

Pyrolon™ CBFR



Stitched & Taped Seams



High chemical barrier Type 3 & 4 chemical suit combined with FR properties to EN 14116 – Index 3.



- Coverall with high level chemical barrier for protection against a wide range of hazardous chemicals.
- Certified as primary FR workwear to EN 11612 (A1/C1) - will provide protection against heat and flame without wearing an FR garment underneath.
- Approved to the latest 2015 version of EN 14116 which requires vertical flammability testing on the zip front fastening as well as the fabric – and requires that the zip functions after the test.
- Meets the requirements of FR standard EN 14116 – to Index 3 (As test according to EN 15025 - not index 1 as other FR disposables. Note that Index 3 is the same requirements as detailed for FR garments in EN 11612 for thermal protective garments.
- Single zip and double storm flap front fastening with hook & loop seals enabling re-use where appropriate (chemical suits should ONLY be re-used if uncontaminated and undamaged. Decision on re-use is the users' responsibility).
- Coverall with hood, elasticated cuffs, waist and ankles. Version with attached feet available.
- Lakeland "Super-B style with 3-piece hood, crotch gusset and inset sleeves for superior freedom of movement and durability.
- Double layer, cushioned kneepads for comfort and durability.

Physical Properties

| Property | EN Standard | CE Class |
|------------------------------|-------------|------------------|
| Abrasion Resistance | EN 530 | 6 |
| Flex Cracking | ISO 7854 | 3 |
| Trapezoidal Tear | ISO 9073 | 3 |
| Tensile Strength | EN 13934 | 3 |
| Puncture Resistance | EN 863 | 2 |
| Anti-static (charge decay) * | EN 1149-3 | SF=0.1/HDT=0.24s |
| Seam Strength | EN 13935-2 | 4 |

* Anti-static tested according to EN 1149-3 (Charge decay). Requirements in EN 1149-5 are: SF (Shielding Factor) >0.2 or Half Decay Time < 4s, so HDT of 0.24s is well within the requirement

Permeation Test Data *

Liquid chemicals from EN 6529 Annex A. For a full list of chemicals tested see Permeation Data Tables or Chemical Search at www.lakeland.com/europe. Tested at saturation unless stated.

| Chemical | CAS No. | Result / CE Class |
|-------------------------|-----------|--------------------|
| Acetone | 67-64-1 | >480 min / Class 6 |
| Acetonitrile | 70-05-8 | >480 min / Class 6 |
| Carbon Disulphide | 75-15-0 | >480 min / Class 6 |
| Dichloromethane | 75-09-2 | >480 min / Class 6 |
| Diethylamine | 209-89-7 | >240 min / Class 5 |
| Ethyl Acetate | 141-78-6 | >480 min / Class 6 |
| Hydrochloric Acid (37%) | 7647-01-0 | >480 min / Class 6 |
| Hydrofluoric Acid (48%) | 7664-39-3 | >480 min / Class 6 |
| n-Hexane | 110-54-3 | >480 min / Class 6 |
| Methanol | 67-56-1 | >30 min / Class 2 |
| Sodium Hydroxide (50%) | 1310-73-2 | >480 min / Class 6 |
| Sulphuric Acid (98%) | 7664-93-9 | >480 min / Class 6 |
| Tetrahydrofuran | 109-99-9 | >10 min / Class 1 |
| Toluene | 95-47-6 | >480 min / Class 6 |

* NB = normalised breakthrough. This is the time taken for the PERMEATION RATE to reach 1.0µg/minute/cm² in controlled laboratory conditions at 23°C. It is NOT the point at which breakthrough first occurs. For safe use times see Selection Guide and PermaSURE®. Because the primary concern for Pyrolon™ CBFR is the COMBINATION of chemical barrier **and** FR properties, its permeation barrier and testing is limited. However, more extensive penetration testing against a range of chemicals (according to test ASTM F903) is available on request.

Pyrolon™ CBFR Styles



Style code 228
Coverall with hood
Size: SM - 3X



Style code 214
Coverall with hood and attached feet
Size: SM - 3X

Available in: Navy blue

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.

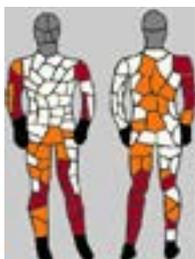
Lakeland Pyrolon™ garments use a unique viscose based fabric which will not ignite and are certified to EN 14116

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 3 & 4 suits perform in this test when worn over a Thermal Protective Garment.

Predicted Body Burn (PBB) Results for various Type 3 & 4 Coveralls

| TPG coverall only | TPG with Standard Chemical Coverall | TPG with Pyrolon™ CRFR Coverall | TPG with Pyrolon™ CBFR Coverall |
|--|---|---|---|
| | | | |
| PBB = 37% NO 3rd degree burns | PBB = 53% including 3rd degree burns | PBB = 24% NO 3rd degree burns | PBB = 9.02% NO 3rd degree burns |
| The results show that wearing a standard chemical suit over a TPG not only increases predicted body burn compared against the TPG suit alone, it also results in 3rd degree burns. Wearing a Pyrolon™ chemical suit over the same TPG REDUCES predicted body burn and produced no 3rd degree burns. | | | |

| | | | | | | | |
|---|-----------|-----------------|-------------|---------------|---------------|--------------------|---|
| Pyrolon™ garments provide a range of protection | EN 14116 | Pyrolon™ Plus 2 | Pyrolon™ XT | Pyrolon™ CRFR | Pyrolon™ CBFR | 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 | ✓ | ✓ | ✓ | ✓ | ✓ | |