Bisley PROTECTIVEWEAR

PROTECT YOUR GREATEST ASSET ...YOUR WORKERS

Bisley WORKWEAR

www.bisleyworkwear.com.au

GAZAL

The Evolution of Workwear: Industrial Driving Forces

Functionality & Durability
- Cotton Drill 310gsm

Health + Safety & Risk Environment Analysis
- Fire Resistance
- Reflective Taping
- Waterproofing

Industry Specialisation
- Insect Protection
- Anti-Bacterial
- Heat Management

Comfort & Performance
- Cotton Drill 155gsm
- Cotton Drill 240gsm
- Mesh Panelling
- Breathable Venting

A Multi-layer Health and Safety Strategy

- **Multi-layer health and safety strategies along the vulnerable points of the oil and gas production process results in reduced lost man-hours, higher productivity and higher returns on investment.**
- **Multi-layered solutions can contain one or all of these Health and Safety options.**

Health solutions

– Insect Protection Treatments
– Heat Management Treatments
– Anti-bacterial Treatments

Safety solutions

– Fire Resistant fabrications, treated and inherent
– Anti-Static properties

Bisley PROTECTIVEWEAR

Bisley FLAME RESISTANT

Bisley INSECT PROTECTION

Bisley ANTI STATIC WEAR

Bisley HEAT MANAGEMENT

Bisley ANTI BACTERIAL

INSECT PROTECTION

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Bisley INSECT PROTECTION

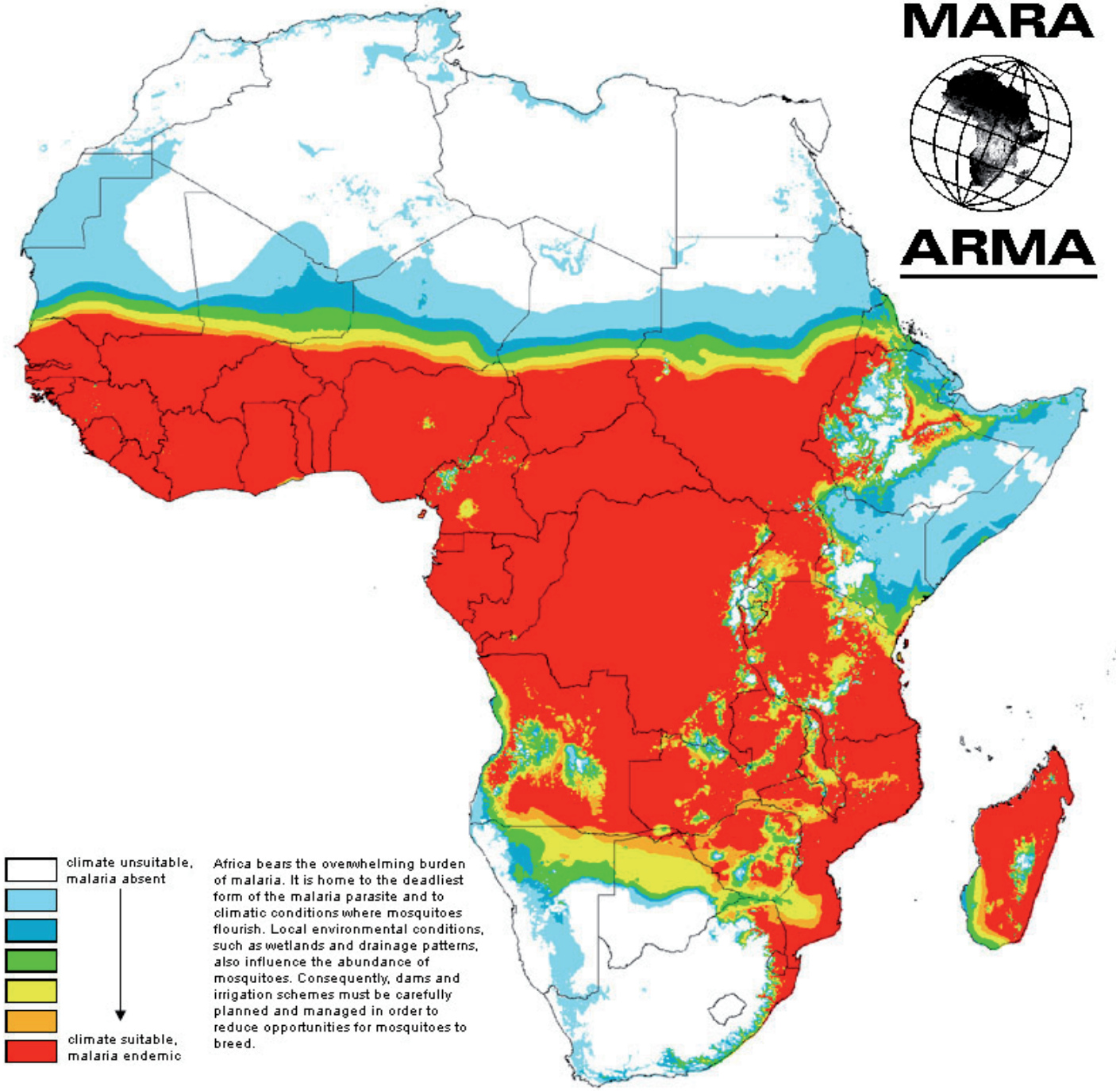
Malaria and other insect transmitted diseases

