For the latest information from our Static Control Products Division, visit our web site:

www.achilles-esd.com
FOR THE FUTURE, FOR THE WORLD

Globalization History

1961 Technical cooperation with ICI of Great Britain is launched; polyurethane foam production begins.

1965 Achilles K.C.I. Corp. is established in New York. (It is absorbed in 1978 by Achilles USA, INC.)

1973 Achilles Hong Kong Co.,Ltd. is established in Hong Kong.

1978 Technical cooperation with Tarkett Soring AG of Sweden, relating to the manufacture of industrial flooring materials, begins.

1992 Guangzhou Supatra Co., Ltd., a shoemaking company, is established in China.

1993 Kunshan Achilles Artificial Leather Co., Ltd. is established via joint venture in China.

1994 Exclusive contract signed with Skechers of the USA to sell Skechers brand shoes in Japan.

1998 Production of the revolutionary new electron conjugated conductive polymer “ST-Poly” begins.

2001 Achilles E-tech (Dongguan) Co., Ltd. is established in Guangdong, China. This company specializes in processing HDD-related products with conductive ST-Poly treatment.

2002 Achilles (Shanghai) International Trading Co., Ltd. is established for the sales and import/export of Achilles products in China.

2004 Operations begin at the Kunshan Achilles Artificial Leather Co., Ltd. Factory No.2.

2006 Acquires Sanshin Enterprises Co., Ltd. as a subsidiary by acquiring 100% of shares issued.

2008 Achilles Advanced Technology Co., Ltd. is established in Taiwan to meet demands from the expanding semiconductor market. A sales office of Achilles USA, INC. opens in Detroit, USA.

Achilles Corporation Thailand Representative Office is established in Bangkok, Thailand.

Corporate Profile
Achilles Corporation
Capital ¥14.64 Billion
Employees 1,496 (as of Mar. 2010)

Head Office, Branch Office, and Sales Office
(Head Office)
22, Daikyo-Cho, Shinjyuku-ku, Tokyo 160-8885
Tel +81-3-3225-2170
(Kansai Branch Office)
14-15-1 Chome, Nishinokyo-Machi, Nishi-Ku, Osaka-Fu 550-0005
Tel +81-6-6534-2111

Other Sales Office
Hokkaido, Kyushu Shintomi Annex

Factories
Ashikaga Factory No.1 / Ashikaga Factory No.2 / Shiga Factory No.1 / Shiga Factory No.2 / Bibai Factory / Kyushu Factory

For the Future, For the World
Various technologies and products

New values that will lead the way for the new generation of corporations and society: This is what our technology constantly strives for.
Achilles Complete ESD Solutions

We can help you to inspect your facility, to determine your exact needs to recommend the appropriate ESD control materials and procedures for your successful ESD control program implementation.

“Hardware” Approach for your ESD control

- **Product Lineup**
  We offer various ESD control materials for your facility and packaging needs.

- **Complete Report**
  We document findings from our process evaluation and recommend appropriate ESD control measures and hardware needed.

- **Process Evaluation**
  We help operators and engineers identify the root cause of ESD events in accordance with IEC61340 standard.

- **Training Seminar**
  We offer ESD training seminar at your site. Operators and engineers must have good understanding of ESD management.

Higher Yield Quality Assurance Reliable Manufacturing

“Software Approach” for your ESD control

- **Facility materials for Factories**
  15. Soft Partition Films
  17. ESD Shoes & Safety Shoes
  17. ESD Safety Slippers
  18. Wrist Strap
  18. Ground Wires
  19. Floor Mats
  19. Sticky Mats for Clean Rooms
  19. Conductive Unit Floor Mats
  19. Antistatic Cushion Mats
  20. Conductive Table Mats
  20. Wrist Strap Monitoring System

- **Static dissipation**
  21. Static Dissipating Brushes
  21. Ionizers
  21. Electrostatic Voltmeters

- **Stationary**
  22. Conductive Clear Files
  22. Conductive Binders
  22. Conductive Clear Folders
  22. Conductive Clip Boards
  22. Conductive Hook and Loop Fasteners
  22. Conductive Pouches

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2. for Devices
3. for FPC, other Electrical parts

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07. Spacers(Separators)
07. Cushions
08. Wafer Boxes for Frame Wafers
08. Wafer Cases for Single Wafer/Frame Wafer
08. Cushioning for Wafer Boxes
08. Bumped/Compounded Wafer Carriages
09. Tape and Reels
11. Conductive Sheets for Vacuum Forming
12. Conductive Injection Molding Trays
12. Antistatic Protect Films
13. Transparent Antistatic Bags
13. Electrostatic Shielding Bags
13. Moisture Vapor Barrier Bags
13. Transparent Moisture Vapor Barrier Bags
13. Conductive Films
13. Transparent Antistatic Films
14. Transparent Conductive Films
14. Conductive Adhesive Films
14. Conductive Adhesive Tapes

反弹
ST Poly conductive processing technology

Achilles’ ST Poly is made with polypropylene, a conductive polymer with an electronic conjugated system that provides uniform coating, compounding, and conductivity on surfaces of various materials and shapes of base materials.

