



ELECTROSTATIC  
DISCHARGE CONTROL

**DOU YEE**  
ENTERPRISES

# DOU YEE

## GLOBAL CAPABILITY • LOCAL FOCUS

Established in 1982, Dou Yee is a leading total industrial solutions provider, serving the semiconductor, data storage and electronic industries.

Dou Yee specializes in the manufacture of electronics packaging materials with static discharge and humidity control properties, cleanroom apparel and footwear, among others.

The comprehensive range of products makes Dou Yee a convenient one-stop industrial provider. With a worldwide business network of more than 39 international branches and representative offices spread across 19 countries, Dou Yee provides customers with comprehensive global solutions tailored to their local needs.



### MISSION STATEMENT

We aim to become the worldwide leading provider of industrial solutions in the semiconductors, data storage and electronics sector. We provide services that are of the highest standards, and quality products to our valued customers.

# ELECTROSTATIC DISCHARGE CONTROL



YOUR PERFECT PARTNER IN ESD  
CONTROL SOLUTIONS.

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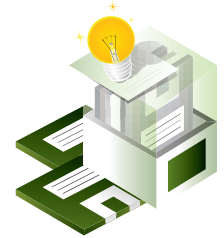
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



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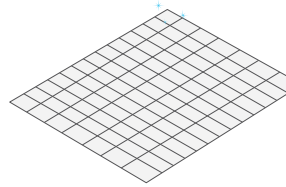
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
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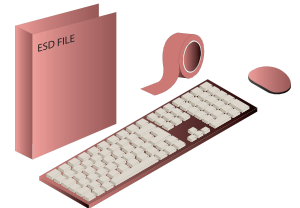
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# INTRODUCTION TO ESD



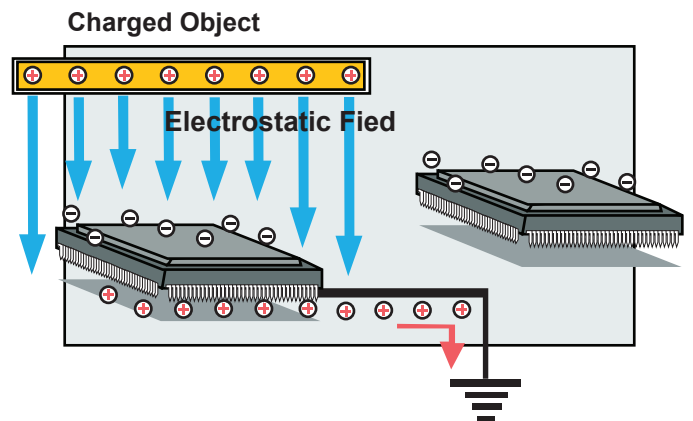
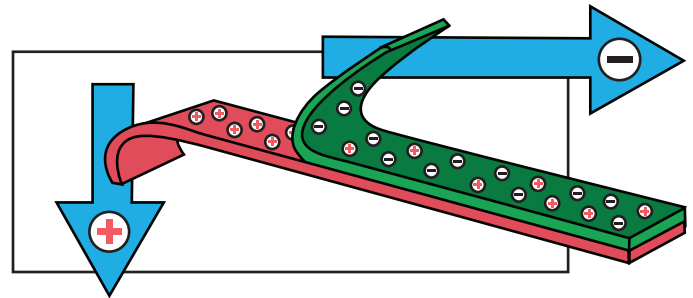
## HOW STATIC CHARGE IS GENERATED

### Triboelectrification :

Any material, whether a conductor or non-conductor, can be charged triboelectrically. The magnitude and polarity of the charge depends on the characteristics of the two materials. They are affected by several factors, such as the surface condition, size of the contact area, speed of separation or rubbing etc.,

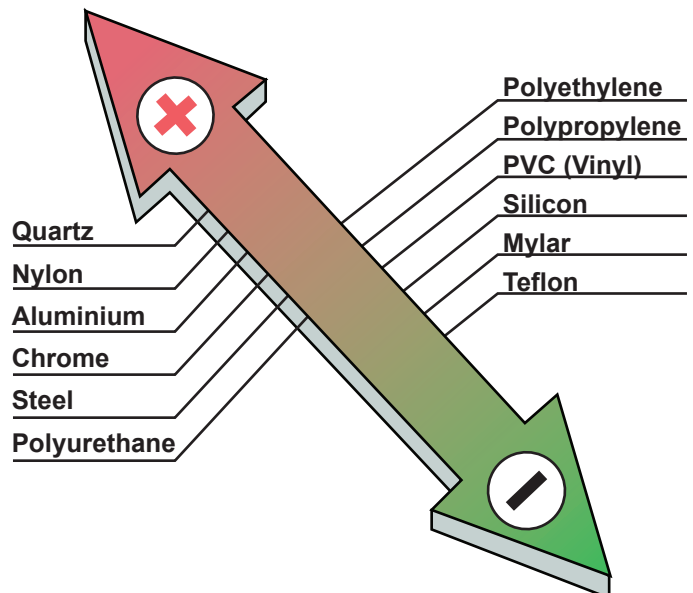
### Induction :

Static Charge present on an object creates an electrostatic field. When a conductive object is placed within the electrostatic field and connected to the ground, it takes on a static charge of opposite polarity to the original charged object.



## TRIBOELECTRIC SERIES

The triboelectric series is a ranking of materials in the order of their likelihood of becoming positively or negatively charged. If two materials listed on the chart contact and separate, the one higher on the list will become positively charged. The better the insulator, the more easily it is charged by friction.





## PROBLEMS CAUSED BY STATIC CHARGES

### Contamination :

Materials used in the cleanroom are typically good insulators and become charged easily. If a critical product's surface becomes charged, the surface will attract airborne particulates in the cleanroom. Once these particles are bonded to a charged surface, it will be very difficult to remove these particles. Contamination of this nature is a major contributor to product degradation and device failure.

### Destruction Of Sensitive Devices :

ESD can cause electronic device failure during any phase in the production, packaging and testing processes. As the critical dimensions and tolerance of components and circuits become progressively smaller, they become less tolerant to ESD.



