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Your notice of	Your reference	our reference	date
2010-02-01	03/12/2009-042	CR/ 981_2010	2010-02-04

Certification report version 2

1. Description of the tested article as provided by the manufacturer:

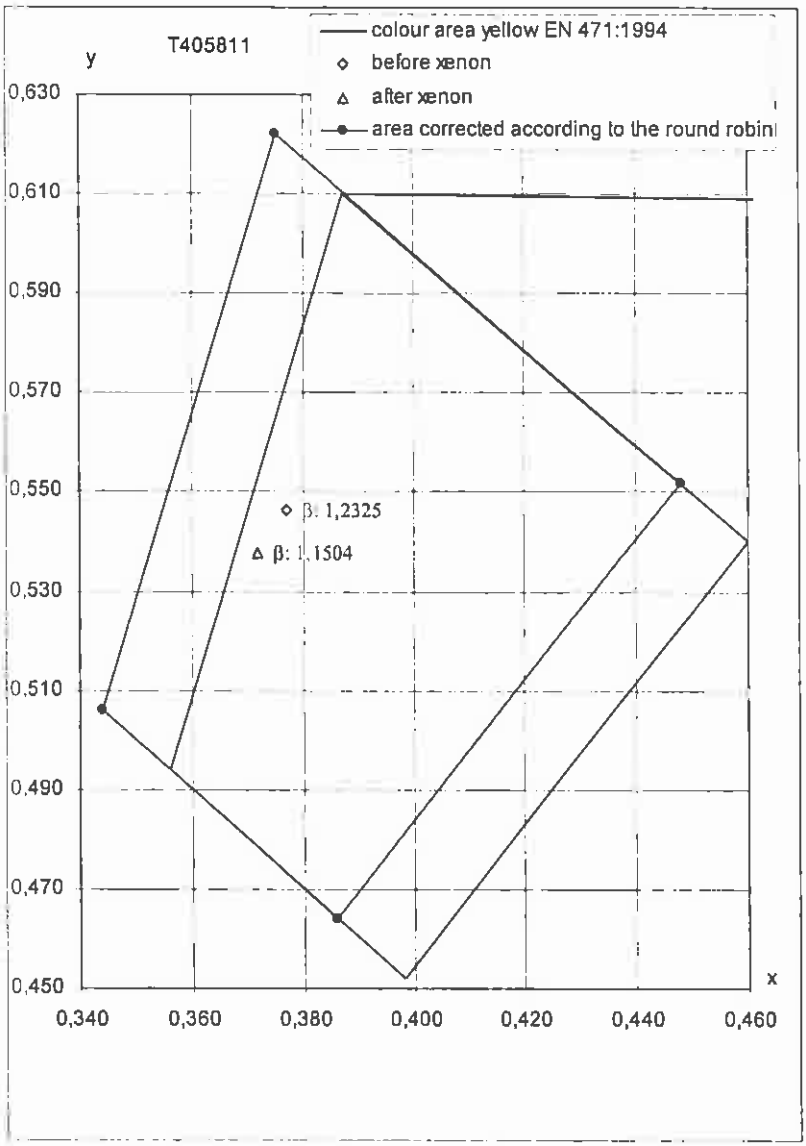
quality name:	full option Patent: E 1 336 001 / SURFACE TEXTILE HAUTE VISIBILITE / KERMEL/ L.THIRIOT
mass:	240 g/m²
composition:	kermel-containing mixture