- According to WHO, Malaria and other insect transmitted diseases slows economic growth in Africa by up to 1.3% each year.
- Sub-Saharan Africa's GDP is approximately $300 billion, the short-term benefit of malaria and other insect transmitted diseases control can reasonably be estimated at between $3 billion and $12 billion per year.
- Globally there are between 300 to 500 million clinical cases of Malaria each year.
- WHO is quoted as saying that Malaria and other insect transmitted diseases is draining the life out of African economies.
- Over 85% of world malaria deaths, disease and disability occur in the African region.
- Oil & Gas exploration is predominantly conducted in emerging markets around the world, such as the African continent.
- Integrated vector management, such as treated clothing, mosquito netting and medication, is about better decision making and understanding of the risk environment.

Bisley INSECT PROTECTION

MARA

ARMA



Africa bears the overwhelming burden of malaria. It is home to the deadliest form of the malaria parasite and to climatic conditions where mosquitoes flourish. Local environmental conditions, such as wetlands and drainage patterns, also influence the abundance of mosquitoes. Consequently, dams and irrigation schemes must be carefully planned and managed in order to reduce opportunities for mosquitoes to breed.

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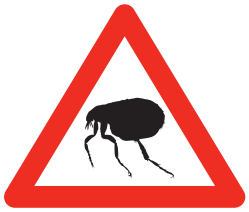
INSECT PROTECTION

Based on scientific estimates, at present one person out of six has been infected with insect transmitted diseases such as malaria, dengue or yellow fever, lyme borreliosis or leishmaniasis. According to the infomation of US health control centers, from the 17th to the early 20th century, more cases of illness and death were caused by these than all other causes together.

Mosquitoes transmit malaria, dengue fever or yellow fever.

Ticks transmit lyme borreliosis.



Fleas host encephalitis germs as well as agents of other diseases.

Tsetse flies transmit sleeping sickness
Sand flies can transmit leishmaniasis.

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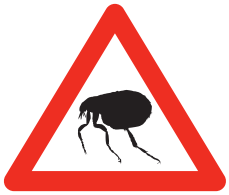
Bisley INSECT PROTECTION

- **Comply with NATO Standard TL8305**
  - **Permethrin content measurement**
  - **Insect knock down rates**
- **Tested using World Health Organisation (WHO) recommendations**
- **Comply with Cytotoxicity testing which measures the potential for skin irritation**
  - **DIN EN ISO 10993-1:2003-12**
  - **DIN EN ISO 10993-5:1999-11**
  - **DIN EN ISO 10993-12:2005-03**
- **Fabric complies with OEKO-TEX 100 – Class II (harmless to human health)**
- **Non-toxic to humans, safe and odourless**
- **Superior protection against insect bites including mosquitoes, ticks, lice and bed bugs**
- **Protection for up to domestic 100 washes**
- **100% knock down rates after contact up to approximately 72 minutes**
- **No repetition of treatment necessary**
- **We recommended that exposed skin not covered by Bisley Insect Protection garments should be protected by an approved insect repellant**

Ticks transmit lyme borreliosis.

Tsetse flies transmit sleeping sickness
Sand flies can transmit leishmaniasis.

Mosquitoes transmit malaria, dengue fever or yellow fever.



Fleas host encephalitis germs as well as agents of other diseases.