## SOLUTIONS

It is impossible to completely eliminate static electricity from production environments. However, we can control the problem by implementing the following solutions:

### 1. ESD Control Facilities :

To reduce the risk of ESD damage by 3 basic steps:

<b>PREVENTION</b>		Use ESD-Safe material to reduce static charge generation
<b>PROTECTION</b>		Use protective material with Faraday Cage shielding effect during storage and transportation
<b>ELIMINATION</b>	<b>Grounding</b>	Create a path for charges to migrate from conductive objects/ human bodies to ground
	<b>Neutralisation</b>	Create air ions to neutralise charges on both insulators and isolated conductors

### 2. Awareness / Training :

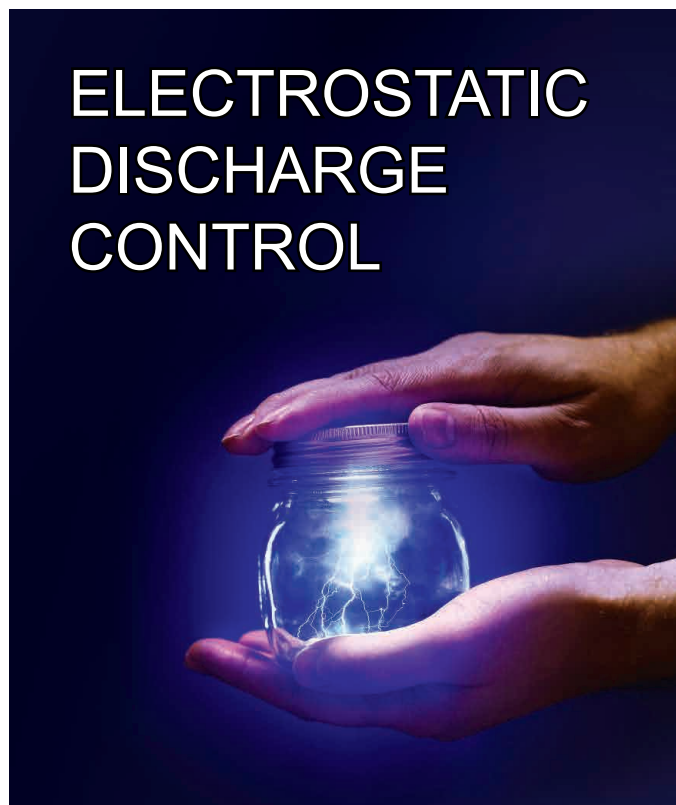
The sustained success of an ESD control program is heavily dependent on personnel that fully understand the extent of the ESD program. Training is essential for all personnel at all levels. ESD awareness must be maintained in ESD-sensitive areas.

### 3. Enforcement :

Extensive awareness training makes it easier to enforce ESD control program requirements. However, it is still necessary to establish formal and realistic enforcement procedures to reinforce the point that ultimately, these responsibilities lie with everybody.

### Microprocessor / Robotic Lock-Up :

Most new production equipment is based on microprocessors, and they are increasingly sensitive to ESD-related problems. Even though robotic devices may be grounded, the products they manipulate often carry significant electrostatic charges. It is possible that a single ESD event at one point along a robotic assembly line may be enough to shut down the entire operation.





# PACKAGING



DOU YEE is a leader in the static control industry for over thirty years. Our ESD-safe packaging products have satisfied thousands of customers in the electronic industry. Our experience, technological know-how and advanced production facilities enable us to offer quality products at the most competitive prices in the industry.

## **SUPERSHIELD® Static Shield Bags** Product Code : **DY3650**

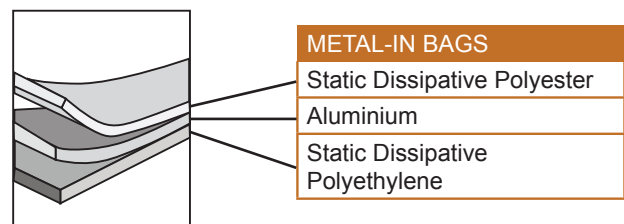
Static Shield bags are made from high quality static dissipative metalized film to provide optimum protection for your ESD sensitive products. The 3.0 mil thick material offers superior durability.

- A Faraday cage is created to protect your products from electrostatic discharge
- High quality material provides excellent protection from punctures and tears
- Polycarbonate compatible, contains no Amines, Amides or N-Octanic Acid
- Fast delivery for any customised size
- Printed with ESD awareness logo and date code for traceability

### TYPICAL VALUE

Property	Value
Thickness (ASTM D374)	2 mils (DY3660) 2.5 mils (DY3655) 3 mils (DY3650) 3.6 mils (DY3692)
Surface Resistance - Both surfaces (EOS/ESD S11.11)	< 10 <sup>11</sup> Ω
Static Shielding (ANSI/ESD-STM-11.31)	< 50nJ

### CONSTRUCTION OF ESD SAFE BAGS



Static Shielding Bag with Dual Pockets



Static Shielding Bag





**SUPERBARRIER®**  
**Moisture Barrier Bags**  
**Product Code : DY3008**

Moisture Barrier Bags provide moisture, corrosion and shielding protection for sensitive components. All MBBs are amine and amide free, pass out-gassing, corrosion tests and exceeds the requirements of EIA-583, EIA-541, EIA-625, IPC/JEDEC J-STD-033 and MIL-PRF-81705 Type 1 standards.



*Transparent Moisture Barrier Bag*



*Moisture Barrier Bags*



**Clean Bags - Product Code : DY3800**

This series addresses the concerns of particle and contamination control, which is critical to data storage and semiconductor industries.

- Cleanroom control manufacturing environment
- Customized sizes



*Static Shielding Bag*



*Moisture Barrier Bag*



**Moisture Barrier Box Bag**  
**Product Code : DY3900 / DY3950**

This moisture barrier box bag is designed with JEDEC tray sizes in mind. Converted from static shielding or moisture barrier material, it serves as an alternative packaging solution. It provides wide openings and added dimensions to house the trays. Standard sizes for packing IC trays are also available. Customers can choose from materials according to JEDEC standards.



*Moisture Barrier Box Bag*



**Static Shielding Zip-Lock Bags**  
**Product Code : DY3700**

Using high quality zippers, this bag has outstanding re-sealable functionality to serve as an alternative packaging solution. It can be customized to sizes as small as 2 inches opening and 3 inches length. Highly recommended for use in manufacturing environments where the bag needs to be reused for various processes and/or locations.



*Static Shielding Zip-Lock*

**REMARKS**

*Detail specifications available upon request*

**PE Bags / Zip-Lock Bags**  
**Product Code : DY3003 / DY3004**

These bags are made from polyethylene material that has excellent mechanical property and static shielding capabilities (for conductive bags only). The package and contents are kept at equal potential so that the accumulated charges can be drained away safely without damaging the contents.



*Anti-Static & Conductive Packaging Bags*

**Pink Anti-Static Bubble Wrap**  
**Product Code : DY3004-AB-PK**

Designed with general packaging and cushioning functions, this inexpensive bubble wrap/bag offers complete protection of parts during transportation.



*Pink Anti-Static Bubble Wrap*

**Conductive / Static Dissipative Packaging Foams**  
**Product Code : DY4000**

A wide range of Conductive / Static Dissipative Foams with different densities and cell-structures are available for applications. This carbon-impregnated material provides permanent and uniform protection for ESD sensitive devices. It is ideal for long-term packaging of semiconductor components because of its low ionic contamination.

