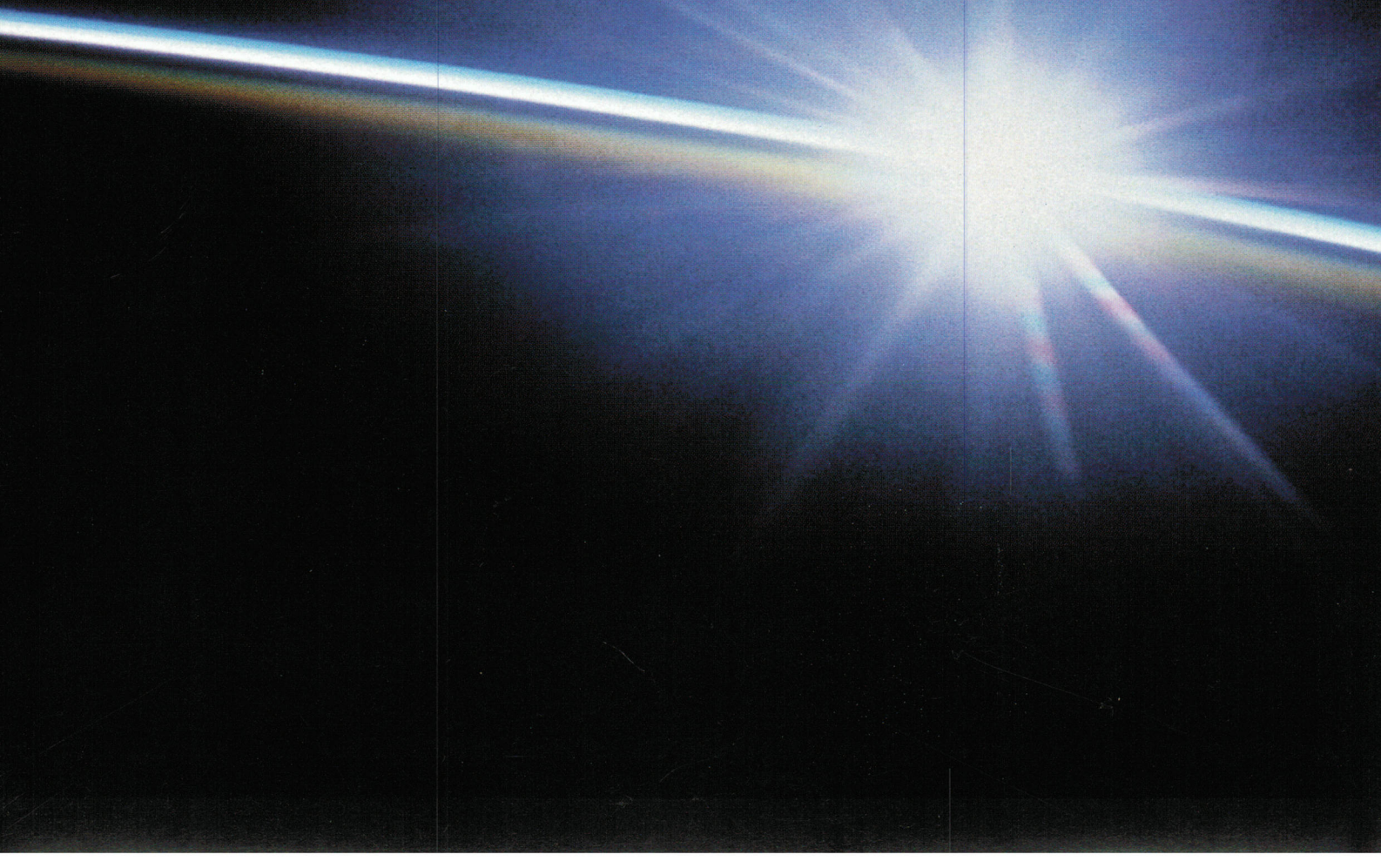


What you don't know
about electrostatic discharge
may shock you.



Until now.

Introducing Conductrol™
by Sterling Fibers,
the revolutionary fiber
that controls ESD.

The problem.