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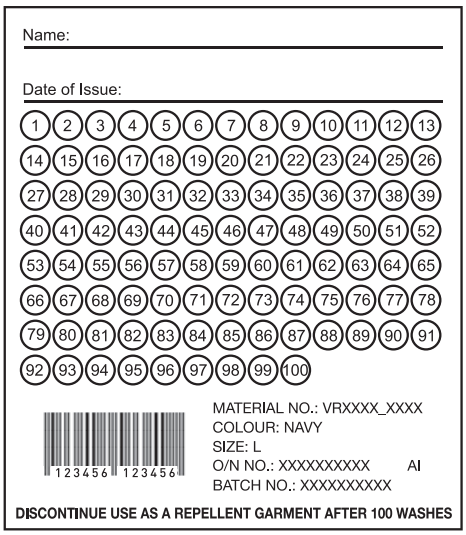
Bisley INSECT PROTECTION

BISLEY INSECT PROTECTION FABRICS

OUR UNIQUE 100 WASH SYSTEM DEVELOPED FOR EXXONMOBIL

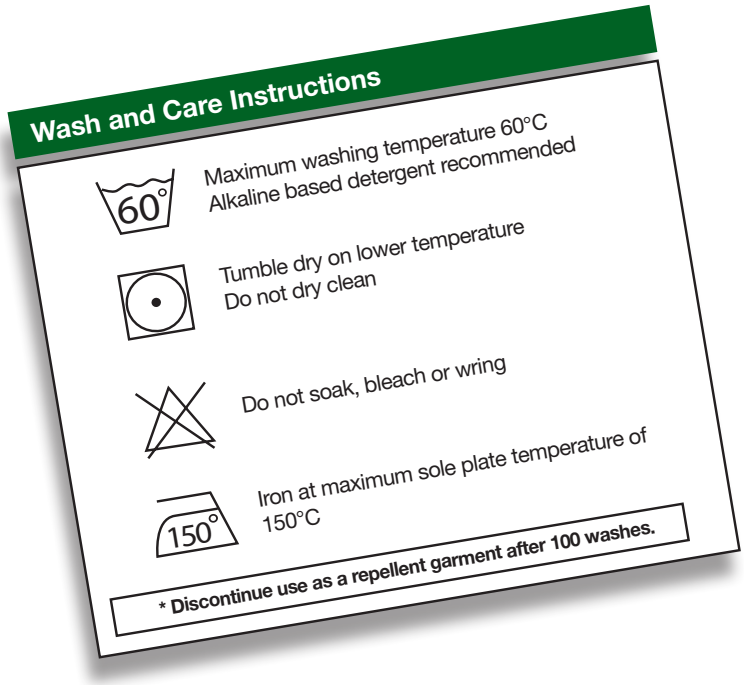
A checklist label stitched into each garment to make sure you get the maximum protection and longevity from your Bisley Insect Protection Workwear.



INSECTS AND THEIR TRANSMITTABLE DISEASES

The transmission of a disease can take place in two ways:

- Vectors such as flies can carry on their legs a large number of microorganisms, which cause diseases (typhus, dysentery, cholera or trachoma, worldwide the most frequent cause of blindness) when exceeding a certain number.
- The second possibility is that vectors spread bacteria, viruses or parasites by stinging or biting. In this way they transmit germs from an infected host into the body of the new host.



Bisley
INSECT PROTECTION

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FLAME RESISTANT

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Bisley FLAME RESISTANT

Bisley Flame Resistant garments are made from fabrics that comply with worldwide standards, to protect the wearer in risk environments. The fabric range fulfils measures such as durability, comfort, protection, weight and price and includes either a treated or inherent fabric composition.

STANDARDS FOR NFPA 70E

Safety Requirements for Employee Workplaces

HRC (Hazard Risk Category)	CLOTHING DESCRIPTION Typical Number of Clothing Layers	ATPV (Req. Minimum ARC Rating)	TYPE CLOTHING
			'Everyday Working Clothing' ATPV ≥ 8
1	Non-melting, flammable material (1*)	N/A	Indura® Ultra Soft® (301) - 237gsm Meets HRC 0, 1 and 2
2	FR shirt and FR pants or FR coverall (1*)	4	
3	Cotton underwear plus FR shirt and FR Pants (1 or 2*)	8	

Bisley FLAME RESISTANT

Bisley Workwear currently offers three Flame Resistant clothing solutions to suit your Protectivewear needs and requirements;

1. A complete stock service on Indura® Ultra Soft® Flame Resistant clothing including pants, shirts, coveralls and jackets.
2. A fully customisable range of products using Bisley Treated Flame Resistant fabric, made to the customer's specific requirements.
3. A fully customisable range of products using Bisley Inherent Flame Resistant fabric, made to the customer's specific requirements.