Antistatic agents processing technology

Antistatic additives are heavily used as antistatic processing agents. Achilles does not allow compromises in even antistatic additives.

Carbon conductive processing technology

Carbon offers optimum stability for conductive processing technology. Taking advantage of this property, we at Achilles continue to develop various products according to purposes and material types.

Metal conductive processing technology

Metal has the highest conductive performance. Achilles develops various products using materials such as evaporated metal, plating, aluminum flake, and stainless fiber.

Five features of ST Poly

- Conductive polymer makes extremely thin films and transparent conductivity possible.
- Clean and stable conductive performance with minimum bleeding and defluxion.
- Highly flexible to accommodate a wide range of materials and forms.
- Excellent chemical properties - low out-gas, low ion contamination silicon-free etc.
- Accommodates various after-processing such as laminating, printing, adhesion processing etc.

Compatibility with base material

<table>
<thead>
<tr>
<th>Material</th>
<th>Compatibility</th>
<th>Material</th>
<th>Compatibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>PET</td>
<td>○</td>
<td>PAB</td>
<td>○</td>
</tr>
<tr>
<td>A-PET</td>
<td>○</td>
<td>PABG</td>
<td>○</td>
</tr>
<tr>
<td>PE</td>
<td>○</td>
<td>PEIS</td>
<td>○</td>
</tr>
<tr>
<td>PS</td>
<td>○</td>
<td>PEIK</td>
<td>○</td>
</tr>
<tr>
<td>PP</td>
<td>○</td>
<td>PEI</td>
<td>○</td>
</tr>
<tr>
<td>POM</td>
<td>×</td>
<td>Pi</td>
<td>○</td>
</tr>
<tr>
<td>PC</td>
<td>○</td>
<td>PVC</td>
<td>○</td>
</tr>
<tr>
<td>ABS</td>
<td>○</td>
<td>LDP</td>
<td>△</td>
</tr>
<tr>
<td>PAN</td>
<td>○</td>
<td>Glass</td>
<td>X</td>
</tr>
<tr>
<td>PMMA</td>
<td>×</td>
<td>Metal</td>
<td>X</td>
</tr>
</tbody>
</table>

Warning

- Caution is required when using ST-Poly in contact with alkaline materials. ST Poly is composed of highly chemical resistant macro molecules. Alkaline materials may adversely affect performance of ST-Poly.
- Not suggested to use ST-Poly devices that can generate strong friction. The layer of ST Poly film, though rigid, may wear when used in locations with constant friction.
- Other notes Exposure to strong UV light for long time may deteriorate its property.

Applications

ST Poly can be used in a wide variety of applications for antistatic properties.

Applications in different categories

<table>
<thead>
<tr>
<th>Applications</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Film</td>
<td>Protection film</td>
</tr>
<tr>
<td>Clean curtain</td>
<td></td>
</tr>
<tr>
<td>Spacer film</td>
<td></td>
</tr>
<tr>
<td>Sheet</td>
<td>Vacuum forming sheet</td>
</tr>
<tr>
<td>Carrier tape base sheet</td>
<td></td>
</tr>
<tr>
<td>Stationery</td>
<td></td>
</tr>
<tr>
<td>Molded plastic</td>
<td>HDD parts, copy machine parts</td>
</tr>
<tr>
<td>Wafer / Photo mask case</td>
<td></td>
</tr>
<tr>
<td>IC tray, HDD tray</td>
<td></td>
</tr>
<tr>
<td>Electrical parts</td>
<td>FPC</td>
</tr>
<tr>
<td>Fiber / Thread</td>
<td>Glove / Cloth</td>
</tr>
<tr>
<td>Wiper</td>
<td></td>
</tr>
<tr>
<td>Tooling</td>
<td>Resin tooling</td>
</tr>
</tbody>
</table>
**Wafer Shipping Boxes**

**Product name**  | Protos Carrier MA Series
**Features**  
1. Static protection during shipment.  
2. Compact design contributes to more efficient handling.  
3. Can be applied to wafer transfer equipment.  
4. Excellent air tightness.  
5. ESD protection.  
6. Double wall structure for wafer protection.  
7. Can store 3.5 inch floppy disks.  
8. Able to ship wafer size of 4"/5"/6"/8"/12".  
9. Two carrier designs available, standard type and slim type.  
10. Recyclable.