Everyone has experienced the phenomenon of Electrostatic Discharge (ESD). In the winter when humidity is low, you generate it by walking across a carpet and touching a doorknob. The uncomfortable spark you see and feel is what is referred to as ESD. In solids/air filtration situations a single spark has the potential to set off an explosion.

Electronic logic devices, particularly while they are being manufactured or assembled into finished products, are very vulnerable to ESD events. Also, in the modern office where high-density computer networks are the norm, precautions against ESD events are required.

The solution.

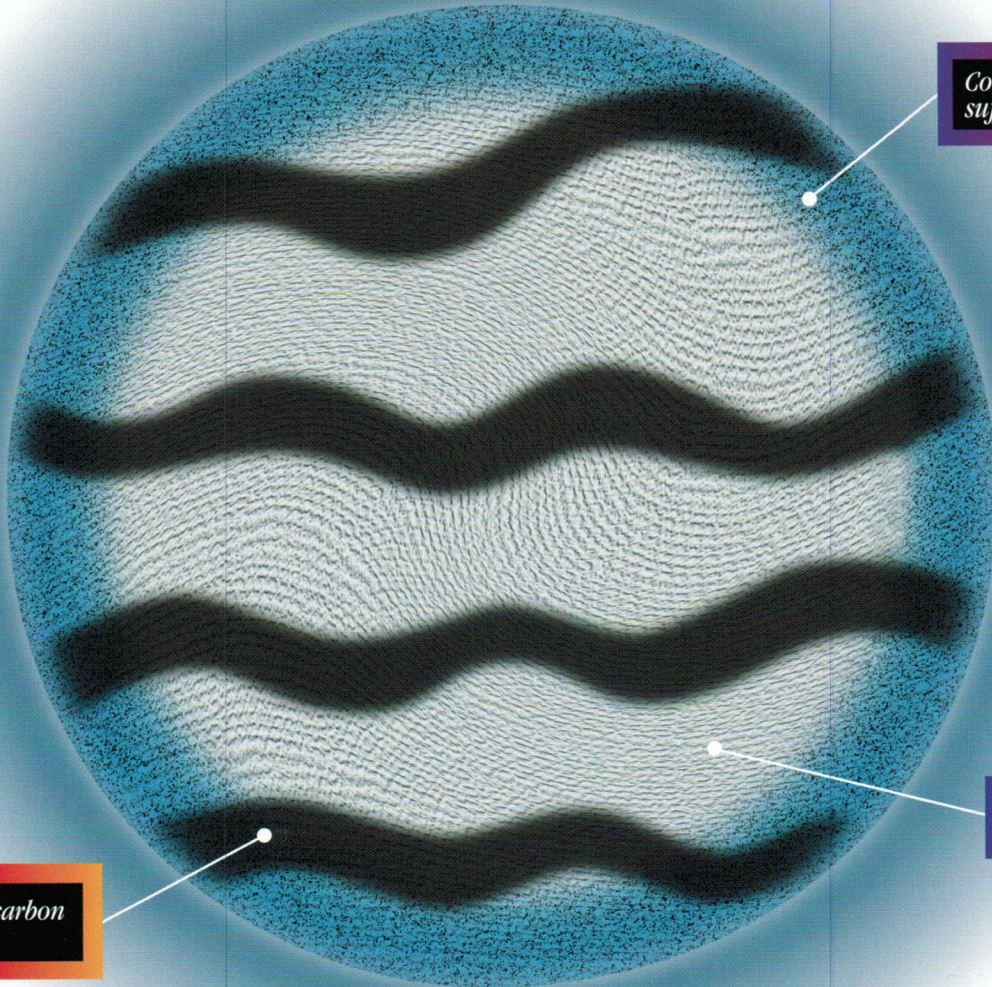
Sterling Technical Fibers uniquely engineered Conductrol™ to combine the stability of carbon-based fibers with the enhanced performance of modified fibers. This delivers the best conductivity/dollar ratio in most applications.

Conductrol, an acrylic-based conductive fiber can be incorporated into filter bags or most materials (flooring, furniture, work surfaces, and all types of apparel) that may come into contact with electronic devices or the people who handle them. With the exception of concentrated chlorine, the conductivity of Conductrol lasts in every environment tested for as long as the fiber lasts.

CONDUCTROL™

Cross section of Conductrol, the acrylic based conductive fiber.