BISLEY TREATED FLAME RESISTANT FABRIC

Similar in construction to Indura® Ultra Soft® fabric (88/11/1), the Bisley Treated Flame Resistant fabric can also be treated with the diverse selection of Bisley's Protectivewear solutions, including: Insect Protection, Anti-Bacterial, Heat Management and Waterproofing. At 250gsm, it achieves a Cal Rating of above 8 and HRC 2.

FABRIC CODE (Reference)	FABRIC COMPOSITION	ATPV (Req. Minimum ARC Rating)	COLOURS AVAILABLE
BISLEY CP-A250	88% Cotton/ 11% Polyamide/ 1% Carbon Filament (3/1 Twill)	250gsm ± 5%	All regular solid colours. Bright Orange & Bright Yellow to meet AS/NZS 1906.4:2010.

BISLEY INHERENT FLAME RESISTANT FABRIC

Bisley Inherent Flame Resistant Fabric is spun quite differently to its Treated companion, giving the fabric a lighter hand-feel, and providing an impression to the user that they are wearing a light-weight garment. Achieving a Cal Rating of above 8 and HRC 2 at 240gsm, it can also be treated with the diverse selection of Bisley's Protectivewear solutions, including: Insect Protection, Anti-Bacterial, Heat Management and Waterproofing.

FABRIC CODE (Reference)	FABRIC COMPOSITION	ATPV (Req. Minimum ARC Rating)	COLOURS AVAILABLE
BISLEY PLA-A240	48% Protex/ 35% Lyocell/ 16% Aramid/ 1% Carbon Fibre (Inherently Flame Retardant)	240gsm ± 5%	All regular solid colours. Bright Orange & Bright Yellow to meet AS/NZS 1906.4:2010.

Bisley FLAME RESISTANT

- Comply with Australian & New Zealand Standards:
  - AS2919, AS/NZS4399 & 1020
  - Hi Visibility AS/NZS4602 & 1906 (Class D, D/N & N)
- Comply with European and International Standards
  - EN 340, 1149-3 & 13034
  - EN/ISO 11612 & 11611
  - REACH Certified
- Comply with US Standards
  - NFPA 70E, 2112, 1977
  - OSHA 1910.269
- Comply with International Standards
  - IEC/ ISO 61482-2 (Class 1)
  - ISO 14184-1
  - ASTM F1506, F1002, F1959/ F1959M-06ae1
  - ISO 14184
- Available as treatment or inherent
- 3M 8935 branded flame resistant taping
- Comply with OEKO-TEX 100
  - Class II (safe to wear against skin)
- Comply with HRC and ATPV Ratings
  - HRC 0,1, & 2
  - ATPV Range 6 - 9
  - made to order industry specific clothing and accessories

- Guaranteed flame resistant for the life of the garment
- Low formaldehyde levels
- Protection against arc flash, flash fire, molten metal, radiant heat, contact heat, and limited chemical splash
- Cotton blend fabrics allow a range of fabric styles, colour options and weights, where heat stress is an issue

HEAT MANAGEMENT

Bisley WORKWEAR

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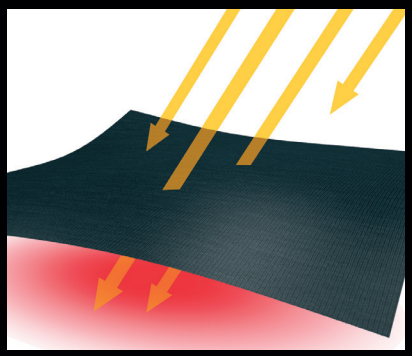
“Reduces heat build-up and provides reliable protection from UV rays.“
Schoeller Technologies AG

In regular workwear garments, dark colours heat up stronger when exposed to direct sunlight compared to light colours.

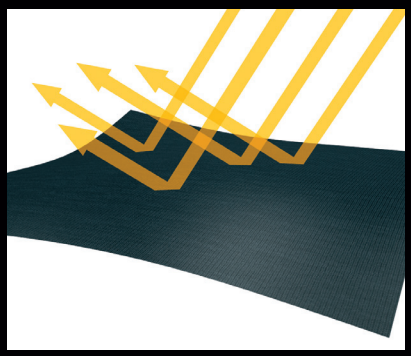
Bisley Workwear is now offering the technologically advanced **coldblack®** treatment incorporated into the fabric production process.