- Surface Resistance :  $10^3 - 10^6 \Omega$



*Black Conductive / Static Dissipative PE/PU/EVA*

**Pink Antistatic Packaging Foams**  
**Product Code : DY4300**

This inexpensive foam has antistatic properties designed for general packaging and cushioning functions for ESD sensitive products.



*Pink Anti-Static PE / PU Foam*

**REMARKS**  
*Detail specifications available upon request*



**Normal And High Temperature  
Resistant PP Straps  
Product Code : Z2-999 - PP Strap**

Conductive / Static dissipative PP straps are specially designed to pack ESD sensitive items firmly through strapping action. It is compatible with most of the conventional strapping machines.

- Size : 9mm x 1200m / 12mm x 1500m
- Thickness : 0.65mm
- Tensile Strength : > 79 MPa
- Elongation at Break : > 125%
- Surface Resistance :  $\leq 10^8 \Omega$
- High Temperature Resistant Grade Available



*Black Conductive / Static Dissipative PP*

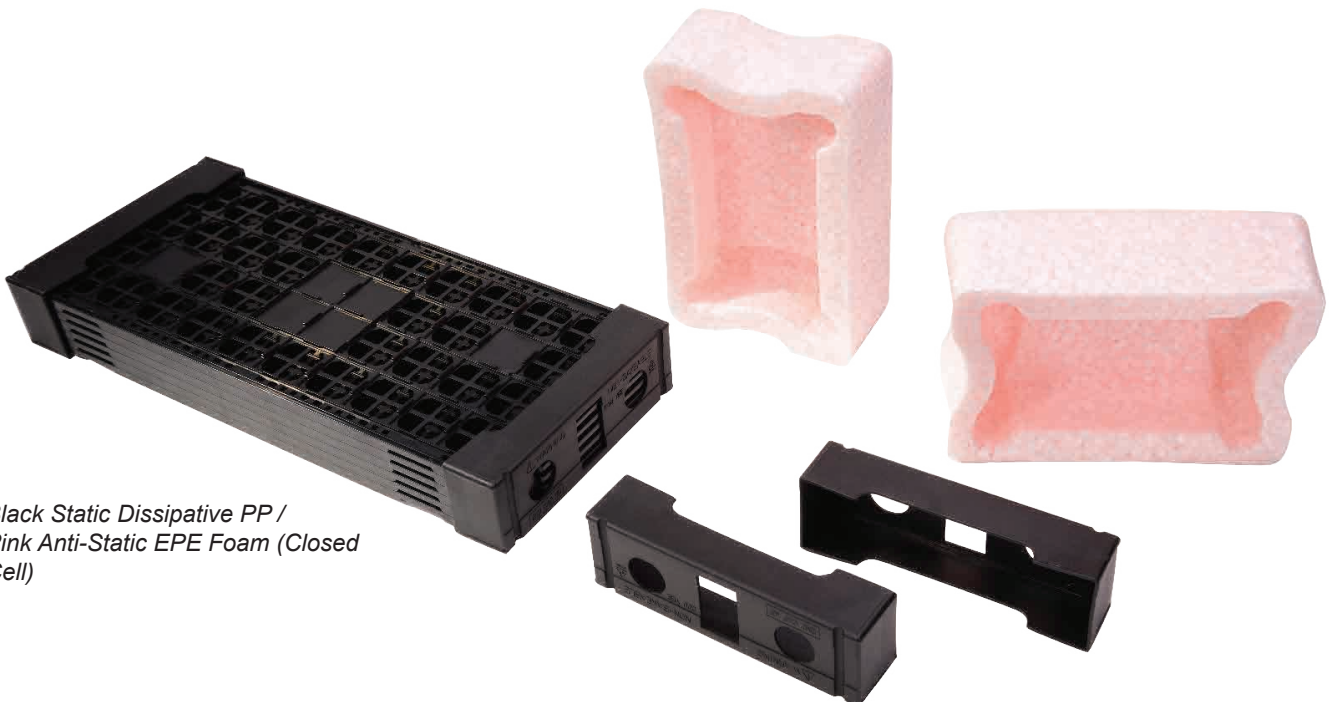


**End Caps For Trays  
Product Code : DY5004 / DY4300**

Static Dissipative End Caps are used to cover the stacks of JEDEC trays to secure and protect trays during shipment. They are used in conjunction with Conductive / Static Dissipative PP Straps for added security.

End Cap sizes can be customized to suit different packing requirements.

- Surface Resistance :  $\leq 10^9 \Omega$



*Black Static Dissipative PP /  
Pink Anti-Static EPE Foam (Closed  
Cell)*

**REMARKS**

*Detail specifications available upon request*



## Vacuum Sealers Product Code : DY3303

There is a wide range of vacuum sealers available for different types of operation. Sealers with retractable nozzle, vertical sealing and double chamber functions are available to cater for different sealing needs. The Body of the sealers is made of stainless steel, making these sealers suitable to be used in Electrostatic Protected Area (EPA).

The sealers also comes with optional accessories like double heating elements for sealing thick bags, gas flushing function for purging gases like N<sub>2</sub>/ Compressed Air/ Oxygen into packaging before sealing.

Clean room models, with exhaust, to be used in a clean room environment are also available.



REMARKS

Other Models and configurations available upon request



**Conductive Grid Tapes**  
**Product Code : DY8200**

This conductive biaxially oriented polypropylene packaging tape is protected between two copolymer layers and has an effective static shielding ability. The conductive grid tape offers reliable protection for any sensitive devices otherwise being damaged by normal insulating tape.



