ELLIOTTS

ISO 9001 Quality Management Systems CERTIFIED

FS 740782

Product Data Sheet

Non-Aluminised Proban® Jacket & Coat

Proban® FR clothing is engineered for foundry workers and designed to deliver unquestionable protection from risks of molten metal splash. It also addresses the obvious heat-stress related issues that occur in foundries.

Features

- Available in two lengths 1000mm and 1500mm
- Side closure of 50mm flame resistant hook + loop
- Sewn with FR aramid thread
- Reinforced inner sleeve section
- Hook + loop sleeve cuff tabs
- Designed to be worn over Secondary Protective Clothing
- Available in sizes SML–4XL.

Item Type	Part Number (Rust)	Part Number (Orange)
Jacket (1000mm long)	PFC1000RU	PFC1000OR
Coat (1500mm long)	PFC1500RU	PFC1500OR

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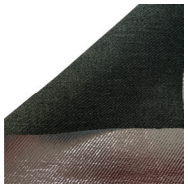
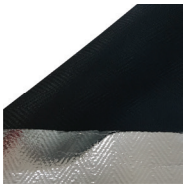
Aluminised Fabrics

Unlined

Single layer Aluminised Fabric only.

Series	Fabric	Aluminised Technology	Weight
CA340	Aluminised carbon / Aramid	Reflespace	340 gsm
AR530	Aluminised Aramid	TBA	530 gsm
PR720	Aluminised Preox (Pre-oxidised acrylic)	TBA	720 gsm

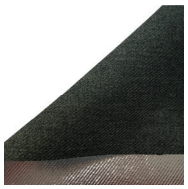




Lined

Aluminised Fabric with T-Gard® P190 thermal liner.

Series	Fabric	Weight
CA340L	Aluminised CA340/ T-Gard P190	340 gsm + 430 gsm = 770 gsm
AR530L	Aluminised AR530/ T-Gard P190	530 gsm + 430 gsm = 960 gsm
PR720L	Aluminised PR720/ T-Gard P190	720 gsm + 430 gsm = 1150 gsm



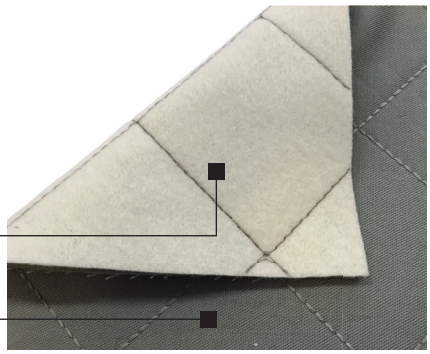
Non Aluminised Fabrics

Single layer Aluminised Fabric only.

Series	Fabric	Weight
WELDWOOL	100% Wool	780 gsm
PR97	Merino wool and Lenzing FR®	380 gsm
PROBAN	PROBAN® FR	340 gsm

Liner Fabric

The T-Gard® P190 Thermal Liner has been specifically designed for Furnace PPE and is exclusive to Elliotts. T-Gard® P190 is light weight and offers excellent thermal protection. The face fabric is a Proban FR 100% Cotton which provides a comfortable FR material against the body that can easily wick away moisture. The thermal batting is a 100% Nomex.



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Fabric Performance

Unlined

Series	Limited Flame Spread Face Ignition Code A1 (Outer Fabric)	Limited Flame Spread Edge Ignition Code A2	Convective Heat Code B	Radiant Heat Code C	Molten Aluminium Splash Code D	Molten Iron Splash Code E	Contact Heat Code F
CA340	A1	NT	B1 7.4s	C3 54.4s	D3 >350g	E3 >200g	F0 4.9s
AR530	NT	NT	NT	NT	NT	NT	NT
PR720	A1	NT	B1 6.9s	C3 66.0s	D3 >350g	E3 >200g	F1 8.8s

NT – No test data available on AR530

Lined

Series	Limited Flame Spread Face Ignition Code A1 (Outer Fabric)	Limited Flame Spread Face Ignition Code A1 (Lining Fabric)	Limited Flame Spread Edge Ignition Code A2	Convective Heat Code B	Radiant Heat Code C	Molten Aluminium Splash Code D	Molten Iron Splash Code E	Contact Heat Code F
CA340L	A1 Pass	A1 Pass	A2 Pass	B2 15.2s	C4 165.7s	D3 >350g	E3 >200g	F3 16.7s
AR530L	A1 Pass	A1 Pass	A2 Pass	B3 21.3s	C4 215.9s	NT	NT	F3 20.1s
PR720L	A1 Pass	A1 Pass	A2 Pass	B2 15.8s	C4 186.2s	D3 >350g	E3 >200g	F3 15.4s

NT – No test data available on AR530

Fabric System Evaluation

Heat Protection

		HIGHEST		LOWEST
Convective Heat	Unlined	CA340	PR720	AR530 (NT)
	Lined	AR530L	PR720L	CA340L
Radiant Heat	Unlined		PR720	CA340
	Lined	AR530L	PR720L	CA340L
Contact Heat	Unlined	PR720	CA340	AR530 (NT)
	Lined	AR530L	CA340L	PR720L

Molten Aluminum and Iron Splash

Molten Aluminum Splash	All Fabrics achieved the highest possible rating of D3 and are suitable for Molten Aluminium Splash
Molten Iron Splash	All Fabrics achieved the highest possible rating of E3 and are suitable for Molten Iron Splash

NT – No test data available on AR530 and AR530L

Comfort – Weight

		LIGHTEST		HEAVIEST
Weight	Unlined	CA340	AR530	PR720
	Lined	CA340	AR530	PR720

Comfort – Flexibility

		MOST FLEXIBLE		LEAST FLEXIBLE
Flexibility	Unlined	CA340	PR720	AR530
	Lined	CA340	PR720	AR530

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Certifications and Standards

The international standard most commonly used around the world for protective clothing for furnace operators is ISO 11612 Protective clothing – Clothing to protect against heat and flame.