**Product Code** | Specification
--- | ---
**Product Code** | Wafer size | Number of wafers | Material | Type | Package
MA-0: 1 1/16" | 50 | 100 | PP | Conductive | Conformal packing
MA-0: 1 1/16" | 60 | 200 | PP | Conductive | Conformal packing
MA-1: 1 3/4" | 75 | 200 | PP | Conductive | Conformal packing
MA-1: 1 3/4" | 90 | 300 | PP | Conductive | Conformal packing
MA-1: 1 1/16" | 75 | 200 | PP | Conductive | Conformal packing
MA-1: 1 1/16" | 90 | 300 | PP | Conductive | Conformal packing
**Table 1:**
<table>
<thead>
<tr>
<th>Wafer size</th>
<th>Number of wafers</th>
<th>Material</th>
<th>Type</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1/16&quot;</td>
<td>50</td>
<td>PP</td>
<td>Conductive</td>
<td>Conformal packing</td>
</tr>
<tr>
<td>1 1/16&quot;</td>
<td>60</td>
<td>PP</td>
<td>Conductive</td>
<td>Conformal packing</td>
</tr>
<tr>
<td>1 3/4&quot;</td>
<td>75</td>
<td>PP</td>
<td>Conductive</td>
<td>Conformal packing</td>
</tr>
<tr>
<td>1 3/4&quot;</td>
<td>90</td>
<td>PP</td>
<td>Conductive</td>
<td>Conformal packing</td>
</tr>
<tr>
<td>1 1/16&quot;</td>
<td>75</td>
<td>PP</td>
<td>Conductive</td>
<td>Conformal packing</td>
</tr>
<tr>
<td>1 1/16&quot;</td>
<td>90</td>
<td>PP</td>
<td>Conductive</td>
<td>Conformal packing</td>
</tr>
</tbody>
</table>

**Spacers (Separators)**

**Product name**  | Protos Spacer
**Features**  
1. Low particle.  
2. Low ion contamination.  
3. Anti-static material.  
4. Anti-scratching material.  
5. Reversible.  
6. Can be used with wafer transfer device.

**Product Code** | Specification
--- | ---
**Product Code** | Wafer size | Number of wafers | Material | Type | Package
PEA: 250 | 1 1/16" | 100 | PP | Conductive | Conformal packing
PEA: 250 | 1 3/4" | 100 | PP | Conductive | Conformal packing
CPS: 250 | 1 1/16" | 100 | PP | Conductive | Conformal packing
CPS: 250 | 1 3/4" | 100 | PP | Conductive | Conformal packing

**Cushions**

**Product name**  | MA-12/SP (with separate-type blue clips)
**Features**  
1. Can carry a 1 3/4 inch wafer safely.  
2. Since clean conductive material (ST-Poly) is used for the frame, wafer to wafer caused by out-gassing during wafer storage is eliminated.

**Product Code** | Specification
--- | ---
**Product Code** | Wafer size | Material | Type | Package
MA-12/SP | 1 3/4" | Conformal packing |
MA-12/SP | 1 1/16" | Conformal packing |

**Wafer Boxes for Frame Wafers Carriage**

**Product name**  | Protos Carrier ND Series
**Features**  
ND-6: 1.0 x 10^2 or less  
ND-12: 1.0 x 10^2 or less  
ND-8: 1.0 x 10^2 or less  
ND-12: Antistatic PC/ABS

**Product Code** | Specification
--- | ---
**Product Code** | Wafer size | Material | Type | Package
ND-8: 1.0 x 10^2 or less  
ND-12: Antistatic PC/ABS

**Wafer Cases for Single Frame Wafer Carriage**

**Product name**  | VFP-ND-6R-90 for 6-inch wafer  
**Features**  
Can carry a 6-inch frame wafer safely. Since it is set to the case by its frame part. The wafer itself does not contact the case. Excellent transparency enables the user to easily identify the contents without opening the case.

**Product Code** | Specification
--- | ---
**Product Code** | Wafer size | Material | Type | Package
VFP-ND-6R-90 | 6-inch | Conductive | PC |

**Cushioning for Wafer Boxes**

**Product name**  | MA-12PP
**Features**  
1. Can be stored in trays.  
2. Reusable.

**Product Code** | Specification
--- | ---
**Product Code** | Material | Type |
MA-12PP | Poly-propyline |

**Bumped/Compounded Wafer Carriages**

**Product name**  | Bumped Wafer Package System
**Features**  
Can be applied to 6 to 12 inch wafer transfer.  
Can be used in a wafer box, maximum of 12 wafers can be carried.

**Product Code** | Specification
--- | ---
**Product Code** | Wafer size | Material | Type | Package
Bumped Wafer Package System | 6 to 12 inch | Conductive |
Bumped Wafer Package System | 6 to 12 inch | Conformal packing |
Achilles Top Cover Tape with its excellent antistatic characteristics and transparency provides various types of embossed carrier tapes with stable sealing property.

