

# Pyrolon™ Plus 2



## Pyrolon® Plus 2 Style



**Style Code: 428**  
Coverall with elasticated hood, cuffs, waist and ankles.

Sizes: SM - 3X

Available in:  White



## Flame retardant Type 5 & 6 breathable coverall

- Pyrolon garments meet the requirements of EN 14116 (Index 1) for garment for protection against flames and heat.
- Fabric will not ignite, chars at low temperature and unlike standard disposables does not continue burning after the ignition source is withdrawn.
- Can safely be used over thermal protective garments without compromising thermal protection.
- Note that Pyrolon™ Plus 2 fabric will not ignite but is designed to wear OVER thermal protective garments and will not provide heat protection if worn alone.
- Intrinsic anti-static properties with very low surface resistance; anti-static does not wear off in use like standard disposables.
- Lakeland "Super-B" ergonomic styling – unique combination of three design elements to optimise fit, durability and freedom of movement.
- Three piece hood for rounder head shape and greater comfort.
- Inset sleeves – torso shaped to body to maximise freedom of movement and negate the need for thumbloops.
- Two piece crotch gusset – enhances freedom of movement and reduced crotch splitting.

Physical Properties					
Property	EN Std	Pyrolon™ Plus 2	Pyrolon™ XT	FR SMS Brand A	FR SMS Brand B
		CE Class	CE Class	CE Class	CE Class
Abrasion Resistance	EN 530	3	2	2	1
Flex Cracking	ISO 7854	6	6	6	5
Trapezoidal Tear	ISO 9073	2	3	2	1
Tensile Strength	EN 13934	1	2	1	1
Puncture Resistance	EN 863	2	2	1	1
Anti-Static (Surface Resistance)	EN 1149-1	Pass* (<2.5 x 10 <sup>9</sup> Ω)	Pass* (<2.5 x 10 <sup>9</sup> Ω)	n/a	n/a
Seam Strength	EN 13935-2	2	3	3	2

\* According to EN 1149-5

Chemical Repellency and Penetration EN 6530								
Chemical	Pyrolon™ Plus 2		Pyrolon™ XT		FR SMS Brand A		FR SMS Brand B	
	R	P	R	P	R	P	R	P
Sulphuric Acid 30% CAS No. 67-64-1	3	2	3	2	3	3	3	3
Sodium Hydroxide CAS No. 1310-73-2	3	3	3	2	3	3	3	3
O-Xylene CAS No. 75-15-0	NT	NT	NT	NT	n/a	n/a	n/a	n/a
Butanol CAS No. 75-09-2	NT	NT	NT	NT	n/a	n/a	n/a	n/a

### Note:-

Columns 3 and 4 contain comparative data for two commonly available FR SMS-based garment brands. The tests show that in most cases the Lakeland Pyrolon™ options feature superior properties.

However, whereas thermal mannequin testing to show predicted body burn when worn over a thermal protecting EN 11612 garment has been conducted on Pyrolon™, no such testing is available from the manufacturers of Brands A and B. Lakeland has conducted such testing for comparison purposes. The results are shown below:-

Thermal Mannequin Testing					
	FSPE	Standard SMS	FR SMS	Pyrolon™ Plus 2	Pyrolon™ XT
Total % predicted body burn	23.9%	20.5%	19.6%	7.4%	8.2%
2nd degree burns	15.6%	12.8%	14.7%	7.4%	8.2%
3rd degree burns	8.3%	7.7%	4.9%	0%	0%

### Note:-

1. The predicted body burn performance shows little difference between FSPE, Standard SMS and FR SMS with total body burn being close to 20% and including 3rd degree body burns of 5 to 8%.
2. The total predicted body burn for Pyrolon™ products is much lower at 7 to 8% with no 3rd degree burns apparent.
3. This proves both that Pyrolon™ products show a superior FR performance when worn over EN 11612 protective garments and that the additional cost of FR SMS garments over Standard SMS garments results in very little improvement in FR performance.