**General Antistatic Utility Tapes**  
**Product Code : DY8200**

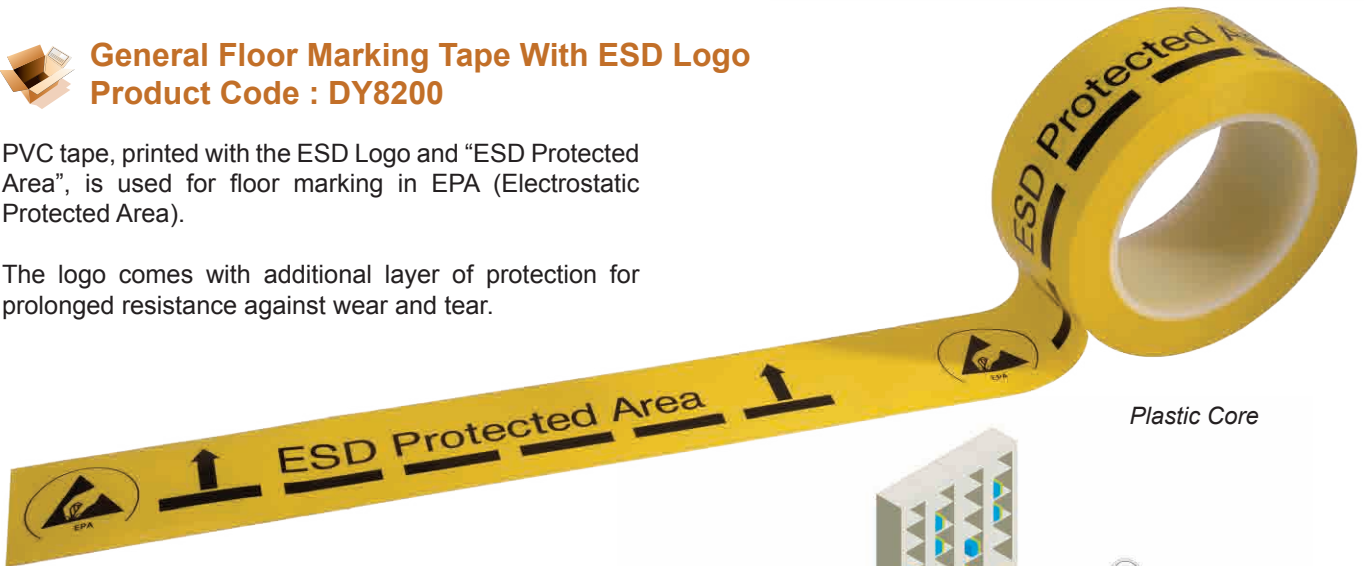
This polyester film antistatic coating tape does not generate static within the decay rates of MIL B-81705. It also has a shielding acrylic adhesive that is commonly used in the packaging of semiconductor and electronic components.



**General Floor Marking Tape With ESD Logo**  
**Product Code : DY8200**

PVC tape, printed with the ESD Logo and "ESD Protected Area", is used for floor marking in EPA (Electrostatic Protected Area).

The logo comes with additional layer of protection for prolonged resistance against wear and tear.



**REMARKS**  
 Detail specifications available upon request



## STORAGE & SOLUTIONS



### Small Conductive Containers With Lids Product Code : DY2007

These containers are one piece boxes that come with a film hinge and snap-lock. All versions can come with foam inserts, closed cell foam inserts and chip boxes with film hinge. These boxes are used for the storing and mailing of electronic components and small packages.



### Conductive Injection Molded Containers Product Code : DY2007 - WEZ

The hazard of electrostatic discharge damage to electronic component modules and units can be attributed to the growing complexity (density) of printed circuits, which make them more susceptible to these damages. Today, voltages as low as 10V can destroy electrostatic sensitive devices and the greatest risk comes from manual handling of the human body, which often carries electrostatic charges in excess of several thousand volts.

The damage caused by electrostatic discharge presents a serious threat to the electronics / data storage industries. These days, manufacturers have to comply with ISO 9000 quality standards and supply relevant documentary proof. They can also be held accountable for consequential damage resulting from faulty products. The only sensible policy to adopt is one of prevention: WEZ BlackLine Conductive Injection Molded Containers protect your electronic products through all phases of manufacturing and logistics.



REMARKS

Various container sizes and configurations available. Please contact us for more details.

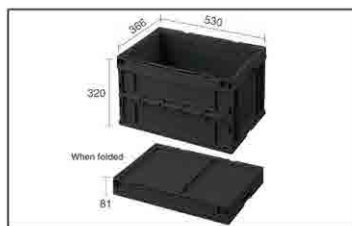
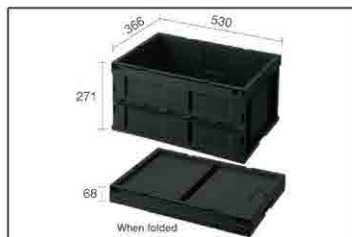
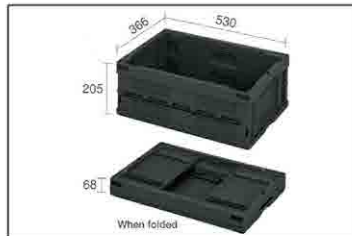


## Foldable Containers

Product Code : DY2007 SEK

These foldable containers are made of special conductive material that prevents dust from attaching to the surface. Suitable for storage and transporting electronic components such as MOS-IC/ LSI and LCD.

- Made of polypropylene that contains a special conductive material, as strong as any conventional product.
- Surface Resistance:  $< 1 \times 10^6 \Omega$
- Volume Resistance:  $< 1 \times 10^4 \Omega$
- Lighter and more economical than metal containers.



OC-30B ~ 30L	
Upper Inside Dimensions	492 mm x 333 mm x H194 mm
Usable Dimensions	492 mm x 333 mm x H187 mm
Material	PP
Lid	#01
Card Rack	Welded Type

OC-40L ~ 40L	
Upper Inside Dimensions	492 mm x 333 mm x H260 mm
Usable Dimensions	492 mm x 333 mm x H253 mm
Material	PP
Lid	#01
Card Rack	OCK-110

OC-50L ~ 50L	
Upper Inside Dimensions	492 mm x 333 mm x H309 mm
Usable Dimensions	492 mm x 333 mm x H302 mm
Material	PP
Lid	#01
Card Rack	OCK-110

OC-75L ~ 75L	
Upper Inside Dimensions	600 mm x 405 mm x H318 mm
Usable Dimensions	600 mm x 405 mm x H310 mm
Material	PP
Lid	#02
Card Rack	OCK-110/MGCCA

Lid #01 (For OC-30B, OC-40L, OC-50L)	
Material	PP

Lid #02 (For OC-75L)	
Material	PP

### Assembly Instructions

Open the lids on both sides and lift up the upper casing

Tap the short sides from the inside and set in place.



### Folding Instructions

Tap the short sides from the outside.

Lift the upper casing slightly to fold.





## Corrugated Plastic Boxes

Product Code : DC2002

These tote boxes are made from extruded corrugated plastic sheets, which are durable, light-weight and inexpensive. They can be customised to your required sizes and applications. A wide range of useful accessories has been made available to compliment this product.