**Features**
- Stable peeling property can keep small chips components secure and avoid jumping problems.
- High transparency with little haze enables recognition of IC chips even after they are taped to embossed carrier tapes, facilitating efficiency for quality control purposes.
- Excellent ESD protection prevents electrostatic damage or jumping problems to semiconductors from occurring.

**Product Code**

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Product Name</th>
<th>Code</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST-9 / ST-931</td>
<td>ST-Cover Tape (Conductive)</td>
<td>ST-9 / ST-931</td>
<td>Heat seal type top cover tape for embossed carrier tapes.</td>
</tr>
<tr>
<td>AS-20 / AS-931</td>
<td>AS Cover Tape (Antistatic)</td>
<td>AS-20 / AS-931</td>
<td>Heat seal type top cover tape for embossed carrier tapes.</td>
</tr>
<tr>
<td>ST-PSA / STS-PSA</td>
<td>ST-PSA Cover Tape (Conductive)</td>
<td>ST-PSA / STS-PSA</td>
<td>*Adhesive type top cover tape for embossed carrier tape. *Adhesive: acrylic-base</td>
</tr>
<tr>
<td>AS-PSA</td>
<td>AS-PSA Cover Tape (Antistatic)</td>
<td>AS-PSA</td>
<td>*Adhesive type top cover tape for embossed carrier tape. *Adhesive: acrylic-base</td>
</tr>
</tbody>
</table>

**Specification**

<table>
<thead>
<tr>
<th>Item Code</th>
<th>ST-9 / ST-931</th>
<th>AS-20 / AS-931</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Width (mm)</td>
<td>Minimum Width: 6.7 / Maximum Width: 8.1</td>
<td></td>
</tr>
<tr>
<td>Roll length (m)</td>
<td>300 or 600 or 900</td>
<td></td>
</tr>
<tr>
<td>Plastic roll core (inch)</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

We’ll take your request.
Conductive Sheets for Vacuum Forming

ST-A-PET

- **Material:** A-PET
- **Product Code:** ST-1A
- **Applications:** Can be used as base material for trays to pack electronic components or embossed carrier tapes.
- **Features:**
  - Clean material containing limited particles, outgassing, and ion contamination, and silicon-free.
  - High transparency makes it easy to recognize the components packed in trays.
  - Made-to-order trays are also available upon request.

![Image of conductive sheets](image-url)

**Specifications**
- **Thickness:** 0.05mm, 0.1mm, 0.15mm
- **Width:** 640mm
- **Length:** 300mm

**Surface Resistance**
- 1.0 x 10^9 Ω or less (Base material before vacuum forming)

<table>
<thead>
<tr>
<th>Composition</th>
<th>A-PET</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST-Poly Conductive layer</td>
<td></td>
</tr>
</tbody>
</table>

Conductive Injection Molding Trays

ST-Poly can be applied not only to sheet and film but also injected into molding trays.

**ST-Poly Injection Trays**
- **Product Code:** ST-1U
- **Applications:** Trays to pack electronic components.
- **Features:**
  - Base material is clean with limited particles, outgassing, and ion contamination.
  - Suitable for clean room usage. Less concerned about contamination when washing trays in the tank.
  - Made-to-order trays are also available upon request.

**Specifications**
- **Surface Resistance:** 1.0 x 10^9 Ω or less

<table>
<thead>
<tr>
<th>Composition</th>
<th>ST-Poly Conductive layer</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE Film</td>
<td></td>
</tr>
</tbody>
</table>

Antistatic Protect Films

**ST-Protect Film**
- **Product Code:** ST-2
- **Applications:** Surface protection of display units such as LCD, POP, Optical films and panels.
- **Features:**
  - Excellent ESD protection prevents electrostatic discharges to peeling and friction and high conductive performance reduces adhesion of particles to the film.
  - High transparency maintains clear visibility of the ESD screen after the film is installed.
  - No contamination of bleeding since no antistatic agent is contained in this film.

**Specifications**
- **Thickness (μm):** 25, 30, 40, 50
- **Surface Resistance (Ω):** 1 x 10^9, 1 x 10^8, 1 x 10^7

<table>
<thead>
<tr>
<th>Composition</th>
<th>PE Film</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST Poly conductive layer</td>
<td></td>
</tr>
<tr>
<td>Acrylic adhesive layer</td>
<td></td>
</tr>
</tbody>
</table>

Conductive Injection Molding Trays

**CNT Injection molding trays**
- **Product Code:** CNT-1U
- **Applications:** Trays to pack electronic components.
- **Features:**
  - Base material is clean with limited particles, outgassing, and ion contamination.
  - Incorporated with carbon nanotube resin in base material which enhances durability as conductive molding tray in washing processes.

