---|---|---|
| | P | R | A | P | R | A |
| 1 | 0.0 % | 99.4 % | 0.1 % | 0.0 % | 99.5 % | 0.1 % |
| 2 | 0.0 % | 99.4 % | 0.0 % | 0.0 % | 99.5 % | 0.0 % |
| 3 | 0.0 % | 99.5 % | 0.0 % | 0.0 % | 99.5 % | 0.0 % |
| Average | 0.0 % | 99.4 % | 0.0 % | 0.0 % | 99.5 % | 0.0 % |

Butan-1-ol (boiling point = 117 °C)

| Sample | Direction 1 | | | Direction 2 | | |
|---|---|---|---|---|---|---|
| | P | R | A | P | R | A |
| 1 | 0.9 % | 95.6 % | 2.2 % | 0.7 % | 95.7 % | 2.2 % |
| 2 | 1.4 % | 95.3 % | 2.4 % | 0.9 % | 96.1 % | 2.1 % |

INRICHTING ERKEND BIJ TOEPASSING VAN DE BESLUITWET VAN 30 JANUARI 1947 / ETABLISSEMENT RECONNU PAR APPLICATION DE L'ARRÊTE-LOI DU 30 JANVIER 1947

| | | | | | | |
|---|---|---|---|---|---|---|
| 3 | 0.4 % | 96.4 % | 2.1 % | 0.9 % | 95.3 % | 2.5 % |
| Average | 0.9 % | 95.8 % | 2.2 % | 0.8 % | 95.7 % | 2.3 % |

O-xylene (boiling point = 144 °C)

| Sample | Direction 1 | | | Direction 2 | | |
|---|---|---|---|---|---|---|
| | P | R | A | P | R | A |
| 1 | 0.8 % | 97.1 % | 1.3 % | 0.8 % | 96.9 % | 1.5 % |
| 2 | 1.8 % | 96.0 % | 1.5 % | 2.1 % | 95.6 % | 1.4 % |
| 3 | 1.0 % | 96.6 % | 1.4 % | 1.4 % | 96.1 % | 1.6 % |
| Average | 1.2 % | 96.6 % | 1.4 % | 1.4 % | 96.2 % | 1.5 % |

P = Penetration index, R = Repulsion index, A = Absorption index

INRICHTING ERKEND BIJ TOEPASSING VAN DE BESLUITWET VAN 30 JANUARI 1947 / ETABLISSEMENT RECONNU PAR APPLICATION DE L'ARRÊTE-LOI DU 30 JANVIER 1947

**Reference:** **T1900681_01d - INDESTRUCTIBLE ROYAL BOX - Pes/Co 65/35%, twill, ± 245 gsm**

***Determination of the breaking strength and elongation***

| | |
|---|---|
| Date of ending the test | 12-02-2019 |
| Standard used | ISO 13934-1 (1999) |
| Product standard | EN14325: 2018 |
| | |
| Deviation from the standard | - |
| Conditioning | 20°C, relative humidity 65% |
| Apparatus | Instron, type CRE, class 0,5 |
| Cell | 5 kN (Warp direction)<br>1 kN (Weft direction) |
| Pretension (automatically) | 5 N |
| Clamps sheeting | Covered with rubber |
| Rate | 100 mm/min |
| Number of test specimens | 5 (Warp direction)<br>5 (Weft direction) |
| Gauge length | 200 mm |
| Width | Fringed, 50 mm |

Conditioned

| | Warp direction | | Weft direction | |
|---|---|---|---|---|
| Specimen | Force (N) | Elongation (%) | Force (N) | Elongation (%) |
| #1 | 1 541 | 27.9 | 687 | 26.2 |
| #2 | 1 583* | 28.6* | 668 | 25.8 |
| #3 | 1 573 | 28.7 | 674 | 25.9 |
| #4 | 1 525 | 28.2 | 686 | 26.2 |
| #5 | 1 551 | 28.3 | 663 | 25.3 |
| Average | 1 600 N | 28.5 % | 680 N | 26.0 % |

Remark: * = Specimen breaks at the edge of the jaws (the clamp breakings are mentioned but not rejected)

INRICHTING ERKEND BIJ TOEPASSING VAN DE BESLUITWET VAN 30 JANUARI 1947 / ETABLISSEMENT RECONNU PAR APPLICATION DE L'ARRÊTE-LOI DU 30 JANVIER 1947

**Reference:** **T1900681_01d - INDESTRUCTIBLE ROYAL BOX - Pes/Co 65/35%, twill, ± 245 gsm**

***Determination of tearing resistance - method of trapezoid***

| | |
|---|---|
| Date of ending the test | 12-02-2019 |
| Standard used | ISO 9073-4 (1997) |
| Product standard | EN14325: 2018 |
| | |
| Deviation from the standard | - |
| Conditioning | 20°C, relative humidity 65% |
| Apparatus | Instron, type CRE, class 0,5 |
| Cell | 1kN |
| Rate | 100 mm/min |
| Number of test specimens | 5 (Warp direction)<br>5 (Weft direction) |
| Calculation | Automatic - Mean of all peaks |

| | Tear resistance (N) | |
|---|---|---|
| | Warp direction | Weft direction |
| #1 | 125 | 51.9 |
| #2 | 133 | 49.0 |
| #3 | 142 | 49.0 |
| #4 | 129 | 46.4 |
| #5 | 125 | 48.9 |
| Average | 131 N | 49.0 N |

Remark For tests in warp direction, the warp yarns tear, for tests in weft direction, the weft yarns tear.