### Features:

- Available in normal, antistatic and conductive grades
- Material thickness: 2mm, 3mm and 4mm
- Water and grease resistant, ideal for transportation
- Light-weight
- Tough and durable

**Material** : Conductive / Static Dissipative / Anti-Static / Normal PP Sheets

**Reinforced Frame & L-Bars** : Conductive PP / Aluminium

**Corners** : Conductive PP (Standard/Flat/High/Double/ Base)

**Lids** : Conductive / Static Dissipative / Anti-Static / Normal PP Sheets (Loose/Hinged/Latched)

**Handles** : Conductive PP (Design A/B/C/D/E)

**Card Holders** : Vacuum-Formed Anti-Static APET (Standard) / Injection Molded Clip-on / Corrugated Sheet / Self-Adhesive Transparent Pocket

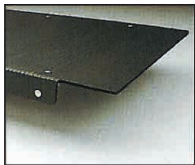
**Partition Sets** : Conductive / Static Dissipative / Anti-Static / Normal PP Sheets Customizable to required sizes and cavities

**Accessories** : Pink Anti-Static Foam Inserts / Vacuum-Formed Trays / Black Conductive / Static Dissipative Foam Inserts



### Cover

#### Detachable Covers



With aluminum bar or conductive HIPS bar



With conductive reinforcement frame

#### Hinged Covers



With metal hinges



With plastic hinges

### Handle



Type A: General Application

Type B: Easy Handling

Type C: Heavy Duty

Type D: Encased Design

Type E: Extended Profile



### Corners



Standard: Enable firm stacking of boxes



High: Enable firm stacking of boxes with cover



Double: For boxes with double-layered walls



Box Base Corner



Cover Corner



Flat Corner





**Part Bins & Components Storage Rack**  
**Product Code : DY2004 / DY2006 / DY5200**

Conductive part bins are ideal for storing electrostatic sensitive devices. They can be used with assembly racks to create an organized grounded storage system.

The conductive component rack provides a systematic storage of electrostatic sensitive devices. It consists of 20 small drawers housed in a rectangular rack.



*Components Storage Rack*



*Part Bins*



**PCB Storage Solutions**  
**Product Code : DY2007**

PCB of all sizes are held simply and safely with WEZ circuit board holders. There are various sizes available to suit different BlackLine containers, ensuring good protection in a visible and organized manner throughout production, testing and storage.

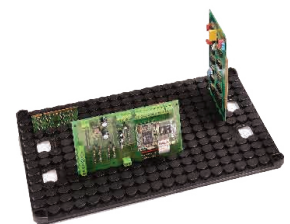
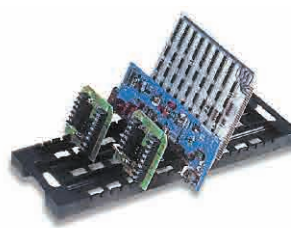
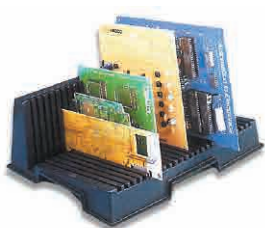


*Nikko Rack*



**Conductive PCB Racks**  
**Product Code : DY2005**

Our Conductive PCB Racks are made for handling, clinched, SMD, soldered and bare boards of any sizes with no adjustments required. Different sizes and design are available for a wide variety of applications.



*Conductive PCB Racks*



## Thermoformed Trays Product Code : DY5003

Dou Yee has developed customize packaging and shipping thermoformed trays, which are ideal for most internal and external transportation needs for the semiconductor, electronics and medical industries. We control all aspects in terms of the design and manufacturing process, having our own R&D, engineering tooling and QA departments.



### *Static Dissipative PETG Trays*

*Suitable for packing sensitive devices and cleanroom compatible*

*Thickness: From 0.5mm – 1.7mm*

*Surface Resistance:  $1.0 \times 10^7 - 1.0 \times 10^{10} \Omega$*

*Maximum tray dimensions: 700 x 500mm*



### *Carbon Nanotube Trays*

*Superior Clean material with excellent shielding and ESD features. Ideal for sensitive devices and clean room compatible*

*Thickness: From 0.3mm – 1.2mm*

*Surface Resistance:  $1.0 \times 10^4 - 1.0 \times 10^{11} \Omega$*

*Maximum tray dimensions: 700 x 500mm*



### *Conductive and Antistatic Hips / PS Trays*

*Our most common and competitive material with excellent shielding properties*

*Thickness: From 0.3mm – 2.0mm*

*Surface Resistance:  $1.0 \times 10^4 - 1.0 \times 10^{11} \Omega$*

*Maximum tray dimensions: 1000 x 1000mm*



**Antistatic PP Trays**

*Economical Ideal for trays with good durability and temperature resistance*

*Thickness: From 0.3mm – 1.2mm*

*Surface Resistance: < 10<sup>12</sup> Ω*

*Maximum tray dimensions: 700 x 500mm*

*Non-antistatic is available*

**Antistatic HDPE Trays**

*Economical Ideal for commercial and retail packaging and durability*

*Thickness: From 0.3mm – 1.2mm*

*Surface Resistance: < 10<sup>12</sup> Ω*

*Maximum tray dimensions: 700 x 500mm*

*Non-antistatic is available*



**Antistatic APET Trays**

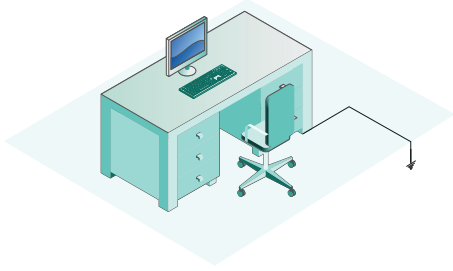
*Ideal for trays, lids and blister packs*

*Thickness: From 0.3mm – 1.2mm*

*Surface Resistance: < 10<sup>12</sup> Ω*

*Maximum tray dimensions: 700 x 500mm*

*Non-antistatic is available*



# WORKSTATION & GROUNDING



## Bench Top Laminates Product Code : DY1008

Material: Static Dissipative Wood Laminates (Various Colours)

The unique characteristics of Nevamar's Static Dissipative Laminates make them ideally suited for a variety of electrostatic sensitive applications. This product meets or surpasses all standards of electrical properties, even at low humidity levels. The product also practically eliminates surface shedding to provide a tough, durable work surface that outperform and outlast competitive materials.



## Static Dissipative Veneer Product Code : DY1008

Material: Static Dissipative Veneer (Green / Gray)

This product offers ESD protection to workstation surfaces for sensitive products. Easy to install and they are suitable for post-forming applications on workstations and tables in ESD Protected Areas.

### Part Number:

DY1008-VENEER, Green, 1.2MX20MX0.7MM  
DY1008-VENEER, GREY, 1.2MX20MX0.7MM

### Permanent Static Dissipative Veneer

- Colour Dissipative Top Layer (Grey/Green)
- Black Conductive Bottom Layer



Electrical Properties	
Top Surface Resistance	< 1 x 10 <sup>8</sup> Ω
Bottom Surface Resistance	< 1 x 10 <sup>8</sup> Ω
Volume Resistance	< 1 x 10 <sup>7</sup> Ω
Static Decay ( ± 1000V to 0V)	≤ 0.7 seconds
Tribocharging Voltage	≤ 40V

Physical Properties	
Material	PS, EVA, PE (Synthesized)
Width	1.2 Meters
Length	20 Meters
Thickness	0.7 mm
Minimum Tolerable Temperature	-12°C
Maximum Tolerable Temperature	100°C
	Applicable to Indoor workshop

Benefits	
Intrinsic Property	The resistance readings of the product is not humidity an/or temperature dependent
Permanent Property	Static dissipative property is permanent
Environment Friendly	Non-toxic, odorless and tasteless
Engineering & Chemical	Abrasion, oil, acid (weak) and alkaline resistant
Flexible	Come in roll form, easy to handle and to post-form



## Black Conductive Rubber Mat Product Code : DY1001

A flexible and durable conductive mat, specially designed for ESD sensitive areas. Can be used as table or floor mat.

