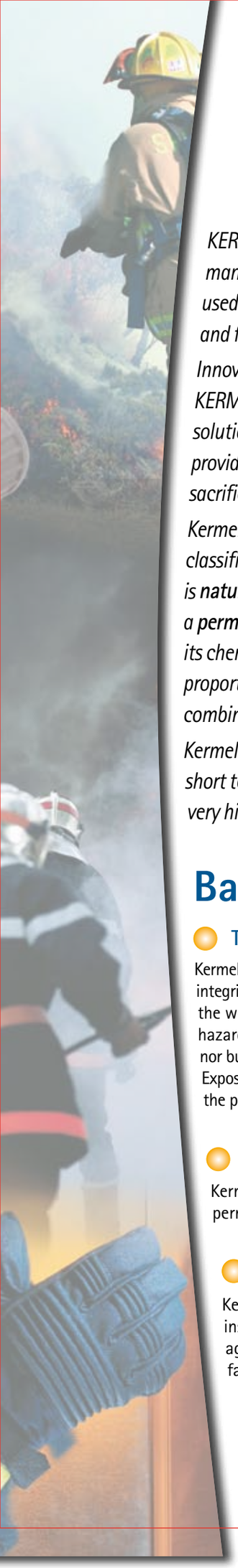
KERMEL

PERFORMANCE IS OUR PROFESSION

KERMEL® fibre for fire fighters' protective clothing



KERMEL®:

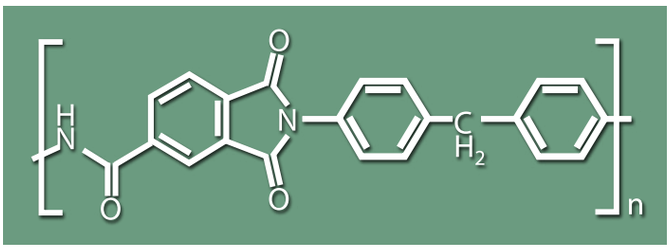
KERMEL is the leading European manufacturer of meta-aramid fibres used in protective clothing against heat and flames.

Innovation is a key element within KERMEL: we offer a wide range of textile solutions from the skin to the outershell, providing maximum protection without sacrificing any degree of comfort.

Kermel® fibre is a polyamide-imide, classified in the meta-aramid family. It is ***naturally non-flammable,*** *which is a* ***permanent*** *characteristic thanks to its chemical structure including a high proportion of aromatic structures and combined double bonds.*

Kermel® fibre maintains ***maximum*** *short term protection against very high temperatures (up to 1,000 °C).*

Kermel® fibre



Polyamide-imide

Kermel® fibre protects you from head to toe:

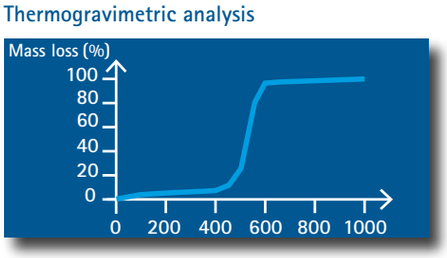
- knitwear (used in underwear)
- station wear garments
- wildland garments
- fire suits
  - > fabric outershell
  - > membrane support
  - > thermal barrier and lining

Base properties

Thermostability

Kermel® fabrics are stable in flames, and the integrity of the clothing is sufficient to enable the wearer to move away rapidly from the hazardous area. Kermel® fibres do not melt nor burn when exposed to high temperatures. Exposure to such temperatures will only make the polymer char slowly.

Thermogravimetric analysis



Non-flammability

Kermel® based garments are inherently and permanently non-flammable.

Thermal insulation

Kermel® fibre is a very good thermal insulator, which allows good protection against heat, even with lightweight fabrics.

Resistance to chemicals

The chemical properties of Kermel® provide efficient protection against most chemical agents.
Kermel® fibre gives good resistance to cold acids, even when concentrated, and dilute alkalis at ambient temperature, when immersed for extended periods. It also withstands most organic solvents, chlorine bleach, detergents and water vapour.
For short-period contact, i.e. accidental contact such as splashes or projections, Kermel® retains its integrity and therefore sustains the protective screen effect.

After more than four days immersed in sulfuric acid, sodium hydroxide or acetone, Kermel® fibre retains more than 50% of its initial properties, which are unchanged in boiling water and steam.

your solutions from the skin

KERMEL® fibre for **UNDERWEAR**

KERMEL has launched a new range of non-flammable and thermostable underwear garments from socks to caps that improve air permeability moisture management.

Due to its intrinsic softness and its «cotton like» feel, which is unequalled for an aramid, Kermel® fibre works particularly well in knitwear that is in direct contact with the skin: balaclavas, polo-shirts, tee-shirts, sweat-shirts.
Kermel® knits have the same properties as the station wear garments, ensuring permanent flame resistance together with increased comfort.
Knitwear technology can be applied to yarns made in 100% Kermel® or in blends: Kermel V50, Kermel V70, or Kermel/Wool/FR Lenzing.
They can also be manufactured as a new type of double sided knitwear, which enables improved sweat evaporation while keeping skin dry.
For underwear made from 100% Kermel®, that "open" knit is particularly suited for intense and regular use during the summer. This is when the wearer really appreciates the quick drying and efficient moisture management of the knits.