**Specifications**
- **Surface Resistance:** 1.0 x 10^9 Ω - 1.0 x 10^10 Ω

<table>
<thead>
<tr>
<th>Composition</th>
<th>PE Film</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNT Poly conductive layer</td>
<td></td>
</tr>
<tr>
<td>Acrylic enhanced, carbon nano-tube resin (Standard Low adhesion)</td>
<td></td>
</tr>
</tbody>
</table>
**Transparent Antistatic Bags**

- **Product name**: Skypoly bag
  - **Product Code**: SKY-1
  - **Applications**: For packaging of electronic parts.
  - **Features**:
    - Antistatic
    - Transparent

**Electrostatic Shielding Bags**

- **Product name**: Al shield bag NV
  - **Product Code**: AL-05
  - **Applications**: For packaging of electronic parts.
  - **Features**:
    - Excellent ESD protection because of the antistatic outer/inner layer
    - Durability is enhanced by Al layer inserted between PET and PE layer
    - Minimum quantity for supplied: 100pcs

**Moisture Vapor Barrier Bags**

- **Product name**: Al Damp proof Conductive Bag
  - **Product Code**: AL-01
  - **Applications**: For packaging of electronic parts.
  - **Features**:
    - Conductive
    - Damp proof
    - 100μm light proof & high electrostatic shielding property

**Transparent Moisture Vapor Barrier Bags**

- **Product name**: Silica deposited moisture barrier bag
  - **Product Code**: Si-01
  - **Applications**: For packaging of electronic parts.
  - **Features**:
    - Excellent protection from moisture & oxidation without using metalized film or metal foil.
    - Transparent
    - Easily disposable

**Conductive Films**

- **Product name**: Cropoly film
  - **Product Code**: 101UU
  - **Applications**: For packaging of electronic parts.
  - **Features**:
    - Excellent conductive property
  - **Surface Resistance**: 1.0 x 10^10 Ω or less

**Transparent Antistatic Films**

- **Product name**: Skypoly film
  - **Product Code**: SKY-4
  - **Applications**: For packaging of electronic parts.
  - **Features**:
    - Antistatic property with transparency
  - **Surface Resistance**: 1.0 x 10^10 Ω or less (200C, 30%RH)

**Transparent Conductive Films**

- **Product name**: ST-PET film
  - **Product Code**: ST-8
  - **Applications**: Static shield screen for CRT monitor, surface shield cover, room divider for clean room and equipment.
  - **Features**:
    - Suitable for clean room use: limited outgas, and ion contamination
    - High transparency
  - **Surface Resistance**: 1.0 x 10^10 Ω or less
  - **Specification**:
    - **Material**: PET

**Conductive Adhesive Films**

- **Product name**: ST-SF Film
  - **Product Code**: ST-14-500-20, ST-14-1000-20
  - **Applications**: Room divider for clean room, static control film for observation window used on equipment.
  - **Features**:
    - Good antistatic property
    - Limited outgas, and ion contamination
    - High light transparency
    - Cost-effective
  - **Surface Resistance**: 1.0 x 10^10 Ω or less
  - **Specification**:
    | Part No. | Width  | Length |
    |----------|--------|--------|
    | ST-14-500-20 | 50mm  | 20m    |
    | ST-14-1000-20 | 1000mm | 20m   |

**Conductive Adhesive Tapes**

- **Product name**: IC Tape
  - **Product Code**: ST-6
  - **Applications**: Packing tape for semiconductor devices.
  - **Features**:
    - Good antistatic property
    - Clean material: Neither carbon materials nor contamination-causing agents are used.
    - Good ESD protection minimizes electrification caused by peeling of tape.
    - High Transparency
  - **Surface Resistance**: 1.0 x 10^10 Ω or less (conductive side)
  - **Specification**:
    | Width  | Length  | Wrapping unit |
    |--------|---------|---------------|
    | 10mm   | 50cm    | 400 feet/carton |
    | 50mm   | 90cm    | 400 feet/carton |
**Soft Partition Films**

### Achilles Seiden F

**Applications**
For partition purposes in areas where high level ESD protection is needed, as in clean rooms.

**Features**
- Unique conductive printed design on surface of flexible PVC film.
- Surface resistance level of 10^12 (JIS K-6911).
- Good transparency.
- Flame Retardant grade 2 (in accordance with JIS A-1302 test method).

**Specification**

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Achilles Seiden F</th>
<th>Achilles Seiden F UV Guard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width (mm)</td>
<td>Foil</td>
<td>Foil</td>
</tr>
<tr>
<td>Length (mm)</td>
<td>Foil</td>
<td>Foil</td>
</tr>
<tr>
<td>Thickness (mm)</td>
<td>Foil</td>
<td>Foil</td>
</tr>
</tbody>
</table>

### Achilles Yellow Seiden F, Achilles Seiden F UV Guard

**Applications**
For partition purposes or for areas where high level ESD protection and UV guard is needed, as in clean rooms.