- Surface resistance :  $\leq 10^4 \Omega$  (EOS/ESD S11.11)



## Demat® High Temperature Static Dissipative Rubber Mat Product Code : DY1003-SD

- Colour Dissipative Upper Layer / Black Conductive Bottom Layer
- Easy to clean, high durability and high temperature resistant
- Dimension : 1.22M (width) x 10M (length) x 2.1mm (thickness)

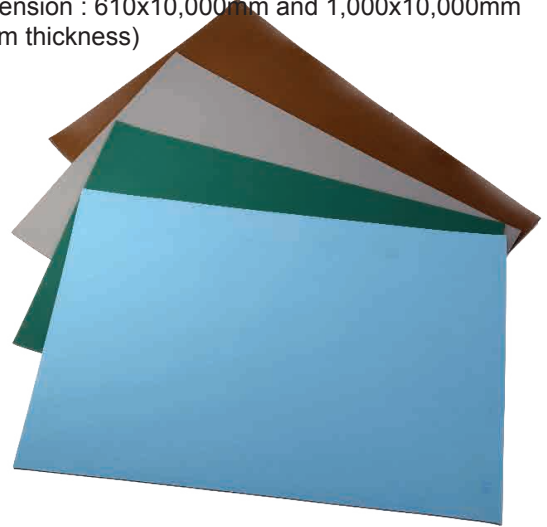
Temperature Chart	
200°C	OK
250°C	OK
300°C	Slight Discoloured
350°C	Discoloured
400°C	Burnt



## Static Dissipative Rubber Mat Product Code : DY1003

These static dissipative mats consist of two laminated layers.

- Colour Top Layer : provides static-free surface for highly ESD sensitive operations (Static Dissipative, Surface resistance  $\leq 10^9 \Omega$ ) (EOS/ESD S11.11)
- Black Bottom Layer : allows static charge to be drained away effectively (Conductive, Surface resistance  $\leq 10^4 \Omega$ ) (EOS/ESD S11.11)
- Dimension : 610x10,000mm and 1,000x10,000mm (2mm thickness)



## Static Dissipative Vinyl Mat Product Code : DY1003- SD-VINYL

This vinyl composite has a tough top and cushioned bottom, with dissipative vinyl layers that have a conductive grid mesh inner layer to provide faster discharge paths to ground. It also allows energy absorption for components susceptible to physical shock.

- Thickness : 0.125" (3.2mm)
- Multiple width and length available
- Surface Resistance :  $10^7$  to  $10^9 \Omega$  (ESD S4.1, 12% RH at 48 hrs)





## Soldering & De-soldering Stations Product Code : DY1100

We have a series of soldering stations and fume extractors available for various different applications. Our soldering stations range from small footprint to all-in-one multi-function SMD rework system that is capable of performing soldering and de-soldering functions. Fume extractors are also available in desk-top model and multi-layer filtering system with air flow control. All our equipment comes with user-friendly interface, ESD safe, Lead-Free, RoHS Compliant and CE Certified.



426DLX Fume Extractor



LF1600 Soldering Station



HV-2 Fume Extraction System



LF-853 SMD Re-work System

### REMARKS

Please contact us for a full range of soldering and de-soldering products



## Static Dissipative Metallized/ Carbon Grid Sheets Product Code : DY1006-ME/GD

### Excellent and Permanent Antistatic Performance

Made from polyvinylchloride mixed conductive plasticizer. Surface resistance is  $10^9 - 10^{10} \Omega$  that prevents suitably the accumulation of electrostatic charge.

