



Fire Tough/Smelter Sock

SpotNet Distribution - Fire Tough/Smelter Sock

Overview

Construction

Knee length three layer construction featuring –

- Wool (85%), Nylon (15%).
- Outer layer – heavy gauge wool construction.
- Middle layer – nylon layer for durability.
- Inner layer – wool for comfort and cushioning.

Combination of the fibres plus cushioning of foot ensures comfort, stretch and durability. Tightly knitted layers help to protect the foot.

Utilisation

- The garment is designed for use in **conditions of extreme heat**. Industry sector use includes oilrigs, emergency services, electric utilities, structural and wildland fire fighting, primary smelters and general heavy industry – basically any workplace environment where there is a high risk of injury from flame, extreme heat or ignition or where molten metal can penetrate protective work wear or enter protective footwear.
- The garment is Australian made and has been tested for resistance to molten aluminium (780°C) and cast iron (1400°C) and ease of ignition and protection against flame. The test time for ease of ignition and protection against flame exceeds 20 seconds.
- It should be noted that the garment is classed as Fire Resistant and should not be taken to be Fire Proof.

Product Range

Range	Australia/UK	USA	European
Small	3-8	4-9	37-42
Medium	6-10	8-12	39-44
Large	11-14	13-16	45-48

Colours –

- Black (all sizes).
- Natural (6-10 only).

Care Instructions

- Warm machine wash.
- Wash and dry inside out.
- Wash dark colours separately.
- Do not soak.
- Do not bleach.
- Warm tumble dry.
- Dry without delay

User Tip – as an alternative to wearing the garment fully extended to just below the knee, wear as a “loose fit” and roll the top of the garment down over the top of your smelter boot. Doing so creates a seal around the top of the boot.



Fire Tough/Smelter Sock

Test Criteria and Results and Additional Information

**BS EN 373: 1993
Protective Clothing
Assessment Of Resistance Of Materials To Molten Metal Splash -**
1. Aluminium
2. Cast Iron

**ISO 6940-1984 (E)
Determination Of Ease Of Ignition Of Vertically Oriented Specimens**

Canesis Network Limited – New Zealand
Test Date – 12th January 2004
Test Report Date – 17th February 2004

BS EN 373: 1993

Protective Clothing – Assessment Of Resistance Of Materials To Molten Metal Splash

Date of testing: 12/01/04

ALUMINIUM heated to 820°C (to give pour temperature 780°C ± 20°C)

Specimen angle to horizontal 60 ± 1°

Pour Height 225 ± 5 mm

*The molten metal splash index is calculated as the mean of the lowest mass poured to cause damage and the highest mass poured (of the 4 tests required) not causing damage.

As New

Initial Weight of Aluminium (gms)	Amount Poured (grams)	Metal Adhered To Fabric	Damage To Skin
1	112.0	N	N
2	156.0	N	N
3	196.0	N	N
4	253.0	N	Y
5	234.0	N	N
6	242.0	N	N
7	242.0	N	N
8	245.0	N	N
9	245.0	N	N

*Molten Metal Splash Index = 249

After One Domestic Wash

Initial Weight of Aluminium (gms)	Amount Poured (grams)	Metal Adhered To Fabric	Damage To Skin
1	198.0	N	N
2	239.0	N	N
3	255.0	N	Y
4	253.0	N	Y
5	239.0	N	N
6	239.6	N	N
7	240.0	N	N

*Molten Metal Splash Index = 246.5

After 5 Domestic Washes

Initial Weight of Aluminium (gms)	Amount Poured (grams)	Metal Adhered To Fabric	Damage To Skin
1	210.0	N	Y
2	183.0	N	Y
3	172.0	N	N
4	170.0	N	N
5	170.0	N	N
6	170.0	N	N

*Molten Metal Splash Index = 177.5

BS EN 373: 1993
Protective Clothing – Assessment Of Resistance Of Materials To Molten Metal Splash

Date of testing: 12/01/04

CAST IRON heated to 1500°C (to give pour temperature 1400°C ± 20°C)

Specimen angle to horizontal 75 ± 1°

Pour Height 225 ± 5 mm

*The molten metal splash index is calculated as the mean of the lowest mass poured to cause damage and the highest mass poured (of the 4 tests required) not causing damage.

