

# Pyrolon™ TPCR



Lakeland Pyrolon™ TPCR offers users a unique combination of protection against multiple risks in a single, limited life coverall.

- FR chemical Barrier film laminated to FR base - 330gsm.
- 'Blanket' base fabric offers good FR and high level arc protection.
- Achieves class 1 in all heat resistance tests - similar to most woven FR fabrics.
- Fabric does not ignite in FR tests.
- Achieves Arc Thermal Protective Value of 21.9 cal/m<sup>2</sup> - HRC Class 2 - compared with typical values for FR woven fabrics:-  
- 330gsm FR cotton: 13 cal/m<sup>2</sup> - HRC Class 2.  
- 200gsm meta-aramid: 7.1 cal/m<sup>2</sup> - HRC Class 1.
- Melting point of 232°C - will resist splashes of hot liquids.
- Single coverall for protection covers multiple risks:
- Flame and heat protection to EN 11612 - A1/A2.
- Chemical splash and spray protection to Types 3 & 4 (EN 14605)
- Passed all heat resistance tests - EN Class 1 in all tests : Convective, radiant and contact heat + molten aluminium and iron splash similar to most FR woven fabrics.
- Protection against thermal hazards of electric arc... Class 1 (4kA) in EN 61482-1-2
- Arc Thermal Protective Value (ATPV) according to ASTM 1959 test = 21.9 cal/m<sup>2</sup>
- Protection for welding and allied process to EN 11611.
- Soft and flexible fabric for enhanced comfort.
- Fabric is tough and durable. Can be used more than once if uncontaminated and un-damaged.
- Replace FR garments in dirty or physically demanding areas to reduce costs of replacement and laundering.
- Lakeland Super-B style: coverall with elasticated hood, cuffs, ankles and waist. Double zip / storm flap front.

## Pyrolon™ TPCR Styles



**Style code 428**  
Coverall with elasticated hood, cuffs, waist & ankles. Double front zip fastening.

Sizes: S - XXXL

Available in: Orange with grey seams



### Note:

The primary purpose of Pyrolon™ garments is to combine flame retardant properties with chemical protection and they are intended for use in areas where contact with flame and heat is the primary risk but where some chemical protection is required.

The barrier film used on Pyrolon™ garments is a proprietary FR film that has a reasonable barrier to penetration by many chemicals. However, in many cases it may not have a high resistance to permeation by chemicals.

For this reason the US ASTM F903 penetration test, which records time until a visible amount of the chemical penetrates the fabric rather than recording a time to a specific permeation rate has been used to indicate levels of protection. Where high permeation resistance is required against chemicals with high toxicity a higher barrier chemical suit may be required.

Selection of the most appropriate chemical suit for a task is always the responsibility of the user and should only be made by qualified personnel following a suitable risk assessment.

### Physical Properties

		Pyrolon® TPCR	Brand H
Property	EN Standard	CE Class	CE Class
Abrasion Resistance	EN 530	6	6
Flex Cracking	ISO 7854	5	1
Trapezoidal Tear	ISO 9073	2	5
Tensile Strength	EN 13934	3	5
Puncture Resistance	EN 863	2	2
Seam Strength	ISO 5082	4	5

### Permeation and Penetration Test Results

Pyrolon® TPCR uses the same barrier film as Pyrolon® CRFR so test results are the same for both. Testing has been conducted to three test variations.

Chemical	CAS No.	Permeation time to rate: 0.1ug/min/cm <sup>2</sup>	Permeation time to rate: 1.0ug/min/cm <sup>2</sup>	Penetration visible breakthrough ASTM F903
Acetone	67-64-1	12	NT	>60
Acetonitrile 90%	70-05-8	Imm	NT	>60
Carbon Disulphide	75-15-0	9	NT	>60
Dichloromethane	75-09-2	Imm	NT	2
Diethylamine	209-89-7	Imm	NT	>60
Ethyl Acetate	141-78-6	16	NT	>60
n-Hexane	110-54-3	>480	NT	>60
Methanol	67-56-1	Imm	NT	>60
Sodium Hydroxide (40%)	1310-73-2	>480	>480	>60
Sulphuric Acid (96%)	7664-93-9	38	19	45
Tetrahydrofuran	109-99-9	<1	NT	<1
Toluene	95-47-6	6	NT	>60


Note: ASTM F903 is a "breakthrough" barrier test rather than a permeation test. It records the time until a visible amount of the chemical breaches the fabric and so deals with a larger volume than a permeation test. Whilst this type of test is not currently recognised in Europe it still provides useful information for users in some circumstances.

# Pyrolon™ TPCR – Multi-Risk Limited Life Coverall


Some applications require protection from multiple risks.

Some sites have different hazards in different areas.


In both cases a combination of two or more different suits is required to provide protection.  
**But Beware! Combining different suits can compromise protection!**

 <p>Why wear several suits when protecting against multiple risk?</p>	<p>FOR EXAMPLE: a standard chemical suit worn over an EN 11612 FR garment will compromise FR protection!</p>	<p><b>A single Pyrolon™ TPCR provides protection for all these applications</b></p>
 <p>Why maintain stocks of several different suits for different applications?</p>	<p>Standard chemical suits are made from flammable fabric and will ignite and burn, sticking to the EN 11612 fabric beneath and transferring heat energy to the skin beneath.</p> <p>Thermal Mannequin Testing has proved that wearing a standard disposable over a thermal protective suit can critically reduce thermal protection.</p>	
 <p>Beware!</p>	<p>if combining different types of protective clothing. The properties of one might compromise the protection offered by another.</p>	

Pyrolon™ TPCR is a **multi-risk** suit - a single coverall that provides users with protection against multiple hazards - all in one suit.








Remove the risk of combining suits and compromising protection.



Remove the need to stock different types of clothing for different applications.



Pyrolon™ TPCR Certification			
Standard	Description	Results	
<b>Arc Flash Protection</b>			
EN 61482-1-2:2007	Protection against Arc Flash thermal hazards	PASS 4kA (Class 1)	
<b>Chemical Spray Protection</b>			
EN 14605:2004	Chemical protection - Types 3 & 4	PASS	
<b>Welding and Allied Processes</b>			
EN 11611:2008	Protection for welding and allied processes	PASS A1/A2	
<b>Flame and Heat Protection</b>			
EN 11612:2008	Protection from heat and flame hazards	PASS A1/A2	
<b>Anti-Static</b>			
EN 1149-5:2008	Anti-static	PASS	

Arc Thermal Protective Values (ATPV)			
Standard	Description	Results	
NFPA 1959 *	ATPV	21.9 cal/cm <sup>2</sup>	HRC 2
<b>For comparison, typical ATPV's for nonwoven coveralls are:</b>			
330gsm FR cotton		13 cal/cm <sup>2</sup>	HRC 2
200gsm meta-aramid		7.1 cal/cm <sup>2</sup>	HRC 1

Note: NFPA 1959 is a similar test to EN 61482-1-1 which measures the ATPV of arc clothing fabrics.

Heat Protection Tests (EN 11612)		
Standard	Description	Results
ISO 9151	Convective Heat (B)	Class B1
ISO 6942	Radiant Heat (C)	Class C1
ISO 9185	Molten Aluminium Splash (D)	Class D1
ISO 9185	Molten Iron Splash (E)	Class E1
ISO 12127	Contact Heat (F)	Class F1
EN 1149-1	Surface Resistance (mean)	0.49 x 10 <sup>9</sup> Ω