

TNO Industrie en Techniek

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Report

Received:

Three different types of transfer emblems:

1. Tru-Image;
2. Truflex;
3. Flex-Image

Each type of emblem is transferred (laminated) on a Nomex (265 g/m² twill) fire retardant treated fire brigade work wear.

TNO number: 033.10799/01.03

Order:

Research the influence on the fire resistancy of the transferred emblems according to NEN-EN 531 and NEN-EN 533. These standards include EN 367, EN 366 (ISO 6942) and EN 532 (ISO 15025)

Testmethode:

Flame spread	: EN ISO 15025:2002
Washing (5x)	: ISO 6330 2A,E
Requirements (index 1,2 or 3)	: EN 533:1997
Heat transfer, flame	: EN 367:1992
Heat transfer, radiation	: ISO 6942:2002 (EN 366)
Requirements (HTI & RHTI)	: EN 469:2002

Testconditions:

Temperature	: 20° C
Moisture content	: 65% RV

EN ISO 15025

Type of gas	: propane
Way of burning	: surface flaming
Distance to burner head	: 17 mm

Datum

2006-04-27

Projectnummer

033.10799/01.03

Telefoon cliënt

036-5491111

Fax cliënt

036-5320398

Kenmerk cliënt

Our order 2005-09-29

Articles

3 transfer emblems

Op opdrachten aan TNO zijn van toepassing de Algemene Voorwaarden voor onderzoeksopdrachten aan TNO, zoals gedeponeerd bij de Arrondissementsrechtbank te Den Haag en de Kamer van Koophandel Haaglanden.

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After washing

	Nomex			Tru-Image		
	1	2	3	1	2	3
Flame time in s (incl. ignition timed)	10	10	10	10	10	10
After flame time	0	0	0	0	0	0
After glow time in s	0	0	0	0	0	0
Reaching edges	no	no	no	no	no	no
Falling rest material (yes / no)	no	no	no	no	no	no
Ignition filterpaper (yes/no)	no	no	no	no	no	no
Classification according to EN 533	Index 3	Index 3	Index 3	Index 3	Index 3	Index 3

	Truflex			Flex-Image		
	1	2	3	1	2	3
Flame time in s (incl. ignition timed)	10	10	10	10	10	10
After flame time	0	0	0	0	0	0
After glow time in s	0	0	0	0	0	0
Reaching edges	no	no	no	no	no	no
Falling rest material (yes / no)	no	no	no	no	no	no
Ignition filterpaper (yes/no)	no	no	no	no	no	no
Classification according to EN 533	Index 3	Index 3	Index 3	Index 3	Index 3	Index 3

➤ *Heat transfer, flame*

Nomex	Average	1	2	3
HTI 12	2,6	2,6	2,7	2,6
HTI 24	4,2	4,1	4,2	4,3
HTI 24-12	1,6			

Tru-Image	Average	1	2	3
HTI 12	2,8	2,7	2,7	2,7
HTI 24	4,6	4,7	4,9	4,3
HTI 24-12	1,8			

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Truflex	Average	1	2	3
HTI 12	2,6	2,8	2,8	2,9
HTI 24	4,6	4,7	4,6	4,6
HTI 24-12	2,0			

Flex-Image	Average	1	2	3
HTI 12	2,9	3,1	2,6	2,9
HTI 24	4,5	4,2	4,5	4,7
HTI 24-12	1,6			

➤ *Heat transfer, radiation*

Nomex	Average	1	2	3
HTI 12	8,6			
HTI 24	14,6			
HTI 24-12	6,0			

Tru-Image	Average	1	2	3
HTI 12	8,7	8,2	9,2	
HTI 24	15,1	14,6	15,6	
HTI 24-12	6,4			

Truflex	Average	1	2	3
HTI 12	8,8	9,0	8,6	
HTI 24	14,8	15,4	14,2	
HTI 24-12	6,0			

Flex-Image	Average	1	2	3
HTI 12	8,6	8,9	8,3	
HTI 24	15,0	15,4	14,6	
HTI 24-12	6,4			

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Conclusions:

- Influence of the (on the mentioned nomex) transferred emblems on the assembly of fire brigade work wear according to NEN-EN 531 and NEN-EN 533 according to the results of the TNO tests.

The on the mentioned nomex material transferred Tru-Image, Truflex and Flex-Image emblems pass the discriminating EN ISO 15025:2002 test.

The on the mentioned nomex material transferred Tru-Image, Truflex and Flex-Image emblems do not influence the heat transfer compared with the mentioned nomex material in a negative way.

The on the mentioned nomex material transferred Tru-Image, Truflex and Flex-Image emblems do not influence the assembly of fire brigade work wear in a negative way.

Tru-Image, Truflex and Flex-Image emblems can be transferred on the nomex material without negatively influencing the safety requirements according to NEN-EN 531 and NEN-EN 533

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