



Lightweight coveralls with a high level of thermal protection help the police force in London face high-risk situations with comfort and confidence

Risky business

Police around the world face hazardous situations on a daily basis. Fortunately these officers are fully protected by Hainsworth's TI-technology.

 Hainsworth Protective Fabrics

Once a crowd starts gathering, anything can happen: a rowdy bunch of football fans can become dangerously unruly, or a 'peaceful' demonstration might turn violent. There is no way of predicting the risks police officers will face in maintaining public order - from rocks and petrol bombs to exhaustion and heat stress. In addition to maintaining a high state of readiness, these men and women must also be able to move freely over prolonged

periods of time, unencumbered by heavy gear.

"The public order approach to policing, which dates from the 70s, covers everything from a handful of protesters to an extremely large crowd," explains Inspector Robert Blackburn of the London Metropolitan Police, the largest and highest profile force in the UK. His responsibilities cover not only officer safety training but also the delivery of personal protective equipment (PPE) - everything from helmets and batons to limb protectors and body armour.

First line of defence

One of the most important elements of this protective package is the coveralls, which can be seen as the first line of defence. Worn over the standard issue body armour, which provides ballistic and stab protection, the coveralls guard the body against injury from flames and excessive heat.

What Inspector Blackburn refers to as 'comprehensive product assessment' led to a decision, taken in 2003, to replace the Met Police's standard wool barathea coveralls, worn as long as anyone can remember, with state-of-the-art coveralls made of an advanced fabric system called TI-technology. This patented dual-layer fabric construction was developed by Hainsworth Protective Fabrics of West Yorkshire, U.K., an innovative specialist whose expertise in protective apparel dates back to the Battle of Waterloo in 1815. TI-technology is a major step forward in thermal protection based on a totally new construction concept that utilises DuPont Nomex on the face of the fabric with a grid of DuPont Kevlar on the back.

Thomas Hainsworth, managing director, describes TI-technology as both evolutionary and revolutionary. "It is evolutionary in that it makes the most appropriate use of each fibre's unique characteristics: the thermal protection and flexibility of Nomex and the strength of Kevlar. The revolutionary part comes through linking the two fibres, not by conventional blending but in the weaving process. This produces a fabric, which, under conditions of extreme heat, creates Active Air Entrapment. Because it harnesses the excellent insulating properties of air, the TI-technology fabric system offers up to 25 per cent more thermal protection than conventional heat-resistant aramid fabrics of the same weight.

In addition, a special fabric finish called Repel+, also developed by Hainsworth, assures quick run-off of hazardous liquids such as petrol.

'It suits our needs'

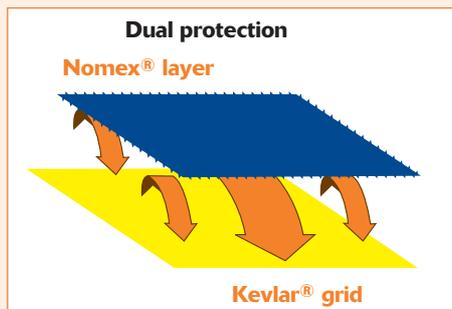
The Metropolitan Police Force decided to make the quantum leap from wool barathea to TI-technology because, as Inspector Blackburn puts it: "It suits our needs. It offers the high level of protection we were looking for; it is substantially lighter than wool, which, especially when wet, can become hot and heavy; and it has the ability to breathe. The garments are lightweight and comfortable, enabling public order officers to perform at a high level as long as they are needed, without suffering from heat stress."

The changeover to the new coveralls, manufactured by S. Yaffy Protective Clothing of Glasgow, Scotland, is being conducted on a progressive replacement and new issue basis over a period of three years. It involves two levels of public order officers, a total of approximately 6,000. Level One, known as the Territorial Support Group, receives supplementary training, which qualifies them to handle specific operations

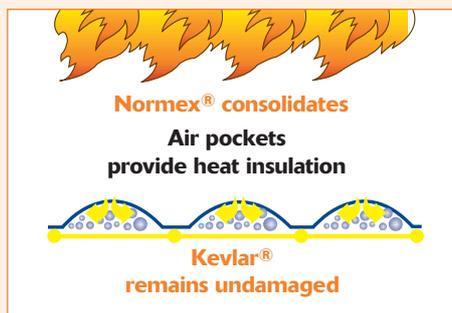
'How it works'

TI-technology is an advanced dual-layer woven fabric system developed and patented by Hainsworth Protective Fabrics.

The two layers - Nomex on the outer surface and an inner grid of Kevlar - are woven together, using a specially engineered pattern that enables the innovative fabric system to work effectively.



When exposed to a flash fire or extreme heat, the Nomex 'consolidates' and ripples, while remaining firmly intact with the Kevlar grid. This creates air pockets - Active Air Entrapment - which provide optimum thermal protection to the wearer.



such as drug raids and anti-terrorism patrol. Level Two comprises about 5,000 everyday police officers, who receive public order training and can be drawn from their normal policing duties to become part of a 'serial' covering demonstrations and certain high-risk events alongside their Level One colleagues.

A collaborative process

Hainsworth partnered with DuPont Life Protection in developing and testing its TI-technology system, which has already found wide acceptance among firefighters for its broad array of thermal protective qualities, break-open resistance and liquid run-off. "Meeting and exceeding the key needs of the UK's largest police force was a great collaborative challenge," says Rob Price, DuPont marketing manager. "TI-technology maximises wearability and minimises the risk of heat stress without compromising protection. We see this technology entering into other areas of protective apparel, where these benefits are important."

This feature originally appeared in DuPont Magazine