INRICHTING ERKEND BIJ TOEPASSING VAN DE BESLUITWET VAN 30 JANUARI 1947 / ETABLISSEMENT RECONNU PAR APPLICATION DE L'ARRÊTE-LOI DU 30 JANVIER 1947

**Reference:** **T1900681_01d - INDESTRUCTIBLE ROYAL BOX - Pes/Co 65/35%, twill, ± 245 gsm**

***Determination of the abrasion resistance on Martindale***

| | |
|---|---|
| Date of ending the test | 12-02-2019 |
| Standard used | EN 530-2 (2010) |
| Product standard | EN 13034 (2005) + A1 (2009) |
| Deviation from the standard | - |
| Conditioning | 20°C, relative humidity 65% |
| Apparatus | Martindale Wear and Abrasion Tester |
| Used pressure | 9 kPa |
| Abradant | "00" (fixed with double-sided adhesive tape) |
| Number of test specimens | 4 |

| | Number of cycles to breakdown the specimen |
|---|---|
| #1 | >2000 |
| #2 | >2000 |
| #3 | >2000 |
| #4 | >2000 |

Remark The test was carry out without using the "pressurepot"

INRICHTING ERKEND BIJ TOEPASSING VAN DE BESLUITWET VAN 30 JANUARI 1947 / ETABLISSEMENT RECONNU PAR APPLICATION DE L'ARRÊTE-LOI DU 30 JANVIER 1947

**Reference:** **T1900681_01d - INDESTRUCTIBLE ROYAL BOX - Pes/Co 65/35%, twill, ± 245 gsm**

***Determination of the puncture resistance***

| | |
|---|---|
| Date of ending the test | 13-02-2019 |
| Standard used | EN 863 (1995) |
| Product standard | EN 14325: 2018 |
| | |
| Deviation from the standard | - |
| Conditioning | 20°C, relative humidity 65% |
| Apparatus | Instron, type CRE, class 0,5 |
| Cell | 1 kN |
| Perforation speed | 100 mm/min |
| Used spike | Test spike of steel with flat top |
| Number of test specimens | 5 |

Conditioned

| Specimen | Force (N) |
|---|---|
| #1 | 69,37 |
| #2 | 73,34 |
| #3 | 76,02 |
| #4 | 72,42 |
| #5 | 83,01 |
| Average | 75 N |

INRICHTING ERKEND BIJ TOEPASSING VAN DE BESLUITWET VAN 30 JANUARI 1947 / ETABLISSEMENT RECONNU PAR APPLICATION DE L'ARRÊTE-LOI DU 30 JANVIER 1947



**Reference:** **T1900681_01d - INDESTRUCTIBLE ROYAL BOX - Pes/Co 65/35%, twill, ± 245 gsm**

***Protection against liquid chemicals***

| | |
|---|---|
| Date of ending the test | 15-02-2019 |
| Standard used | EN 368 (1992) |
| Product standard | EN 13034 (2005) + A1 (2009) |

| | |
|---|---|
| Deviation from the standard | Execution at room temperature |
| Number of test samples | 6 samples of 360 x 235 mm<br>Fabrics : direction 1 = warp - direction 2 = weft<br>Non-woven : direction 1 = production - direction 2 = perpendicular to it<br>Manufactured: direction 1 = length - direction 2 = width<br>Leather and gloves: 1 direction |

Results
Temperature in °C 22

NaOH, 10%

| Sample | Direction 1 | | Direction 2 | |
|---|---|---|---|---|
| | P | R | P | R |
| 1 | 0.0 % | 99.4 % | 0.0 % | 99.3 % |
| 2 | 0.0 % | 99.5 % | 0.0 % | 99.5 % |
| 3 | 0.0 % | 99.4 % | 0.0 % | 99.2 % |
| Average | 0.0 % | 99.4 % | 0.0 % | 99.3 % |

H2SO4, 30%

| Sample | Direction 1 | | Direction 2 | |
|---|---|---|---|---|
| | P | R | P | R |
| 1 | 0.0 % | 99.5 % | 0.0 % | 99.6 % |
| 2 | 0.0 % | 99.8 % | 0.0 % | 99.7 % |
| 3 | 0.0 % | 99.8 % | 0.0 % | 99.6 % |
| Average | 0.0 % | 99.7 % | 0.0 % | 99.6 % |

P = Penetration index, R = Repulsion index

INRICHTING ERKEND BIJ TOEPASSING VAN DE BESLUITWET VAN 30 JANUARI 1947 / ETABLISSEMENT RECONNU PAR APPLICATION DE L'ARRÊTE-LOI DU 30 JANVIER 1947



**Sample history**

**T1900681_01d** **INDESTRUCTIBLE ROYAL BOX - Pes/Co 65/35%, twill, ± 245 gsm**

From sample T1900681 and the following procedure (INDESTRUCTIBLE ROYAL BOX - Pes/Co 65/35%, twill, ± 245 gsm)

***Industrial washing and drying***

| | |
|---|---|
| Date of ending the test | 06-02-2019 |
| Standard used | ISO 15797 (2018) |
| | |
| Deviation from the standard | - |
| Apparatus | IPSO HF 234 |
| Used detergent | 20 g without optical brightener / kg dry material |
| Washing method | Table 4.2 |
| Temperature | 75°C |
| Drying method | A = tumble dry (80°C) after each washingcycle |
| Final treatment | Impregnation after each washing cycle |
| Number of washing cycles | 5 |
| Mass of the test specimens | 1650 g |