Artist's rendition, magnified to show greater detail.



Conductive polymer
suffused to fiber.

Acrylic polymer.

Blend of conductive carbon
and acrylic polymer.

The properties of this fiber perform well in varied applications.

Through the process of suffusing the polymer to the fiber, we have created a highly stable, conductive product which will remain constant over the life of the fabric.

Durability of conductivity.

| | |
|-------------------------------|--|
| pH 3-11, room temp | no effect |
| Laundering | no effect, 75 launderings |
| Floor cleaners and detergents | no effect |
| Chlorine bleach | 3×10^6 ohm/sq after 36 hr in concentrated bleach |
| Thermal aging, 170° C | no effect after 10 days |

Typical properties.

| | |
|------------------|--|
| Denier | 3.0 |
| Length | 1.0 - 150 mm |
| Color | black |
| Resistivity | 1.0×10^5 ohm/in/fil 2.5×10^3 ohm/sq |
| Tenacity (g/den) | 3.0 - 3.5 |
| Elongation (%) | 25 - 35 |
| Crimps per inch | 12 - 14 |
| Percent crimp | 12 - 14 |

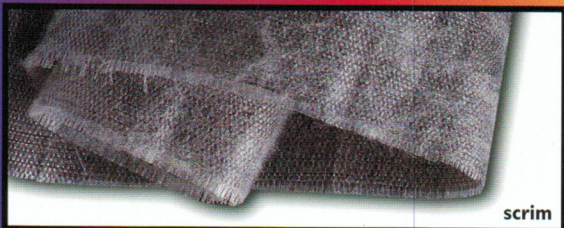
Conductrol applications.



filter bag

Filtration.

Conductrol can be incorporated into both woven and nonwoven conductive filter bags used where there is the hazard of a dust explosion. For nonwoven needle-punched felts the fiber can be blended into the face in staple form. Alternatively, staple fibers can be spun into yarns which are woven into the substrate from which some will reach the surface during the needling process. Non conductive fibers are needled into the substrate, which eliminates the need for the felt manufacturer to blend conductive and non conductive fibers. For woven bags the fiber is spun into yarns which are woven into the fabric. The blend ratio in either the felt or the yarn can be adjusted to give the desired level of conductivity. Photo provided by FrisbeFilter.



scrim

Carpet backing.

Conductrol can be incorporated into needle-punched primary carpet backing for ESD carpets. Face yarns for ESD carpets typically use conductive yarns which make the carpet conductive in the machine direction. The role of the conductive backing is to make the carpet conductive in the cross direction and to enhance surface to ground conductivity. Conductrol is available in both 100% form or in customer specified blends with other fibers for this application. Another way to introduce Conductrol into carpet backing is to spin it into yarns and weave it into a scrim. The blend ratio in either method can be adjusted to give the desired level of conductivity.



upholstery

Upholstery.

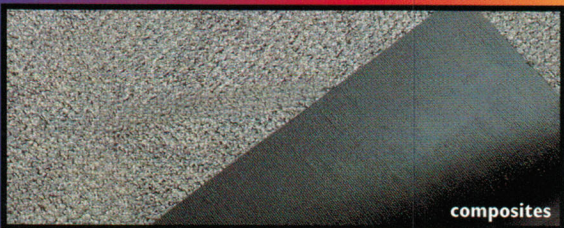
Conductrol is incorporated into upholstery fabrics required for furniture in ESD controlled environments. Conductrol is spun into yarns and woven into fabric. The blend ratio can be adjusted to give the desired level of conductivity.



apparel

Apparel.

Conductrol can be incorporated into a wide variety of apparel products including hosiery, lab coats, gloves, sweaters, and pullovers for use in ESD controlled environments. The fiber can be spun into yarns which can be either woven or knit into the appropriate fabric. Both intimately blended or grid style fabrics are possible. The blend ratio can be adjusted to give the desired level of conductivity.



composites

Specialty materials.

Conductrol cut into very short staple lengths is incorporated into specialty materials composites. Examples include adhesives, rubber, and epoxy flooring. Technical assistance is available in dispersing the fibers into various materials. The blend ratio can be adjusted to give the desired level of conductivity.

CONDUCTROL™