**Features**
- High UV guard property as well as maintaining base properties of Achilles Seiden F (conductive & flame retardant).

**Specification**

<table>
<thead>
<tr>
<th>Product Name</th>
<th>[\text{Achilles Yellow Seiden F, Achilles Seiden F UV Guard}]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width (mm)</td>
<td>Foil</td>
</tr>
<tr>
<td>Length (mm)</td>
<td>Foil</td>
</tr>
<tr>
<td>Thickness (mm)</td>
<td>Foil</td>
</tr>
<tr>
<td>Metric</td>
<td>Foil</td>
</tr>
</tbody>
</table>

### Achilles Black Seiden F, Achilles Seiden Crystal

**Applications**
For partition purposes in areas where high level ESD protection & shading property is needed as in clean rooms.

**Features**
- Excellent shading property.
- 123% shading.
- Maintains property of base film.

**Specification**

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Achilles Black Seiden F</th>
<th>Achilles Seiden Crystal UV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width (mm)</td>
<td>Foil</td>
<td>Foil</td>
</tr>
<tr>
<td>Length (mm)</td>
<td>Foil</td>
<td>Foil</td>
</tr>
<tr>
<td>Thickness (mm)</td>
<td>Foil</td>
<td>Foil</td>
</tr>
</tbody>
</table>

### Achilles Yellow Seiden F Crystal

**Applications**
For partition purposes or for areas where high level ESD protection and UV guard is needed, as in clean rooms.

**Features**
- Maintains high antistatic property by using our original PVC formulation technology.
- Surface resistance level of 10^12 (JIS K-6911).
- Good transparency.
- Flame Retardant grade 2 (in accordance with JIS A-1302 test method).

**Specification**

<table>
<thead>
<tr>
<th>Product Name</th>
<th>[\text{Achilles Yellow Seiden F Crystal UV}]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width (mm)</td>
<td>Foil</td>
</tr>
<tr>
<td>Length (mm)</td>
<td>Foil</td>
</tr>
<tr>
<td>Thickness (mm)</td>
<td>Foil</td>
</tr>
</tbody>
</table>

### Achilles Flare

**Applications**
For partition purposes in areas where high flame retardant property is needed.

**Features**
- Transparent flexible PVC film.
- Flame Retardant grade 2 (in accordance with JIS A-1302).
- Passes flammability MVSS test No.302.

**Specification**

<table>
<thead>
<tr>
<th>Product Name</th>
<th>[\text{Achilles Flare}]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width (mm)</td>
<td>Foil</td>
</tr>
<tr>
<td>Length (mm)</td>
<td>Foil</td>
</tr>
<tr>
<td>Thickness (mm)</td>
<td>Foil</td>
</tr>
</tbody>
</table>

### Achilles Flare Insect Guard

**Applications**
For partition purposes in areas where high flame retardancy and insect guard properties is needed.

**Features**
- High insect guard property while maintaining base properties of Achilles Flare (flame retardant).

**Specification**

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Achilles Flare Insect Guard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width (mm)</td>
<td>Foil</td>
</tr>
<tr>
<td>Length (mm)</td>
<td>Foil</td>
</tr>
<tr>
<td>Thickness (mm)</td>
<td>Foil</td>
</tr>
</tbody>
</table>

### Achilles Vintape

Supplements for curtain-partitioned clear rooms or clear windows, mark for alert areas.

**Features**
- Adhesive base.
- Easy installation.
- Antistatic & flame retardant. Since it uses the same vinyl film base, it will not impair the necessary performances of the curtain itself.

**Specification**

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Vintape</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width (mm)</td>
<td>Foil</td>
</tr>
<tr>
<td>Length (mm)</td>
<td>Foil</td>
</tr>
<tr>
<td>Thickness (mm)</td>
<td>Foil</td>
</tr>
</tbody>
</table>

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**Warning:** Should be grounded when in use. Do not use solvent-based cleaners which may damage printing surface.

