

Testing of Protective Clothing Material

Test item	Industry Sock Terry, art 811
Type	Protective clothing against heat and flame
Customer	Devold of Norway AS N-6030 Langevåg NORWAY
Applied method	EN ISO 11612:2008

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1. Description and identification of test item

Tested item: Industry Sock Terry, art 811
 80% WO/ 18% PA/ 2% Elastic

Washing instructions:



2. Scope of testing

Testing dates: 2010-08-23 - 2010-08-27
 The tests were performed at FIOH.

The following tests were carried out:

<i>Requirement</i>		<i>Test method</i>
Pre-treatment	EN ISO 11612:2008, 5.2	ISO 6330:2000
Limited flame spread, surface ignition -after pre-treatment	EN ISO 11612:2008, 6.3	EN ISO 15025:2000, method A1
Convective heat -after pre-treatment	EN ISO 11612:2008, 7.2	ISO 9151:1995
Radiation heat, 20 kW/m ² -after pre-treatment	EN ISO 11612:2008, 7.3	ISO 6942:2002, method B
Molten aluminium splash -after pre-treatment	EN ISO 11612:2008, 7.4	ISO 9185:2007

2.1 Sampling and conditioning

Receiving date: 2010-08-18

Condition: Intact

Sampling method: The customer supplied the socks, from which specimens were cut off.

Conditioning: Samples were conditioned at least 24 hours in an atmosphere having a temperature of $(20 \pm 2)^\circ\text{C}$ and a relative humidity of $(65 \pm 5)\%$ before testing.

2.2 Pre-treatment

Before testing the sock samples were washed five times. Washing parameters:

Washing machine: Type A washer

Total dry mass: 2 kg

Washing procedure: Hand wash, temperature 40°C

Type of detergent: Wool detergent 70 ml (Bio Luvil wool & silk)

Drying procedure: C, flat dry

Ballast: Knitted fabric (310 g/m²)

After drying flat pressing: No

3. Test results

3.1 Flame spread

Surface ignition (code A1)

Specimen	Afterflame [s]	Afterglow [s]	Flaming to top or either side edge	Hole formation, flaming, molten debris
1 ↑	0	0	no	no
2 ↑	0	0	no	no
3 ↑	0	0	no	no
4 →	0	0	no	no
5 →	0	0	no	no
6 →	0	0	no	no
Mean	0	0	no	no

↑ → warp direction

3.2 Convective heat

Specimen	HTI t_{24} [s]
1	23,7
2	22,8
3	23,3
Lowest value	22,8

3.3 Radiant heat

Specimen	RHTI t_{24} [s]
1	45,2
2	46,9
3	47,7
Lowest value	45,2

3.3 Molten iron splash

Metal: aluminium Pouring temperature: $780 \pm 20^\circ\text{C}$
 Pouring height: 225 ± 5 mm Specimen angle to the horizontal: 60°

Specimen	Mass of metal [g]	Metal poured [g]	Metal adhered	Appearance of PVC film
1	357	353	no	embossing visible, slight shining
2	360	354	no	embossing visible, slight shining
3	357	354	no	embossing visible, slight shining
4	361	355	no	embossing visible, slight shining

4. Summary of the test results

Test	Requirement	Result
Limited flame spread, code A1 -after pre-treatment	EN ISO 11612:2008, 6.3 no flaming to the top or either side edge; no flaming or molten debris; afterglow shall not spread, no hole formation Afterflame time $\leq 2s$, Afterglow time $\leq 2s$	Socks meet the requirement Level of performance: A1
Convective heat, code B -after pre-treatment	EN ISO 11612:2008, 7.2 Heat Transfer Index HTI 24 [s] B1 4,0-10,0 B2 10,0-20,0 B3 over 20,0	Socks meet the requirement Level of performance: B3
Radiation heat, code C 20 kW/m ² -after pre-treatment	EN ISO 11612:2008, 7.3 Radiant Heat Transfers factor RHTI24 [s] C1 7,0-20,0 C2 20,0-50,0 C3 50,0-95,0 C4 over 95,0	Socks meet the requirement Level of performance: C2
Molten aluminium splash, code D -after pre-treatment	EN ISO 11612:2008, 7.4 Molten aluminium splash, g min max D1 100 - <200 D2 200 - <350 D3 ≥ 350	Socks meet the requirement Level of performance: D3

End of test report