

SilveR.STAT[®] fibres: static and bacterial protection in textiles

*Polyamide fibres
have been made
conductive and antibacterial
thanks to pure silver
coating onto the polymer.*



The problems

Static electricity

Static electricity is generated at the surface of two substances when they are separated thus creating severe separation of positive and negative charges accumulated at their surface. It creates a wellknown "discharge", the degree of which is based on speed, pressure, moisture content and temperature.

This discharge creates a spark whose effects are:

- uncomfortable electrical shocks,
- electronic device malfunctions,



- fires and/or explosions in explosive environments.

Making material sufficiently conductive with the adding of antistatic/conductive fibres is the solution to neutralize static electricity.

Bacteria and fungi

Bacteria and fungi developing in textiles can cause:

- alteration of mechanical properties of fibres (mechanical alteration, formation of stains...),

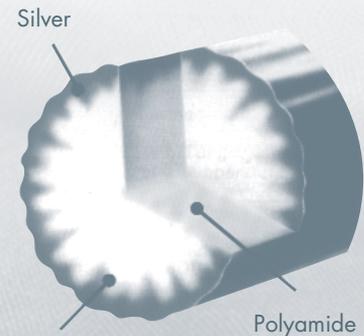
- fabric discoloration,
- forming of odours (due to sweat decomposition by bacteria),
- possibility of diseases (acne, conjunctivitis, infections, food poisoning...).

Silver has been used for thousands of years for its antiseptic properties. This natural element was used in the past to help cicatrization (wounds, burns): the cicatrization is accelerated while increasing the surface conductivity of the injury.

The solution

Polyamide fibres have been made conductive and antibacterial thanks to very pure silver suffused onto the polymer. This layer of silver enables the synthetic fibre to keep its main original textile characteristics. Silver is the most conductive natural element on earth.

The antibacterial mechanism is the following: silver ions escape from SilveR.STAT[®] fibre, enter the membrane of the bacterium, destroy its cellular structure thus preventing bacteria from developing and multiplying.



Linear electrical conductivity (in Ω/cm):



6,7 dTex SilveR.STAT[®]
cut staple fibre
has a linear conductivity
 $\leq 10^3 \Omega/cm$.

R.STAT
Tour de Saône
13, quai du Commerce
F - 69009 LYON



www.r-stat.com

Phone: 33 (0)4 72 37 65 46
Fax: 33 (0)4 78 26 21 83
E-mail: r-stat@r-stat.com

SilveR.STAT® product range

SilveR.STAT® fibres should be blended at a low rate that will be determined according to the construction of the textile material, according to its conditions of process and use and to the level of static and/or bacterial protection expected. When a conductive/antibacterial continuous yarn is used, the rate of introduction does not matter, more the way the conductive/antibacterial yarn is introduced.

Natural silver has also excellent heat conduction properties (heat distribution and storage) thanks to a very high reflectivity index (RI). This index corresponds to the capacity to give an energy back to the source.

SilveR.STAT® product presentation:

Cut staple fibre	Continuous yarn
1,7 - 3,3 - 6,7 - 22 dTex Available under pure or blended form	25 dTex/1F - 240 dTex/10F 44 dTex/10F - 110 dTex/34F other counts on request



Behaviour (indicative, only for fibre and not guaranteed for the finished product):

Treatment*	Retention of properties after:
Ageing	After 1000 h in an oven at 60°C and 70 % relative humidity
Abrasion	After 100 000 castor chair revolutions (test made on a needle-felt carpet)
Elongation	Until breaking
Washing	> 50 on fibre with ECE detergent (normalized) Included washings at 90°C
Temperature	Same as polyamide
Dyeing / bleaching	Dispersed dyestuff – solvent environment – etc...
Caution	Please ask

*Treatment made on SilveR.STAT® 6,7 dTex fibre

Applications



- carpets,
- protective clothing,
- hospital textiles,
- clean-room fabrics,
- industrial non-wovens...

These examples are not exhaustive. Do not hesitate to inquire about your project and we'll find for you the most suitable solution.

Examples of products:

Composition	Product	Surface resistivity in Ω	Cross resistance in Ω
98 % meta-aramid - 2 % SilveR.STAT®	Protective clothing / EN 1149 (After solvent dyeing and 5 washes at 90°C)	10^4	10^2
	Protective clothing ISO/CD 20 743 (After solvent dyeing and 1 wash cycle at 90°C)	ANTIBACTERIAL	
99,6 % PA - 0,4 % SilveR.STAT®	Needlefelt carpet / DIN 54345 After 100,000 castor chair revolutions	-	10^7
Fabric with SilveR.STAT® continuous yarn in grid (10 x 10 mm) 99.6 % PET + 0,4 % SilveR.STAT® 25 dTex	Cleanroom fabric EN 1149	10^4	10^1
Non-woven 93 % PET - 7 % SilveR.STAT® (dyed)	Shoe insoles / DIN 54345	10^2	10^2

Norms

Textile material including a suitable content of SilveR.STAT® fibres can pass the following norms:

- **EN 1149** parts 1 (surface resistivity) and 2 (cross resistance): electrostatic properties for protective clothing.
- **DIN 54345**: electrostatic properties of textiles (floorings, non-wovens, fabrics).
- Antibacterial quantitative methods: e.g. New Trial Method of Kanebo.

These values are non contractual and just indicative. We reserve the right to complement or amend them. More information, based on assimilated experience, is available on request. The given examples are only guidelines for you to design your own products. Information will be given on the basis of your own specifications that must have been supplied to R.STAT and is not a guarantee by R.STAT. Control, certification and validation of products (under their final commercial form and under real conditions of use) including R.STAT's technology lies with every user of R.STAT products.