2. Executed tests:

2.1. Fluorescent yellow

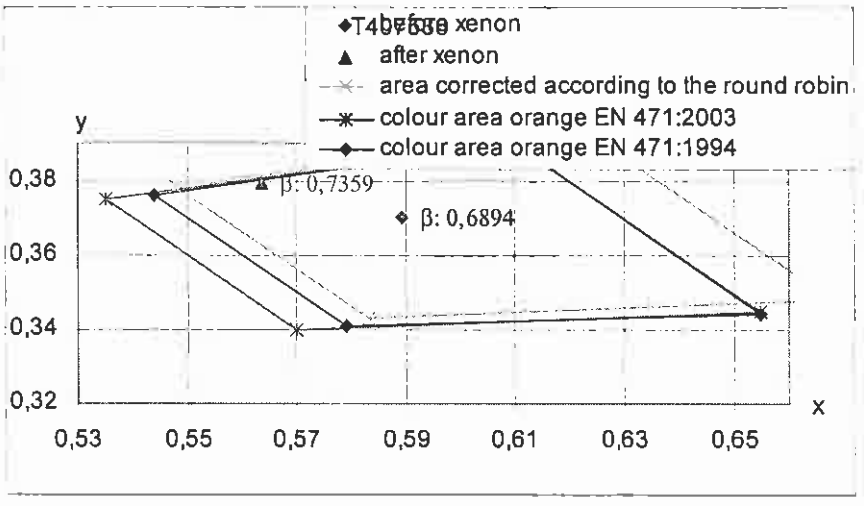
tests from EN 471: 2003 fluorescent colours	requirements	result
dimensional stability 5x(🧺+⚙)	not exceed ± 3% knitted fabrics: not exceed ± 5%	Wa:-2,2 % We:-0,6 %
tensile strength	tensile strength/ g/m² ≥2 and at least 400 N coated and laminated material: no requirement if elongation > 50%	Wa:1350 N We:1180 N
Chromaticity and luminance yellow	colour area see graph 1 luminance: corrected β min 0,772	PASS
colour fastness to rubbing	at least 4 of the grey scale	4-5
colour fastness to perspiration	colour change: at least 4 of the grey scale staining: at least 3 of the grey scale	5 4
colour fastness to dry cleaning	colour change: min. 4 of the grey scale staining: at least 4 of the grey scale	4 4-5
colour fastness to bleaching	colour change: at least 4 of the grey scale	4

tests from EN 471: 2003 fluorescent colours	requirements	result
colour fastness to washing	colour change: min. 4 to 5 of the grey scale staining: at least 4 of the grey scale	4-5 2 on PA 4 on other fibers
colour fastness to ironing	colour change: min. 4 to 5 of the grey scale staining: at least 4 of the grey scale	5 4-5
water vapour resistance	for coated and laminated fabrics: class 1: $R_{et} > 40$ m².Pa/W class 2: $20 < R_{et} \leq 40$ m².Pa/W class 3: $R_{et} \leq 20$ m².Pa/W	Not applicable