(For Achilles Seiden F, Achilles Yellow Seiden F, Achilles Yellow Seiden F UV guard, Achilles black Seiden F)

When Achilles Yellow Seiden F is used, may become sticky over time because of UV. In such a case, replace it with a new one.
**ESD Shoes**

**IC Shoes 101 slip-on type**
- **Product name:** IC Shoes 101
- **Product Code:** ICY-1010
- **Color:** Ivory white

**IC Shoes 102 T-strap type**
- **Product name:** IC Shoes 102
- **Product Code:** ICY-1020
- **Color:** Ivory white

**IC Shoes 103 Hook and Loop type**
- **Product name:** IC Shoes 103
- **Product Code:** ICY-1030
- **Color:** Ivory white

**Features**
- Suede cup-shaped heel bottoms absorb the shock of heel strike as landing and reduces burden on your foot.
- Unique Sole "Heat Gap Design" provides comfortable movement, emphasizing on workability and workability.
- Stable electro-conductivity according to JIS T 8103 test method.
- Air ventilation holes on toes and both sides of the shoe provide superior comfort.
- Anti-bacterial deodorant finish provides refreshing comfort and keeps shoes clean.
- Anti-slip sole design enhances resistance to slipping.
- Durable and keeps its shape intact after machine washing.

**Warning**
- Wash in water no hotter than 40°C. Danger of electric shock when a metal piece is stuck to sole, or when sole is worn out.

**ESD Safety Shoes**

**Work Up**
- **Product name:** Work Up
- **Product Code:** QKS-0040
- **Color:** Ivory white

**IC Slipper**
- **Product name:** IC Slipper
- **Product Code:** ICS-0200
- **Color:** Brown

**Features**
- Plastic protector guards toe. (Soles and uppers aren’t protected)

**ESD Safety Slipper**

**Wrist strap**

**Color Wrist NV**
- **Product name:** Color Wrist NV
- **Product Code:** D-053
- **Applications:** for static controlled areas such as electronic parts assembling or inspection areas.
- **Features:**
  - Most cost-effective in the industry by optimizing supply sources of materials.
  - Can be shipped in small lots.
  - Specifications in accordance with IEC61340-6-1/5-2.

**Packaging Unit**
- 20sets / shipment

**One-Touch Wrist**
- **Product name:** One-Touch Wrist
- **Product Code:** D-051
- **Applications:** In static controlled area such as electronic parts assembling or inspection area.
- **Specification:** Push hook, banana plug with alligator clip, maximum 2M long coiled cord.

**Ground Wires**

**Groundwire with Banana Jack**
- **Product name:** Groundwire with Banana Jack
- **Product Code:** D-070
- **Applications:** Ground wire for conductive mat

**Features**
- Can ground both the antistatic table mat and wrist strap at the same time.
- Can connect to the wrist strap with banana plug through banana jack.

**Specification**
- Lead wire which has 1MD resistance

**Conductive Plate**
- **Product name:** Conductive Plate
- **Product Code:** SKY-67
- **Applications:** For conduction of joint parts for installation of conductive floor materials.

**Features**
- Easy to connect

**Specification**
- Stainless steel tape with adhesive.

**Groundwire**
- **Product name:** Groundwire
- **Product Code:** SKY-8E
- **Applications:** For grounding conductive mats and floor material

**Features**
- Easy to ground

**Specification**
- Lead wire with stainless steel plate

**Wrist strap**

**Easy to put on and take off due to the pushbutton latch.**
Floor Mats

Material: Conductive PVC

**Elefeel Floor (SKY-20W)**
- **Applications**: Floor material for clean rooms or rooms for assembling of semiconductor/electronic components
- **Features**: Moisture-free, abrasion resistance, and outstanding load-bearing capacity
- **Compatibility**: ESD/SDC/F (Compliance with SD21440-4-3)

**Conductive Unit Floor Mats**
- **Application**: For the preparation of clean room space and working/storage areas where a lot of resin work is involved.
- **Features**: Easy to join, easy to maintain the mat.
- **ESD guarantees**: 1.0×1.0 m (Conforms with JAS A 1644)

**Antistatic Cushion Mats**
- **Product name**: Sofmat D
- **Application**: For areas where workers work in a standing position, and for cold areas.
- **Features**: Cushion floor mats provide adequate softness.
- **ESD protection**: Good insulation and prevents heat loss due to insulation.

**Wrist Strap Monitoring System**
- **Product name**: D-001
- **Application**: Wrist strap monitor
- **Features**: Full-time monitoring
- **Accessories**: AC adapter, grounding wire, banana plug
- **Specifications**:
  - **Condition in use**: Humidity: 0%RH or less
  - **Sensitivity adjustment**: 15 ± 5 eta, ± 15 Stilb
  - **Dimension**: 8.7 × 9.2 × 2.7 cm
  - **Weight**: 65 g
  - **Material of case**: ABS resin/Anti-static

Conductive Table Mats

**Product name**: Elefeel Mat NV (SKY-40)
- **Application**: Working tables and storage shelves requiring ESD protection
- **Features**: Focused on cost effectiveness while maintaining high quality conductive mats

**Wrist Arm Monitor**
- **Product name**: D-080
- **Specifications**:
  - **Condition in use**: Humidity: 20%RH or less
  - **Sensitivity adjustment**: 15 ± 5 eta, ± 15 Stilb
  - **Dimension**: 8.7 × 9.2 × 2.7 cm
  - **Weight**: 65 g
  - **Material of case**: ABS resin/Anti-static

Sticky Mats for Clean Room

**Product name**: ST Clean Mat (ST-4)
- **Application**: Mat to remove dust/dirt from shoes mainly in clean rooms.
- **Features**: Multi-adhesive film layer Mat’s static electricity material (ST poly) controls generation of static electricity, minimizing generation of dust when the PE film is removed.