Kermel® is certified Oeko-Tex Standard 100, an advantage when a very wide range of knits is worn in direct contact with skin. This is why Kermel® fibre offers maximum protection to fire-fighters while preserving their health.

KERMEL® fibre for **STATION WEAR GARMENTS**

Standard EN 531 and ISO 15384

The Kermel® range mainly consists of two products, complying with international standards as well as the national requirements for fire fighters' station wear.

Kermel V50

Permanent protection with high level of comfort (50% Kermel®, 50% Lenzing FR), intended for average surface densities.
This fabric is worn and well appreciated by most of the fire brigades worldwide, mainly in 260 g/m² twill.
Station wear garments made out of Kermel V50 combine durability with high performance.
- extreme comfort thanks to the suppleness and the softness of the blend
- absorption capacity very similar to cotton

Kermel V70

Permanent, high protection with lighter weight fabrics for summer (70% Kermel®, 30% Lenzing FR) with higher mechanical performance, intended for lighter weight fabrics with similar mechanical strenght and better breathability.
The higher percentage of Kermel® compensates for the lightness of the fabric and maintains the same level of high performance as the Kermel V50 blend proposed in heavier fabrics. Kermel V70 particularly suits fire brigades located in very hot and dry areas.
- quicker drying
- best level of comfort/resistance
- higher air permeability

to the outershell

KERMEL® fibre for **WILDLAND GARMENTS**

- Standard ISO 15384, when worn on its own,
- Standard ISO/CD 16073.2 when it is worn over Kermel® station wear

Always at the forefront of technology, KERMEL has developed a single layer garment system for use in combating wildland and forest fires. Produced from a single layer Kermel® fabric, the garment has been developed in an antistatic Kermel® fabric, using Bright Orange Kermel® fibre, but is also available in other high visibility colours, providing improved visibility and greater level of protection against radiant heat.

KERMEL® fibre for **FIRE SUITS**

Standard EN 469

Kermel® fibre can be used in the different layers of a garment: the outer fabric, the membrane support, the thermal barrier and the lining. The multi-functional nature of this clothing hinges around several aspects: protection, the integrity of the complex, comfort and appearance.

Comfort: effects on physiological parameters

To be at its maximum efficiency, the body must be at a temperature of approximately 37°C. Any higher than this, heat stress can result in loss of consciousness or cardiac arrest. Three factors are involved: physical effort, environment (heat, gas, danger...), and clothing that retains body heat.

The body can be cooled in two ways: through diffusion into the air and by sweat, which cools the skin when it evaporates. Therefore, two parameters are measured as far as the clothing is concerned: thermal resistance and evaporative resistance.

Limiting this «wearer heat» can be achieved with thin, light complexes, thanks to the selection of intrinsically high performance layers, taking into account the undergarments.

Base protection provided by fire suits made out of Kermel®

In order to maintain protection in action, the multi-layer must have a high and long-lasting resistance to the different types of attacks it can encounter.

Mechanical resistance

The outer shell must retain high tear strength. Since all these attacks will reduce this mechanical resistance, losses of performance must be anticipated. All Kermel® outer shells guarantee a high safety level.

Chemical resistance

A fire fighter may be subjected to projections of acid or other chemical products.

The proofing treatment and the Kermel® inherently resistance to chemical products ensure that there is only a low level of alteration of the outer shell.

Heat resistance

Heat is not only a danger for the wearer; it can also damage clothing. The most exposed layer always ends up being weakened by extreme heat. The thermostability of Kermel® ensures a high residual strength of the outer layer after long heat exposure (according to EN 469, the residual strength of the outer shell is measured after 3 minutes of radiant heat exposure at a flux of 10 kW/m^2).

A large range of colours

Key Benefits

MECHANICAL STRENGTH

The mechanical strength of Kermel® fibre is ideally suited for making durable, long-lasting, value for money clothing.

EXTREME COMFORT

The low modulus of the fibre is realised in the extreme softness of Kermel® fabrics and knits.

QUALITY OF THE APPEARANCE

Kermel® does not pill, i.e. fabrics continue to look as good as new over extended periods, even when working clothes are worn every day.

PERMANENT COLOUR

Kermel® is solution-dyed during the manufacturing process for improved colourfastness.

ADDITIONAL PROPERTIES

All the Kermel® products are designed to be worn for a long period of time, in a perfect appearance, without pilling, fading nor colour change. Only available with Kermel® meta-aramid products!

Contact us for more information on:
- our technology
- solutions adapted specifically to meet your needs
- our worldwide experience

Certifications

- Kermel® fibres are OEKO-TEX Standard 100 certified for next to skin garments.
- KERMEL facilites are ISO 9001:2000 certified
- KERMEL is certified OHSAS 18001 for health and safety at work

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KERMEL is also active in other markets:

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