# Why Use Pyrolon™ ?

Many applications require **both** thermal protection **and** chemical protection. How do you safely provide both?



Why is wearing standard chemical suits over thermal protective garments a hazard?

How do FR standards EN 14116 and EN 11612 standards differ?

What is Thermal Mannequin Testing and how do different garment types perform?

## Why is wearing standard chemical suits over thermal protective garments a hazard?

Currently users often wear a Thermal Protective Garment (TPG) certified to EN 11612 for flame/heat protection and wear a standard chemical suit OVER it for the required liquid or dust protection.

This creates a HAZARD!

Why?

Standard disposable suit fabrics are based on polypropylene/polyethylene and in contact with flames will ignite and burn

Being thermoplastic they melt and drip, adhering to the TPG fabric below, transferring heat energy to the skin beneath and to other surfaces, thus potentially spreading the fire.

In a flash fire situation this will dramatically increase the heat energy contacting the skin and thus the incidence of body burn.

Even in the case of contact with a small flame, a standard chemical suit fabric may ignite and cause burns.

Wearing a standard disposable suit over a TPG can dramatically compromise thermal protection.

## How do FR standards EN 14116 and EN 11612 standards differ?



**EN 11612** is the standard for measuring PROTECTION against different types of heat; convective, radiant, contact etc.



**EN 14116** does not indicate any PROTECTION against flames or heat but is to indicate a fabric's flammability - the tendency to ignite and burn in contact with flame.

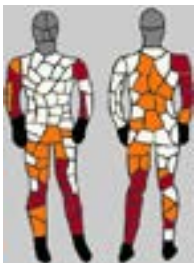
Lakeland Pyrolon™ garments use a unique viscose based fabric which will not ignite and are certified to EN 14116

For Flame & Heat Protection a Thermal Protective Garment (TPG) certified to EN 11612 should be worn.

EN 14116 Index 1 garments can be worn over a TPG without compromising protection.

## What is Thermal Mannequin Testing and how do different garment types perform?

Thermal Mannequin Testing provides a method of assessing the effectiveness of heat protective workwear by using a thermal mannequin (a mannequin covered in heat sensors) and simulating flash fires.



This test produces a body map showing predicted 2nd and 3rd degree burns and so indicates how effectively a garment protects the wearer.

The table indicates how different Type 5 & 6 suits perform in this test when worn over a Thermal Protective Garment.

### Predicted Body Burn Results for various Type 5 & 6 Coveralls

TPG with FSPE coverall	TPG with Standard SMS Coverall	TPG with FR SMS Coverall	TPG with Pyrolon™ XT coverall	TPG with Pyrolon™ Plus 2 coverall
<b>PBB = 23.9%</b> including 3rd degree burns	<b>PBB = 20.5%</b> including 3rd degree burns	<b>PBB = 19.6%</b> including 3rd degree burns	<b>PBB = 8.2%</b> NO 3rd degree burns	<b>PBB = 7.4%</b> NO 3rd degree burns
The results show almost no difference between FSP, Standard SMS and FR SMS, with all three producing 2nd and 3rd degree burns. Pyrolon™ Plus 2 and XT coveralls produce much lower predicted burns and no 3rd degree burns				

Pyrolon™ garments provide a range of protection	EN 14116	Pyrolon™ Plus 2	Pyrolon™ XT	Pyrolon™ CRFR	Pyrolon™ CBRFR	Pyrolon™ Cool Suit	Superior Anti-Static Properties  Pyrolon™ garments also feature intrinsic anti-static properties which unlike standard chemical suits do not rub off or erode with time.
	Type 6	✓ Index 1	✓ Index 1	✓ Index 1	✓ Index 3	✓ Index 1	
	Type 5	✓	✓	✓	✓	✓	
	EN 1073	✓	✓	✓	✓	✓	
	Type 4			✓	✓	✓	
	Type 3			✓	✓	✓	
	EN 11612			✓	✓	✓	
EN 1149-5	✓	✓	✓	✓	✓	✓	