WITHOUT coldblack®

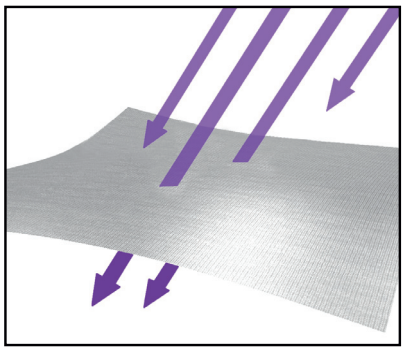


Dark fabrics without the coldblack® treatment absorb heat

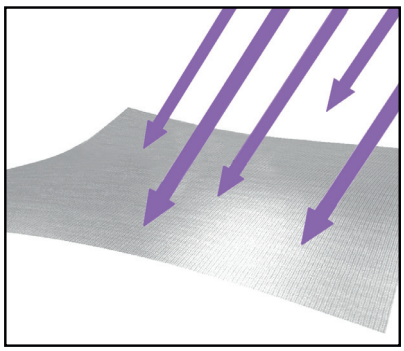
WITH coldblack®



Dark fabrics with the coldblack® treatment reflect heat

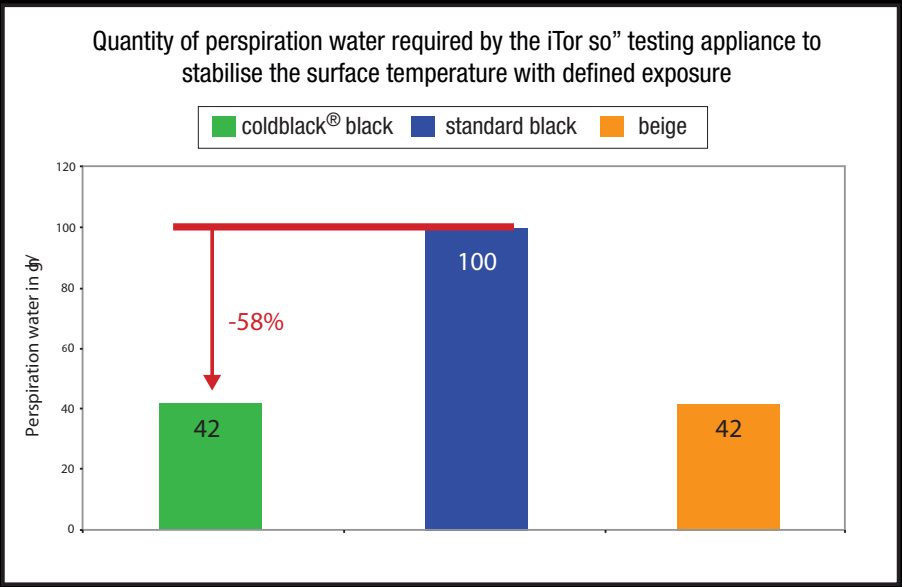


Light coloured fabrics without **coldblack®** allow UV rays to penetrate



Light coloured fabrics with **coldblack®** significantly reduce UV rays from penetratiing

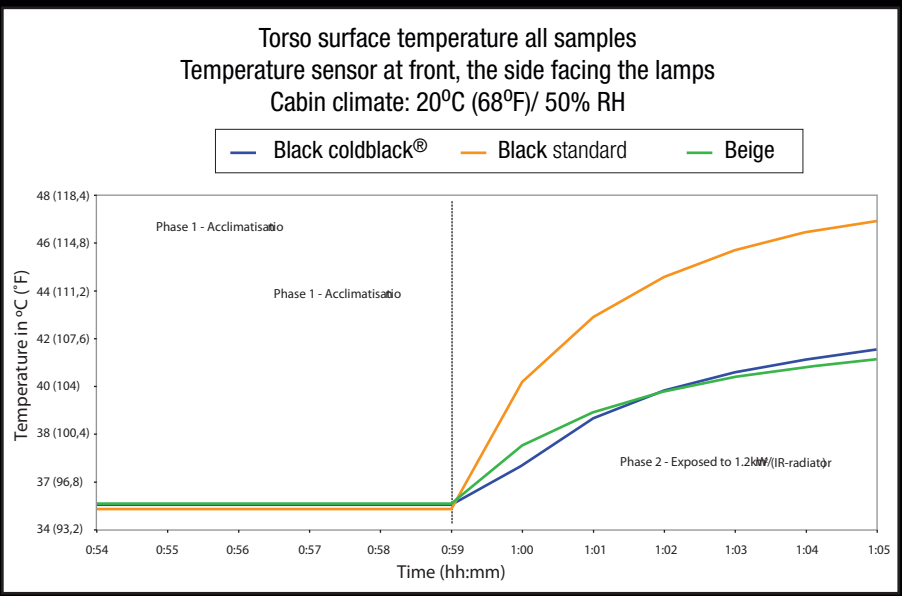
Test results of black fabric treated with **coldblack®**
VS standard fabrics in black and beige:



(Empa Test Report No. 449906 of 28. July, 2008)

MEASURING WITH SIMULATED SWEATING

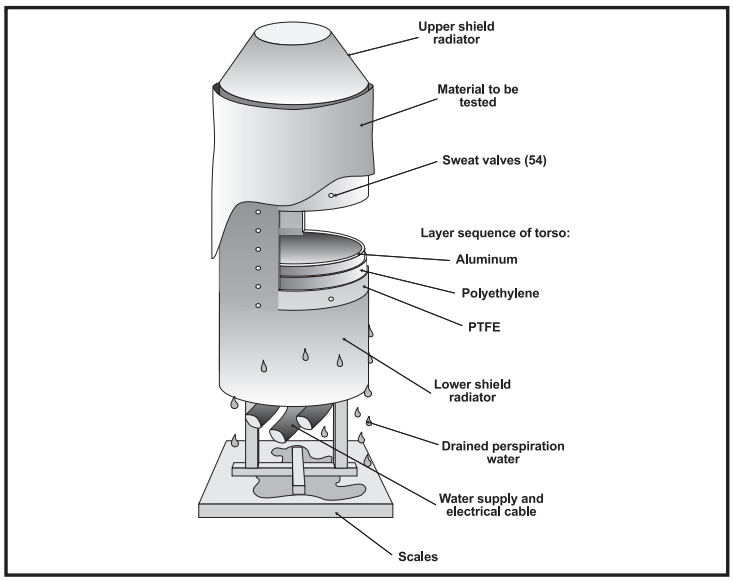
The measurements show that, when exposed to simulated sunshine, a **coldblack®** treated garment (just like a beige one) requires only about half as much perspiration water as a standard black garment to achieve the same torso surface temperature. This means that the wearer of a **coldblack®** treated garment only perspires about half as much as the wearer of a conventional black garment in order to compensate for the increase in skin temperature.



(Empa Test Report No. 448807 of 26. March, 2008)

MEASURING WITHOUT SIMULATED SWEATING

When exposed to simulated sunlight (infrared lamp) the black **coldblack®** treated garment displayed a temperature increase of the torso which is approximately 5°C (9°F) lower than that of the non-treated black shirt.



(Source: Empa)

TESTING ON THE SWEATING TORSO

The capacity of **coldblack®** to reflect infrared heat rays can be determined precisely and measured in the laboratory. The Empa in St. Gallen (www.empa.ch) has measuring methods using a sweating torso. Heat management on the textile surface and the effects on the human body were tested using three different polo shirts.

The torso is a cylinder with the dimensions of the human body. The individual layers of the material replicate the layers of human skin and display properties similar to human skin in terms of heat capacity and heat conducting. In addition, the torso can be filled with water to achieve the same heat capacity as the human body. 20 sensors are attached around the torso to allow the temperature in the individual layers to be determined. The warming through exposure to sunlight is simulated in the torso using infrared rays.

Bisley Workwear can now offer **coldblack®** as an added service when designing and producing your Custom Made Products.

Ideal for all outdoor work environments, the **coldblack®** treatment is applied to the fabric during the fabric production process, therefore any Custom Made Products must be designed from scratch.

Additional benefits of Bisley Workwear garments that are treated with **coldblack®** include:

- Fabrics retain their breathability (as there is no coating)
- Available on most Bisley Workwear garments
- Garments have a greater resistance to aging from sun damage
- The comfort and fabric properties are not affected
- The unique treatment is inherent and remains intact even with frequent wearing or use

ANTI BACTERIAL

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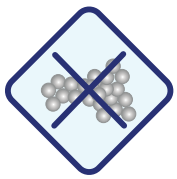
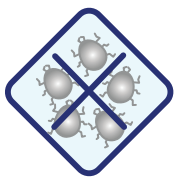
Bisley ANTI BACTERIAL

Antibacterial treatment through the entire sock reduces the risk of fungi and odour