**Composition**
- **Material**: PE, ST Poly, Conductive layer, Acrylic adhesive layer

**Specifications**:
- **Size**: 800 mm × 600 mm × 40 layers/1 roll
- **Packaging**: 1 roll
Static Dissipating Brushes

<table>
<thead>
<tr>
<th>Product Code</th>
<th>L mm</th>
<th>H mm</th>
<th>Packing Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2S-800</td>
<td>800</td>
<td></td>
<td>10 pieces or more</td>
</tr>
<tr>
<td>2S-1000</td>
<td>1000</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>2S-1200</td>
<td>1200</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>2S-1500</td>
<td>1500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2S-1800</td>
<td>1800</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*JS type is bonded electrode

Conductive Clear Files

<table>
<thead>
<tr>
<th>Product name</th>
<th>Product Code</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>STN-100</td>
<td></td>
<td></td>
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</tbody>
</table>

Conductive Binders

<table>
<thead>
<tr>
<th>Product name</th>
<th>Product Code</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST-745-A4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Conductive Clear Folders

<table>
<thead>
<tr>
<th>Product name</th>
<th>Product Code</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>STN Folder</td>
<td></td>
<td></td>
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</tbody>
</table>

Conductive Clip Boards

<table>
<thead>
<tr>
<th>Product name</th>
<th>Product Code</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST Clip Board</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Conductive Hook and Loop Fasteners

<table>
<thead>
<tr>
<th>Product name</th>
<th>Product Code</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST Hook and Loop fastener</td>
<td>ST-20</td>
<td></td>
</tr>
</tbody>
</table>

Conductive Pouches

<table>
<thead>
<tr>
<th>Product name</th>
<th>Product Code</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST Pouch</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Static Dissipating Brushes

**Product name: Non Spark**

**Product Code:** NSP 2S

**Applications:**
- Static dissipating brush for printers or film/paper production (note that brush should be grounded when in use).
- Efficient static dissipation as the brush is self-discharging type.
- Made-to-order brushes are also available upon request.
- JS series brush to be installed in upward direction because of a stilt electrode.

**Features:**
- Clean the brush regularly as dust accumulation may impair static dissipation capabilities.

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**Product name: Ionizers**

**Product Code:** RS-10N

**Applications:**
- Eliminates static electricity by blowing ionized air.
- Air is ionized by high voltage AC corona discharge.
- Ion balance auto self-control system (within ±10V)
- Alarm is initiated in case ion balance exceeds self-control level.
- LED lamp is lit and buzzer sounds in case electrode becomes unclean or air filter is clogged.
- Easy to clean electrodes because of easy access of front opened panel.
- Easily replaceable electrodes by adopting pin connectors.
- Ozone free design allows odorless operation (Ozone concentration of RS-10N: 0.0003ppm or less)

**Features:**
- When air humidity over 65%RH, ion balance may not be controlled within normal range.
- This is a non-explosion proof equipment. Do not use where adovlents, flammable gasses or powders are handled.

---

**Product name: Electrostatic Voltmeters**

**Product Code:** AS mini II

**Applications:**
- Handheld electrostatic voltage measuring device

**Features:**
- Suitable for investigating electrostatic properties of insulating materials.
- Voltmeters built-in as standard accessories are available separately.
- Designed for easy operation.
- Precise measurement with easy operation.
- Do not place it near a charged object to avoid electric discharge. It may lead to device failure.

---

**Product name: Conductive Clip Boards**

**Product Code:** ST Clip Board

**Applications:**
- To store documents within ESD protected area.

**Features:**
- Excellent conducting properties.
- Low outgas, low particle, and low ion contamination.

---

**Product name: Conductive Hook and Loop Fasteners**

**Product Code:** ST-20

**Applications:**
- To band together packaging trays for electronic components, etc. For clean room curtain fastener.

**Features:**
- Excellent antistatic performance.
- Easy opening and secure closing.
- Can be used in heat ovens. (Satisfies surface resistance spec under severe conditions of continuous heating (150°C x 100hrs))

---

**Product name: Conductive Pouches**

**Product Code:** ST Pouch

**Applications:**
- To store signs and documents within ESD protected area.

**Features:**
- High transparency.
- Prevents dust generation from paper.