

Testing of Protective Clothing Material

Test item **175 Thermal Collar, knitted fabric**

Type **Protective clothing against heat and flame**

Customer **Devold of Norway AS**
Molvaersveien 12
N-6030 Langevåg
NORWAY

Applied method **EN ISO 11612:2008**



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1. Description and identification of test item

Tested item: 175 Thermal Collar, black knitted fabric
100% FR pure new Wool, ca 110 g/m²

Washing
instructions:



2. Scope of testing

Testing dates: 2014-09-29 - 2014-10-31
The tests were performed at FIOH.

The following tests were carried out:

Requirement		Test method
Pre-treatment	EN ISO 11612:2008, 5.2	ISO 6330:2012
Heat resistance (180°C) - after pre-treatment	EN ISO 11612:2008, 6.2.1	ISO 17493:2000
Limited flame spread -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

2.1 Sampling and conditioning

Receiving date: 2014-09-24

Condition: Intact

Sampling method: The customer supplied collar samples.

Conditioning: Samples were conditioned at least 24 hours in an atmosphere having a temperature of (20 ± 2)°C and a relative humidity of (65 ± 5)% before testing unless otherwise specified in testing standard.

2.2 Pre-treatment

Washing parameters:

Washing machine: Type A washer

Washing procedure: 4M, temperature 40°C

Drying procedure: C, flat dry

After drying flat pressing: No

Type of detergent: IEC reference detergent

Total dry mass: 2 kg

Ballast: Knitted fabric (310 g/m²)

Material samples were washed five times and dried after last washing procedure.



3. Test results

3.1 Heat resistance

Dimensions of the specimen: 150 mm x 150 or 110 mm
Test temperature: (180±5)°C Time of exposure: 5 min
Deviation: sample size

Material after pre-treatment	Shrinkage warp [%]	Shrinkage weft [%]	Ignition	Melting of dripping	Splitting or delimitation	Other observations
1	-1,4%	-2,6%	no	no	no	no
2	-0,9%	-1,3%	no	no	no	no
3	-1,8%	-0,7%	no	no	no	no
Mean	-1,4%	-1,5%	no	no	no	no

3.2 Limited flame spread

Surface ignition (code A1)

Specimen after pre-treatment	Afterflame [s]	Afterglow [s]	Flaming to top or either side edge	Flaming, molten debris, hole
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		

3.3 Convective heat

Specimen	HTI t ₂₄ [s]
1	19,1
2	22,7
3	21,7
Lowest value	19,1

3.4 Radiant heat

Specimen	RHTI t ₂₄ [s]
1	38,6
2	37,0
3	37,8
Lowest value	37,0



4. Summary of the test results

Test	Requirement	Result
Heat resistance -after pre-treatment	EN ISO 11612:2008,6.2.1 At (180±5)°C not ignite or melt, shrinkage ≤ 5%	Material meets the requirement
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 ≤ 2s, Afterglow time ≤ 2s	Collar fabric meets 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	Collar fabric meets the requirement Level of performance: B2
Radiation heat, 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	Collar fabric meets the requirement Level of performance: C2

End of test report