- Prevent development of unpleasant odours caused by bacteria
- Work like a built-in deoderant
- Keep textiles fresh and comfortable
- Dermatologically tested (DIN EN ISO 10993-5)
- Excellent washing resistance, especially on synthetic fibres 20-50 washing cycles according to EN ISO 6330 (2A) 60oC



NO BACTERIA



NO DUST MITES

NO ODOUR

NO FUNGI

- Reliable and durable bacteriostatic effect against a broad range of bacteria including MRSA (Mehicillin Resistenter Staphylococcus Aureus)
- Safe for man and environment
- Comply with OEKO-TEX 100 - Class I-IV (harmless to human health)
- EPA registered

Bisley WORKWEAR

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Bisley ANTI BACTERIAL

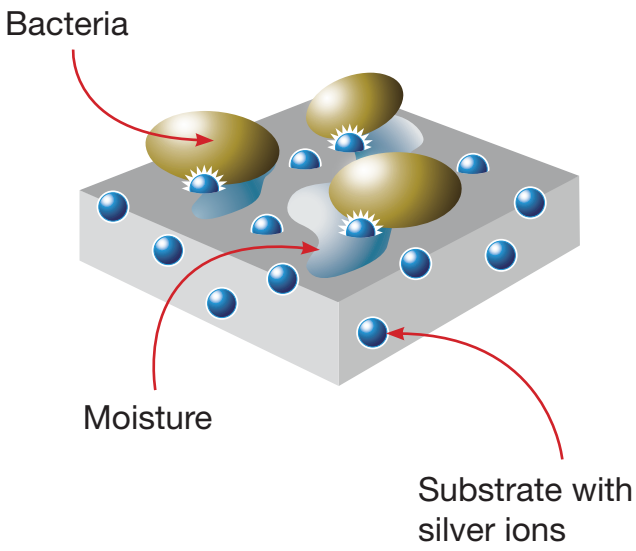
BISLEY ANTI-BACTERIAL FABRICS

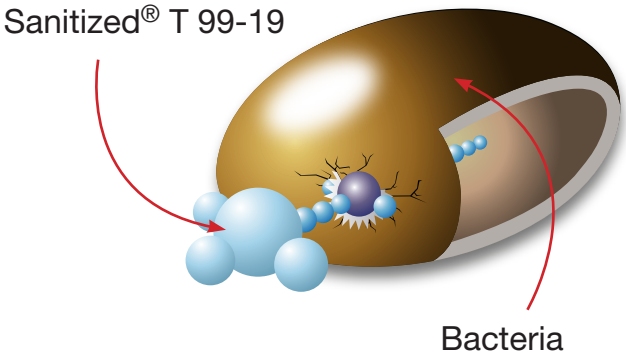
The natural anti-bacterial effect of silver against a broad range of bacteria is undisputed and scientifically proven. It damages the cell membranes of bacteria and inhibits their growth. In addition, it hinders the reproduction of the bacteria responsible for odour development.

Sanitized® Silver is the newest generation of antimicrobial finishes for synthetic fibers, especially polyester. This highly innovative product offers advantages for the producer as well as for the consumer: no binder is necessary, it can be applied during the extract procedure and has washing resistance of up to 100 cycles at 60° Celsius.

FABRIC HYGIENE FUNCTION

The silver ion locates the bacteria via the moisture and deactivates it.





This is the effect silver has on bacteria
1. Cell membrane is destabilised
2. Respiration is prohibited
3. Food (nutrient) intake is impeded
4. Cell division is inhibited

NO ODOUR

NO BACTERIA

NO FUNGI

NO DUST MITES

Bisley
ANTI BACTERIAL

Bisley
WORKWEAR

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ANTI STATIC

Bisley WORKWEAR

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Bisley
ANTI STATIC WEAR

Bisley Anti Static garments are made from fabrics that comply with worldwide standards, to protect the wearer in risk environments. The fabric range fulfills measures such as durability, comfort, protection, weight and price and includes either a treated or inherent fabric composition. Bisley Anti Static fabrics provide solutions for a broad range of risk environments exposed to electrostatic charges.

Uncontrolled discharge from static build-up is a potential hazard for many industries, especially where combustible fuels, gases and dusts are present. It is also equally hazardous to the safe assembly of sensitive components in clean rooms and the operation and maintenance of electronic equipment and controls. One of the most serious risks is from the human body, which is capable of generating up to 40,000 volts of static electricity.

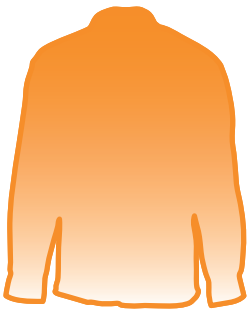
Bisley anti static fabrics have been specifically developed to provide optimum static control against incendiary spark.