This International Standard specifies performance requirements for protective clothing made from materials, which are designed to protect the wearer's body, except the hands, from heat and/or flame. For protection of the wearer's head and feet, the only items of protective clothing falling within the scope of this International Standard are gaiters, leggings, hoods, and overboots. However, concerning hoods, requirements for visors and respiratory equipment are not given.

The performance requirements set out in this International Standard are applicable to protective clothing which could be worn for a wide range of end uses, where there is a need for clothing with limited flame spread properties and where the user can be exposed to radiant, convective, contact heat and/or to molten metal splashes.

ISO 11612: 2015

A1 or A1 + A2, B(x), C(x), D(x), E(x), F(x)

This Standard defines the minimum requirements for clothing for protection against heat and flames.

- Clothing must be supplied with user information from the manufacturer.
- Code A must be complied with, and at least one of the heat transmission performance codes B–F must be met.

Code	Test Method	Protection Against	Performance Level	Minimum Requirement
A	ISO 15025 Procedure A ISO 15025 Procedure B	Limited Flame Spread – Face Ignition Limited Flame Spread – Edge Ignition	A1 OR (A1 AND A2)	Pass
B	ISO 9151	Convective Heat	B1 to B3	B1
C	ISO 6942	Radiant Heat	C1 to C4	C1
D	ISO 9185	Molten Aluminium Splash	D1 to D3	D1
E	ISO 9185	Molten Iron Splash	E1 to E3	E1
F	ISO 12127-1	Contact Heat	F1 to F3	F1

Physical requirements including Tensile Strength, Tear Strength, and Seam strength must also be tested independently.

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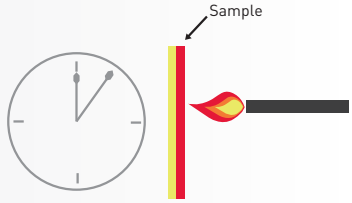
CODE A. Flame propagation (ISO 15025 method A)

Sample is exposed to flame for 10 seconds then removed

	WORST	GOOD	BEST
Performance level	X	A1	A2
Average value of flame persistence < 2 s	Test	Test	Test
Average value of residal incandescence < 2 s	Not passed	Passed	Passed

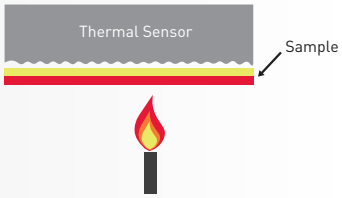


CODE B. Convective heat (ISO 9151)

Temperature increase behind sample is measured

		WORST	GOOD	BEST
Performance level		B1	B2	B3
Heat Transmission Index – HTI (seconds)	min	4	10	20
	max	<10	<20	

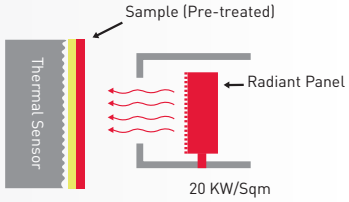
HTI = Average of HTI12 and HTI2 HTI = Time to increase temperature by 24°C HTI = Time to increase temperature by 12°C



CODE C. Radiant heat (ISO 6942 method B)

Temperature increase behind sample is measured

		WORST	GOOD		BEST
Performance level		C1	C2	C3	C4
Heat transfer t_{24} (seconds) T = Time to increase temperature by 24°C	min	7	20	50	95
	max	<20	<50	<95	

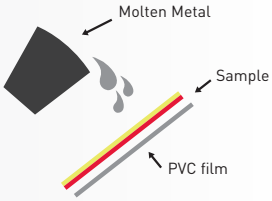


CODE D. Splashes of molten aluminum (ISO 9185)

Quantity necessary to damage PVC film is measured

		WORST	GOOD	BEST
Performance level		D1	D2	D3
Molten metal weight (grams)	min	100	200	350
	max	<200	<350	

Molten Aluminum at 780°C (+/- 20°C) (1436°F) PVC film simulates human skin

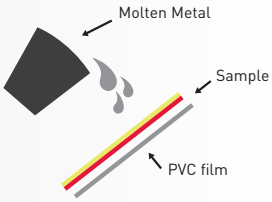


CODE E. Splashes of molten cast-iron (ISO 9185)

Quantity necessary to damage PVC film is measured

		WORST	GOOD	BEST
Performance level		E1	E2	E3
Molten metal wight (grams)	min	60	120	200
	max	<120	<200	

Molten Cast-Iron at 1400°C (+/- 20°C) (2552°F) PVC film simulates human skin

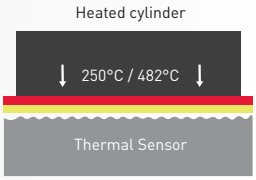


CODE F. Contact heat (ISO 12127)

Heat transmission is measured

		WORST	GOOD	BEST
Performance level		F1	F2	F3
Threshold time (seconds)	min	5	10	15
	max	<10	<15	

Threshold time = time necessary to increase temperature by 1°C



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