As New

Initial Weight of Cast Iron (gms)	Amount Poured (grams)	Metal Adhered To Fabric	Damage To Skin
52.3	50.2	N	Y
43.6	41.2	N	Y
35.4	33.8	N	N
38.6	35.2	N	N
39.4	35.6	N	N
37.6	35.7	N	N

*Molten Metal Splash Index = 38.45

After One Domestic Wash

Initial Weight of Cast Iron (gms)	Amount Poured (grams)	Metal Adhered To Fabric	Damage To Skin
109.4	102.9	N	Y
59.7	56.9	N	Y
52.0	50.4	N	Y
47.0	41.6	N	N
42.5	40.6	N	N
43.7	41.3	N	N
44.8	41.0	N	N

*Molten Metal Splash Index = 46

After 5 Domestic Washes

Initial Weight of Cast Iron (gms)	Amount Poured (grams)	Metal Adhered To Fabric	Damage To Skin
60.4	57.4	N	N
100.1	99.8	N	N
150.5	147.3	N	Y
128.9	124.1	N	Y
110.9	108.8	N	N
110.6	109.4	N	N
109.5	108.1	N	N
111.2	109.9	N	N

*Molten Metal Splash Index = 117

ISO 6940-1984 (E)**Determination Of Ease Of Ignition Of Vertically Oriented Specimens**

Date of testing: 12/01/04

Conditioned at: 20 ± 2°C, 65 ± 2%RH

Ambient temperature and humidity for testing 21°C, 48%RH

Specimen size: 80 mm x 80 mm

Barometric Pressure: 759 mm/Hg

Type of Ignition: Surface

Gas used: Propane

As New

Warp	Ignition Time (sec)	Result	Weft	Ignition Time (sec)	Result
1	20	X	1	20	X
2	20	X	2	20	X
3	20	X	3	20	X
4	20	X	4	20	X
5	20	X	5	20	X
6	20	X	6	20	X
7	20	X	7	20	X

Results: ✓ = Ignition: X = Non-ignition

After One Domestic Wash

Warp	Ignition Time (sec)	Result	Weft	Ignition Time (sec)	Result
1	20	X	1	20	X
2	20	X	2	20	X
3	20	X	3	20	X
4	20	X	4	20	X
5	20	X	5	20	X
6	20	X	6	20	X
7	20	X	7	20	X

Results: ✓ = Ignition: X = Non-ignition

After 5 Domestic Washes

Warp	Ignition Time (sec)	Result	Weft	Ignition Time (sec)	Result
1	20	X	1	20	X
2	20	X	2	20	X
3	20	X	3	20	X
4	20	X	4	20	X
5	20	X	5	20	X
6	20	X	6	20	X
7	20	X	7	20	X

Results: ✓ = Ignition: X = Non-ignition

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Other Test Information

Indalloy Casting Group, Ontario, Canada, (a division of Indalex Limited - North America's and one of the world's largest suppliers of aluminium extrusion components and services) has conducted independent secondary protective clothing tests on the garment. Their testing methods and findings were as follows:

A stand was set up consisting of a thin painted steel sheet angled at 65° and running into a steel pit sow.

For the run-off tests the sample was draped over the steel sheet and approximately .5 kg of molten aluminium at approximately 1350 °F (732 °C) was poured over it.

Run-off Test

Material	Weight	Adhered	Ignited	Paint Scorched	Comments
Fire Tough/ Smelter Sock	n/a	No	No	No	Material discoloured - light

For the burn through/ignition tests the material was placed in the steel pit sow and approximately .5 kg of molten aluminium was poured on and allowed to sit until the material ignited or burned through.

Burn Through/Ignition Test

Material	Weight	Burn Through	Ignited	Time For Burn Through or Ignition	Comments
Fire Tough/ Smelter Sock	n/a	Yes	No	>5 seconds	Melted through – resisted melt through

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Disclaimer/Warranty

The Canesis Network Limited test criteria and results referred to in this article have been obtained under laboratory conditions, undertaken in accordance with relevant and applicable international standards. As such, the reported results may not represent actual performance in individual end user workplace environments or conditions. The textile manufacturer and SpotNet Distribution stipulate that end users determine any fabric's suitability, or otherwise, after undertaking their own research and evaluation. The information and results shown in this article should only be used as a guide while that research and evaluation is being conducted. It is the responsibility of the end user to determine the protection level required for his unique use situation.

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SpotNet Distribution
26 Elizabeth Street, Launceston, 7250, Tasmania, Australia
www.spotnet.com.au