- ✓ Eliminate the build up of static electricity
- ✓ Contain negastatic threads which actively dissipate electrical charges before accumulation
- ✓ Suitable for petrochemical, electrical and high risk flammable environments
- ✓ Can be incorporated into wet weather or dry weather garments
- ✓ Encapsulated into the yarn to avoid the abrasive process of wash, wear and tear
- ✓ Comply with Australian/ New Zealand Standard:
  - AS/NZS 1020:1995
- ✓ Woven into the fabric of the garment, anti static properties ensure a high level of protection, durability and comfort
- ✓ Comply European Standards:
  - EN 1149-1, 1149-2, 1149-3
  - END 1149-5
- ✓ Surface resistivity significantly reduces risk in exposive environments

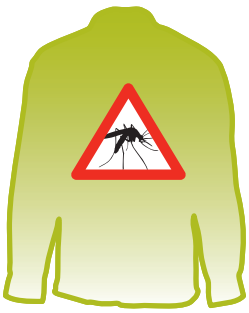
Bisley PROTECTIVEWEAR

STEP 1
BISLEY ANTI-STATIC
FIRE RESISTANT
DRILL WORKWEAR

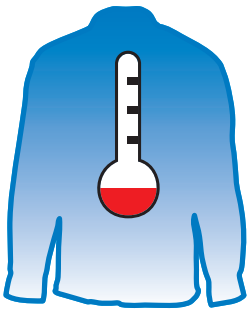
OR



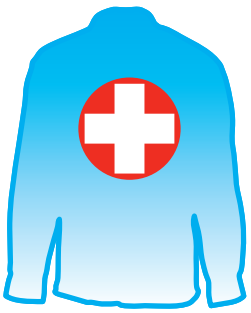
STEP 1
BISLEY COTTON
DRILL WORKWEAR



STEP 2
PERMITHRIN INSECT
PROTECTION TREATMENT



STEP 3
COLDBLACK HEAT
MANAGEMENT TREATMENT



STEP 4
ANTI-BACTERIAL &
ANTI-ODOUR TREATMENT

STEP 5
WATER RESISTANT PVC
COATED PROTECTION

OR

STEP 5
WATER RESISTANT
LAYERED MEMBRANE
PROTECTION

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Bisley PROTECTIVEWEAR

Fabric	Composition	Flame Resistant					Static Control		Insect Protection (Optional)	Anti Bacterial (Optional)	Heat Management (Optional)	Water-Proof (Optional)
		ATPV 6-7	ATPV 8-9	HRC 0	HRC 1	HRC 2	Natural Cotton Properties	Anti-Static Carbon 100% Protection	Yes / No	Yes / No	Yes / No	Yes / No
Indura® Ultra Soft® (341) - 186gsm	88% Cotton/ 12% High Tenacity Nylon	✓		✓	✓		✓					
Indura® Ultra Soft® (301) - 237gsm	88% Cotton/ 12% High Tenacity Nylon		✓	✓	✓	✓	✓					
Bisley CP-A250 - 250gsm Treated	88% Cotton/ 11% Polyamide/ 1% Anti Static (Carbon)	✓		✓	✓			✓	✓	✓	✓	✓
Bisley PLA-A240 - 240gsm Inherent	48% Protex®/ 35% Lyocell/ 16% Aramid 1% Anti Static (Carbon)		✓	✓	✓	✓		✓	✓	✓	✓	✓
Cotton Preshrunk Drill - 155gsm	100% Cotton						✓		✓	✓	✓	✓
Cotton Preshrunk Drill - 190gsm	100% Cotton						✓		✓	✓	✓	✓
Cotton Preshrunk Drill - 240gsm	100% Cotton						✓		✓	✓	✓	✓
Cotton Preshrunk Drill - 310gsm	100% Cotton						✓		✓	✓	✓	✓
Preshrunk Poplin - 110gsm	65% Cotton 35% Polyester								✓	✓	✓	✓
Cotton Chambray - 130gsm	100% Cotton						✓		✓	✓	✓	✓
Cotton Denim - 390gsm	100% Cotton						✓		✓	✓	✓	✓
Cotton Chino - 250gsm	100% Cotton						✓		✓	✓	✓	✓
PV Polyester & Viscose - 235gsm	65% Polyester 35% Viscose								✓	✓	✓	✓