



Pyrolon® Secondary FR Workwear: Heat Tolerances

What are the Heat Tolerances of Pyrolon® fabrics and what does it mean?

Questions about the heat tolerances of Pyrolon® fabrics are common and are often framed along the lines of:-

“What temperature will the Pyrolon® fabric resist?”

The problem is that framing the question in this way can be misleading... what exactly does “resist” mean?

Pyrolon® garments are constructed using a unique fabric entirely different from the thermoplastics used for most disposable coveralls. Engineered specifically for FR properties, the “heat tolerances” of the fabrics are shown in the table below:-

Product	Certification	Softening Temperature	Melting Temperature
Pyrolon® Plus 2	Type 5&6 & EN 14116	227oC	250oC
Pyrolon® XT	Type 5&6 & EN 14116	227oC	250oC
Pyrolon® CRFR	Type 3&4 & EN 14116	227oC	250oC
Pyrolon® CBFR	Type 3&4 & EN 14116	227oC	250oC
Pyrolon® TPCR	Type 3&4 & EN 11612	227oC	250oC

Note: temperatures are the same for each fabric because a specific polymer component in the fabric melts before other components.

However...

- The problem with using terms like “resist” in this context is that it implies *protection*, which is not the case. The temperatures above are an indication **ONLY** of softening and melting points and are **NOT** an indication of any level of protection against liquids or materials up to those temperatures.
 - For example, it does not (necessarily) mean that a wearer **will** be protected against a splash of liquid at 200oC even though this is a lower temperature than the softening point stated. A liquid at 200oC splashed onto the garment may transfer sufficient heat energy through the fabric to cause burns.
 - On the other hand, neither does this mean that the fabric will **NOT** be suitable in such an application because:-
 - A splash of liquid at 200oC **will** immediately and rapidly reduce in temperature once in contact with the air and the garment fabric. Once in contact its temperature **will** quickly reduce, subject to the proximity to the source, ambient temperature, volume of liquid, undergarments worn and thermal properties of the fabric (i.e. its tendency to retain heat energy and release it over time) Thus whilst it *may* allow transference of sufficient heat energy through to the wearers skin to cause burns, it also may not.
- There is no easy way to confirm this other than testing in situ (obviously in a safe and non-hazardous manner), simply because of the variety of unknown, numerous factors that can influence the outcome.
- Thus it is impossible to state with any certainty that a wearer **will** or **will not** be protected in such circumstances based on “heat tolerance” of fabric. Any decision on suitability of Pyrolon® garments for a specific application such as hot liquid splash must therefore be made **following** a suitable risk assessment by qualified personnel and should not be based on heat tolerances quoted.
- Pyrolon® garments are **NOT** thermal protective garments (with the exception of CBFR and TPCR which are certified to EN 11612) and are **NOT** designed to protect against heat energy and flames. Rather they are designed as Secondary FR Workwear - to be worn **OVER** primary FR garments (certified to EN 11612) to provide chemical protection **WITHOUT** compromising heat protection and where standard chemical suits cannot be worn because being based on thermoplastics they will ignite and burn.

For more information about Secondary FR Workwear, FR standards and the principles of heat protection, along with details on Pyrolon® garments and their uses, download our [Guide to Secondary FR Workwear](#).