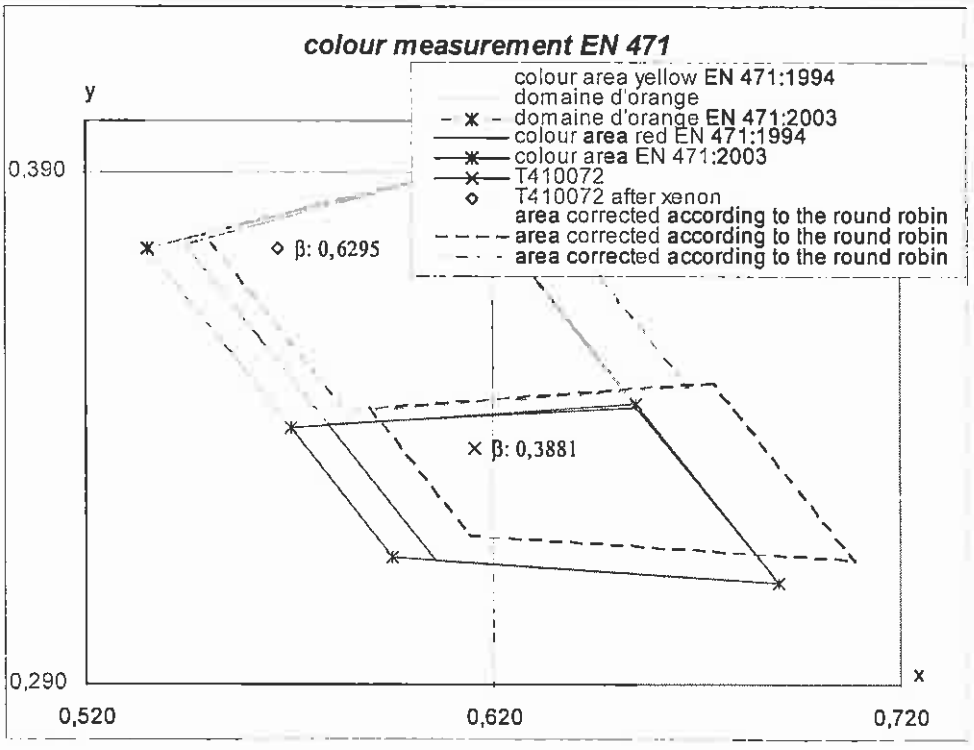
2.2. *fluorescent orange*

tests from EN 471: 2003 fluorescent colours	requirements	result
dimensional stability 5x(🧺+🧺)	not exceed ± 3% knitted fabrics: not exceed ± 5%	Wa:-2,2 % We:-0,6 %
tensile strength	tensile strength/ g/m² ≥2 and at least 400 N coated and laminated material: no requirement if elongation > 50%	Wa:1350 N We:1180 N
Chromaticity and luminance orange	colour area see graph 1 luminance: corrected β min 0,617	PASS
colour fastness to rubbing	at least 4 of the grey scale	4
colour fastness to perspiration	colour change: at least 4 of the grey scale staining: at least 3 of the grey scale	5 4-5
colour fastness to dry cleaning	colour change: min. 4 of the grey scale staining: at least 4 of the grey scale	4-5 4-5
colour fastness to bleaching	colour change: at least 4 of the grey scale	4-5
colour fastness to washing 🧺	colour change: min. 4 to 5 of the grey scale staining: at least 4 of the grey scale	4-5 3-4 on PA 4-5 on other fibers
colour fastness to ironing	colour change: min. 4 to 5 of the grey scale staining: at least 4 of the grey scale	5 5
water vapour resistance	for coated and laminated fabrics: class 1: R_{et} > 40 m².Pa/W class 2: 20 < R_{et} ≤ 40 m².Pa/W class 3: R_{et} ≤ 20 m².Pa/W	Not applicable



2.3. *fluorescent red*

tests from EN 471: 2003 fluorescent colours	requirements	result
dimensional stability 5x(🧺+🧺)	not exceed ± 3% knitted fabrics: not exceed ± 5%	Wa:-2,2 % We:-0,6 %
tensile strength	tensile strength/ g/m² ≥2 and at least 400 N coated and laminated material: no requirement if elongation > 50%	Wa:1350 N We:1180 N
Chromaticity and luminance red	colour area see graph 1 luminance: corrected β min 0,25	PASS
colour fastness to rubbing	at least 4 of the grey scale	4
colour fastness to perspiration	colour change: at least 4 of the grey scale staining: at least 3 of the grey scale	4-5 4
colour fastness to dry cleaning	colour change: min. 4 of the grey scale staining: at least 4 of the grey scale	4-5 2
colour fastness to bleaching	colour change: at least 4 of the grey scale	⊠
colour fastness to washing 75°C	colour change: min. 4 to 5 of the grey scale staining: at least 4 of the grey scale	4-5 4
colour fastness to ironing 🜂	colour change: min. 4 to 5 of the grey scale staining: at least 4 of the grey scale	4-5 4
water vapour resistance	for coated and laminated fabrics: class 1: R_{et} > 40 m².Pa/W class 2: 20 < R_{et} ≤ 40 m².Pa/W class 3: R_{et} ≤ 20 m².Pa/W	Not applicable



2.4. coated version all colours

tests from EN 470/1	requirements	result
flame spread	– no afterflame, (≤ 2s) – no afterglow (≤ 2s) – no flaming debris – no molten debris – no flaming to the top or either side edge – no hole formation	PASS
small splashes molten metal	at least 15 droplets	20 droplets
dimensional stability 5x(🐑+◎)	not exceed ± 3%	Wa:-2,2 % We:-0,6 %
tearing resistance	at least 15 N	Wa: 135 N We: 109 N
tensile strength	at least 300 N	Wa: 1428 N We: 1175 N

2.5. laminated version all colours

tests from EN 470/1	requirements	result
flame spread	– no afterflame, (≤ 2s) – no afterglow (≤ 2s) – no flaming debris – no molten debris – no flaming to the top or either side edge – no hole formation	PASS
small splashes molten metal	at least 15 droplets	20 droplets
dimensional stability 5x(🐑+◎)	not exceed ± 3%	Wa:-2,2 % We:-0,6 %
tearing resistance	at least 15 N	Wa: 135 N We: 109 N
tensile strength	at least 300 N	Wa: 1428 N We: 1175 N

2.6. All colours:

tests from EN 531:1995	requirements:	result
flame spread	– no afterflame, – no afterglow – no flaming debris – no molten debris – no flaming to the top or either side edge – no hole formation	PASS
dimensional stability 5x(🐑+◎)	not exceed ± 3%	Wa:-2,2 % We:-0,6 %