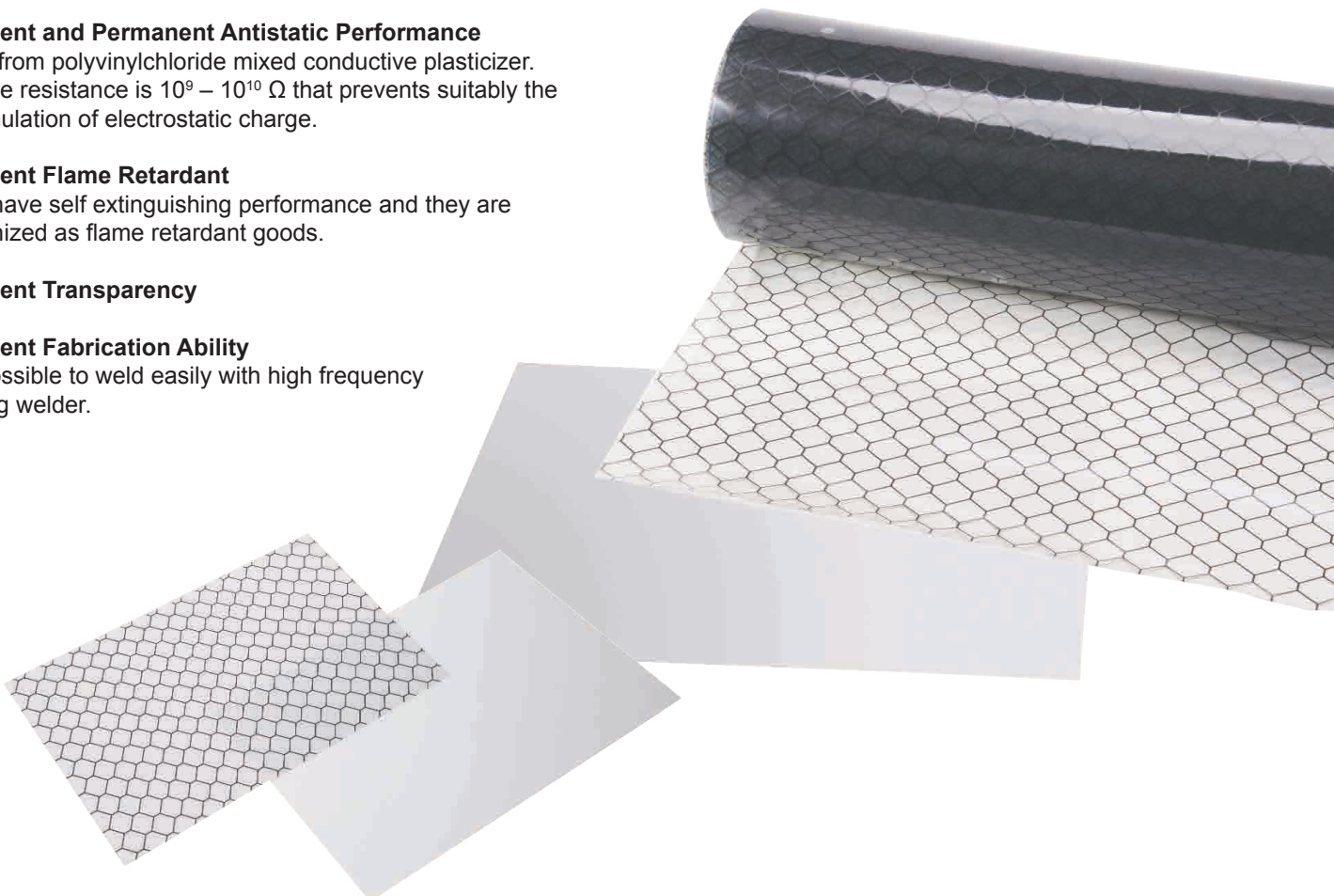
### Excellent Flame Retardant

They have self extinguishing performance and they are recognized as flame retardant goods.

### Excellent Transparency

### Excellent Fabrication Ability

It is possible to weld easily with high frequency heating welder.



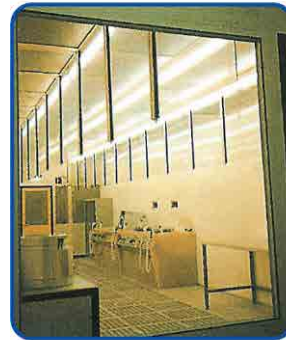


## Static Dissipative DC Plate (Perspex) Product Code : DY1005

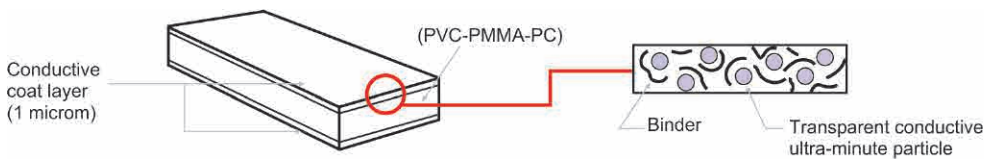


Our static dissipative Perspex has excellent metal coating strength which meets the JLS-K 5400 standard. It has permanent static dissipative characteristics with low triboelectrical charge generation and resistance to most cleaning solvents. It does not attract dust or floating particles and it is most suitable for clean room application.

- Standard size : 1000 x 2000 mm & 1212 x 2424 mm
- Thickness : 1, 2, 3, 4, 5, 6, 8, 10 & 15 mm
- Colour : clear, smoke-brown, orange, yellow
- Surface Resistance :  $10^6 - 10^8 \Omega$  (EOS/ESD S11.11)
- Application : Cleanroom Partitions, Apparatus, Equipment Cover, Work Station Materials and Draft Chamber etc



Esilon DC Plate has a conductive surface coating on both sides of base plastic plate.

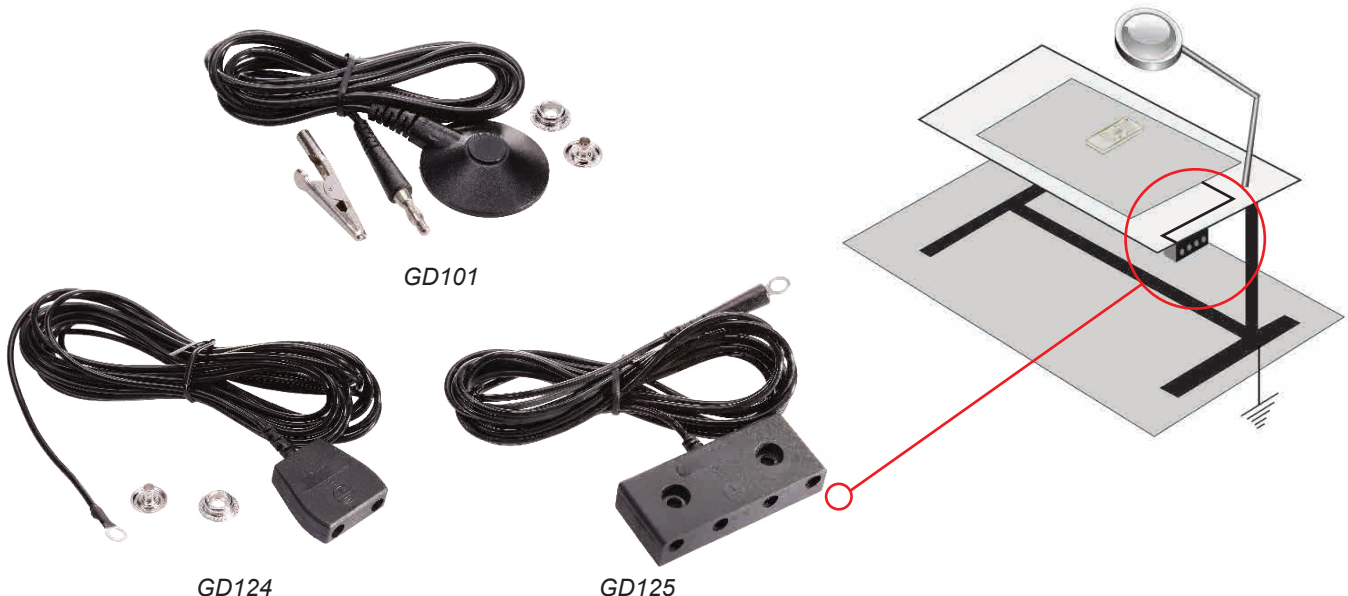


Material Code	Description	Feature
U	$\mu$ PVC	General Application
P	PMMA	Excellent Optical Property
C	Polycarbonate	Excellent Heat & Mechanical Property, Low Outgassing
HC	Hard Coat	Improved Scratch Resistant



## Grounding Components Product Code : DY7000

These universal ground connectors are used at workstations and machines for the purpose of human grounding through Wrist Straps. Its unique design allows it to be used with various wrist strap grounding cords of different designs and snaps.





## Static Control Wrist Straps

A wide range of high quality wrist straps with competitive prices designed to meet various requirements. All models come with one mega-ohm resistor to ensure fast and safe discharge of body charges.