tests from EN 531:1995	requirements:		result
convection heat	HTI_{24}: < 3	→ B 0	HTI_{24} = 6 B1
	min 3 and max 6	→ B 1	
	min 7 and max 12	→ B 2	
	min 13 and max 20	→ B 3	
	min 21 and max 30	→ B 4	
	min 31	→ B 5	
radiation heat	t_2 < 8	→ C 0	t_2 = 20 C1
	min 8 and max 30	→ C 1	
	min 30 and max 90	→ C 2	
	min 90 and max 150	→ C 3	
	min 150	→ C 4	
molten aluminium	Deformation of the PVC film for < 100 g	→ D 0	not tested
	No deformation of the PVC film for projection min 100 g and max 200 g	→ D 1	
	min 201 g and max 350 g	→ D 2	
	min 351 g	→ D 3	
molten iron	Deformation of the PVC film for < 60 g	→ E 0	not tested
	No deformation of the PVC film for projection min 60 g and max 120 g	→ E 1	
	min 121 g and max 200 g	→ E 2	
	min 201 g	→ E 3	

tests from EN 533	requirements	result
flame spread before cleaning	at least index 1	Index 3
flame spread after cleaning	at least index 1	Index 3
dimensional stability 5x(+)	not exceed ± 3%	Wa:-2,2 % We:-0,6 %

test according to EN 1149-3: 2004	requirements	result
dimensional stability 5x(+)	not exceed ± 3%	Wa:-2,2 % We:-0,6 %
method 2: shielding factor S and half decay time t_{50}	t_{50}<4 or S>0,2	t_{50}=0,01 S=0,64

2.7. *Fluorocarbon treated version all colours*

tests according to EN 13034:2005	requirements	test result
dimensional stability	not exceed ± 3%	Wa: We:

tests according to EN 13034:2005	requirements	test result
abrasion	class 1: >10 cycles class 2: >100 cycles class 3: >500 cycles class 4: >1 000 cycles class 5: >1 500 cycles class 6: >2 000 cycles	> 2000 cycles
tearing resistance	class 1: >10 N class 2: >20 N class 3: >40 N class 4: >60 N class 5: >100 N class 6: >150 N	Ch: 205 N Tr: 198 N
tensile strength	class 1: > 30 N class 2: > 60 N class 3: > 100 N class 4: > 250 N class 5: > 500 N class 6: > 1 000 N	We: 1350 N We: 1180 N
puncture	class 1: 5 N class 2: 10 N class 3: 50 N class 4: 100 N class 5: 150 N class 6: 200 N	60,1 N class 3
repulsion H_2SO_4 30 % NaOH 10 % o-xylene butan-1-ol	class 1: R>80% class 2: R>90% class 3: R>95%	H_2SO_4 30%: 99,8% NaOH 10%: 99,6% o-xylene: 88,4% butan-1-ol: 91,4%
penetration H_2SO_4 30 % NaOH 10 % o-xylene butan-1-ol	class 1: P< 10% class 2: P<5% class 3: P<1%	H_2SO_4 30%: 0% NaOH 10%: 0% o-xylene: 9,7% butan-1-ol 6,3%
flame resistance		PASS
seam strength	class 1: > 30 N class 2: > 50 N class 3: > 75 N class 4: > 125 N class 5: > 300 N class 6: > 500 N	Can only be carried out on a complete garment
spray test	no penetration	Can only be carried out on a complete garment

tests from EN ISO 11612	requirements	result
Pre-treatment 50x(75°C+☒) ISO15797		
Heat resistance 180 °C After pre-treatment	no ignition no melting shrinkage <=5%	Wa: 0.1% We: 0.0% Pass
Heat resistance 260 °C (skin contact - optional) After pre-treatment	no ignition no melting shrinkage <=10%	Not tested
flame spread code A1 (original and after maximum number of washing cycles)	no flaming to top or side edge no hole formation no melting no flaming or molten debris after flame time <= 2s after glow time<=2s after glowing shall not spread outside the charred area	Single layer Pass A1 number of washing cycles: 50
flame spread code A2 (original and after maximum number of washing cycles) optional	no flaming to top or side edge no melting no flaming or molten debris after flame time <= 2s after glow time<=2s after glowing shall not spread outside the charred area	Not tested
tensile strength	textile (after pre-treatment): 300 N leather: 60 N	Wa: 840N We: 590N
tear resistance	textile (after pre-treatment): 15 N leather: 20 N	Wa: 35N We: 29N
bursting resistance 50 cm² after pre-treatment	> 200 kPa	Not applicable
convective heat after pre-treatment	HTI_{24}: < 4s → B 0 min 4,0s en < 10,0s → B 1 min 10,0s en < 20,0s → B 2 min 20,0s en <20s → B 3	HTI_{24} = 5.6s B1
radiant heat after pre-treatment	$RHTI_{24}$ < 7s → C 0 min 7,0s en max <20,0s → C 1 min 20,0s en <50,0s → C 2 min 50,0s en <95,0s → C 3 min 95,0s → C 4	$RHTI_{24}$ = 15.8s C1
molten aluminium after pre-treatment	deformation PVC film at < 100 g → D 0 no deformation PVC-film for proj-index min 100 g and max <200 g → D 1 min 200 g and max <350 g → D 2 min 350 g → D 3	Not tested

tests from EN ISO 11612	requirements	result
molten iron after pre-treatment	deformation PVC-film at < 100 g → E 0 no deformation PVC film for proj-index min 60 g and max <120 g → E 1 min 120 g and max <200 g → E 2 min 200 g → E 3	Not tested
contact heat 250°C after pre-treatment	Tt<5 →F0 Tt min 5,0s en max < 10,0s →F1 Tt min 10,0s en max < 15,0s →F2 Tt min 15,0s →F3	Tt = 7.2s F1
pH	> 3,5 and < 9,5	Not tested
dimensional stability 5x(75°C+☺) ISO15797	not exceed ± 3%	Wa:-2,0 % We:-0,5 %

tests from EN ISO 14116:2008	requirements	result
flame spread before cleaning	at least index 1	Index 3
flame spread after cleaning 50x(75°C + ☺) ISO15797	at least index 1	Index 3
tensile strength before cleaning	at least 150 N	Wa: 1400N We: 900N
tensile strength after cleaning 50x(75°C + ☺) ISO15797	at least 150 N	Wa: 840N We: 590N
tearing resistance (trousers shape) before cleaning	at least 7,5 N	Wa: 64N We: 58N
tearing resistance (trousers shape) after 50x(75°C + ☺) ISO15797	at least 7,5 N	Wa: 35N We: 29N
dimensional stability 5x(75°C+☺) ISO15797	not exceed ± 3%	Wa:-2,0 % We:-0,5 %

Detailed results can be found in:

Analysis report 41619 of 2004-10-21
Analysis report 41619/B of 2004-10-22
Analysis report 42378 of 2004-10-28
Analysis report 42763 of 2004-11-23
Analysis report 43664 of 2005-01-24
Analysis report 44914 of 2005-04-11
Analysis report 47582 of 2005-10-17
Analysis report 48038 of 2005-11-24
Analysis report 50858 of 2006-04-21
Analysis report Centexbel 71891 of 2010-01-29

3. Conclusion:

The tested material full option Patent: E 1 336 001 / SURFACE TEXTILE HAUTE VISIBILITE / KERMEL/ L.THIRIOT fluorescent yellow, fluorescent orange and fluorescent red fulfils the requirements of EN 471:2003

The tested material full option Patent: E 1 336 001 / SURFACE TEXTILE HAUTE VISIBILITE / KERMEL/ L.THIRIOT fulfils the requirements of EN 531:1995
index A, B1, C1

The tested material full option Patent: E 1 336 001 / SURFACE TEXTILE HAUTE VISIBILITE / KERMEL/ L.THIRIOT fulfils the requirements of EN 1149-3:2004

The tested material full option Patent: E 1 336 001 / SURFACE TEXTILE HAUTE VISIBILITE / KERMEL/ L.THIRIOT fulfils the requirements of EN 533:1997 index 3/5x60

The tested material full option Patent: E 1 336 001 / SURFACE TEXTILE HAUTE VISIBILITE / KERMEL/ L.THIRIOT coated or laminated version fulfils the requirements of EN 470-1:1995.

The tested material full option Patent: E 1 336 001 / SURFACE TEXTILE HAUTE VISIBILITE / KERMEL/ L.THIRIOT fluorocarbon finished version fulfils the requirements of EN 13034:2005
class 6 for abrasion
class 6 for tearing
class 6 for tensile strength
class 3 for puncture
class 3 for the repulsion of $H_2SO_4$30% and NaOH 10%
class 2 for the repulsion of butan-1-ol
class 1 for the repulsion of o-xylene
class 3 for the penetration of $H_2SO_4$30% and NaOH 10%
class 1 for the penetration of o-xylene and butan-1-ol.

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The tested material full option Patent: E 1 336 001 / SURFACE TEXTILE HAUTE VISIBILITE / KERMEL/ L.THIRIOT fulfils the requirements for the performed tests of

EN ISO 11612: 2008
class A1 B1 C1 F1

The tested material full option Patent: E 1 336 001 / SURFACE TEXTILE HAUTE VISIBILITE / KERMEL/ L.THIRIOT fulfils the requirements for the performed tests of

EN ISO 14116: 2008
index 3/50I/75

The personal protective equipment itself still has to be type tested by a notified body.

Hilde Rubben
By order of Inge De Witte
Certification officer