- Snap fastener on all models with molded-in one mega-ohm current limiting resistor for operator safety
- Strong yet flexible for long service life
- Stretch and retract memory
- Banana plug as standard; alligator clip included for alternate connection to ground
- Standard coiled wire length: 6ft / 10ft / 12ft / 16ft / 20ft



Elastic Woven Wrist Strap - DY7010

Coiled Cord with L-shaped Jack - DY7010-L JACK



Dual Wire Wrist Strap - DY7008



Metal Wrist Strap - DY7007

Dual Snap Grounding Wires - DY7070



Grounding Wire - DY7000-N



Anti-Allergy Wrist Straps - DY7060



## Static Control Heel Grounders Product Code : DY7006

This reusable heel grounder is made of conductive rubber with adjustable hook and loop strap and conductive polyester ribbon for body contact. It provides safe and reliable grounding between mobile personnel and conductive flooring.

- Specification: Ribbon to cup resistance (at 100 V)  $1 \times 10^6 - 1 \times 10^7 \Omega$

### Applications:

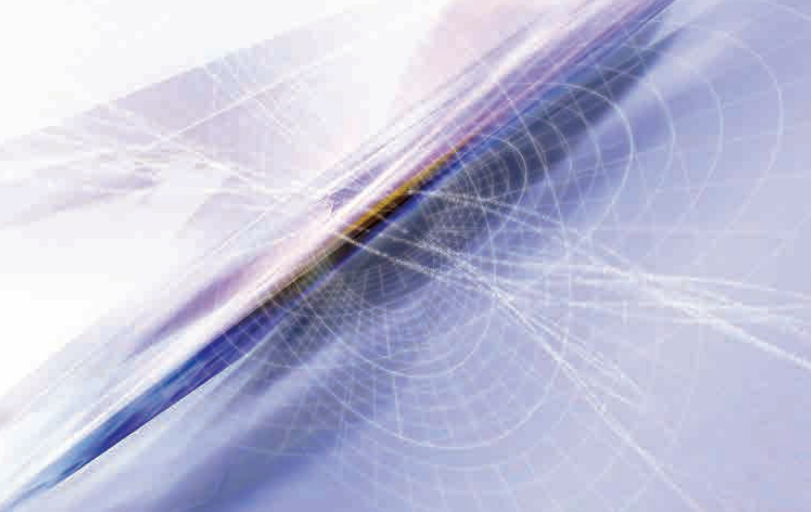
- For the use of mobile personnel when wrist straps are not practical.
- Heel grounder must be used with properly grounded floors.
- Use heel grounders on both feet for proper grounding.
- Disposable heel grounders are also available



Heel Grounders







# APPARELS & FOOTWEAR



## ESD Control Garment Materials Product Code : DY6000

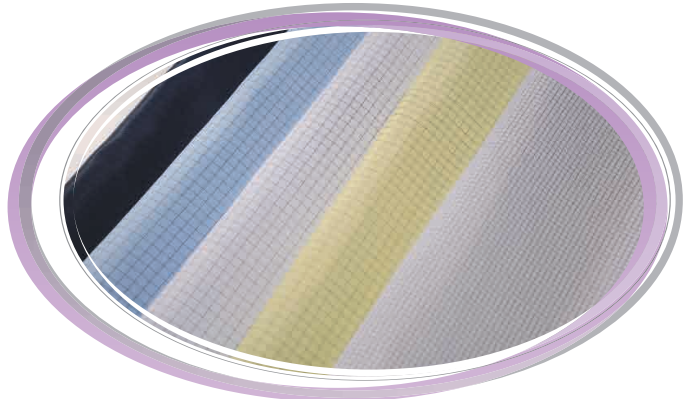
DY6000 Static Dissipative Fabric is made from 100% polyester continuous filament yarns, with electrical conductive fibers interwoven in striped or checked pattern at regular intervals. The cloth material is designed and engineered to exceed cleanroom and ESD requirements. It is durable with excellent washability and comfortable with superior ventilation.

### Function

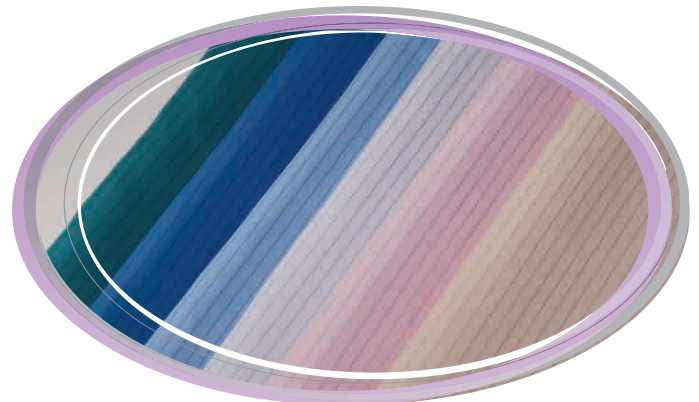
- To suppress human contamination in the cleanroom
- To minimize static charge generation
- To eliminate the possibility of arcing from worker to sensitive electronic products

### Applications

- Data storage, Semiconductors, Electronics, Precision Instruments, Aerospace, Pharmaceutical and Petroleum



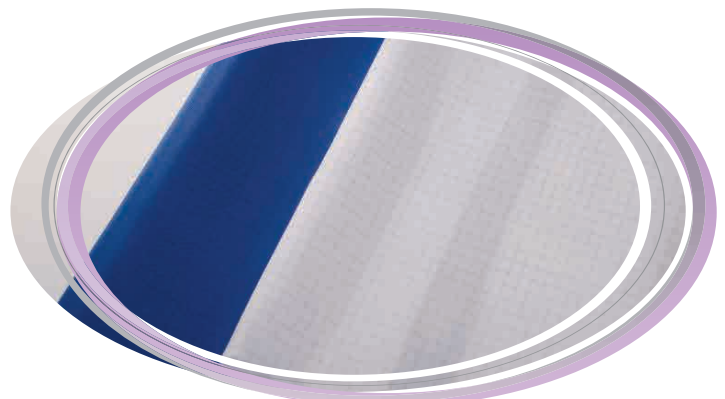
Static Dissipative Fabric - GD 5mm Material / GD 2.5mm Material  
Surface Resistance:  $10^5$  to  $10^6\Omega$



Static Dissipative Fabric - ST Material  
Surface Resistance:  $10^8$  to  $10^{10}\Omega$



Conductive Thread  
Length: 5190M/ Cone  
Surface Resistance:  $10^3$  to  $10^4\Omega$



Static Dissipative Cotton-Polyester Mixed Material  
Surface Resistance:  $10^5$  to  $10^8\Omega$

### REMARKS

Detail specifications available upon request



**ESD Control Garments**  
**Product Code : DY6001**

We provide a wide range of Static Dissipative garments available in different designs to suit all kinds of applications. These garments are made with excellent workmanship from our high quality DY6000 garment material. They serve you with the best electrical and physical properties at the most reasonable price.

Customized designs are welcomed

Sizes: XS, S, M, L, XL, 2XL, 3XL, 4XL

*Jumpsuits*



*Metal Snap Buttons*



*Conductive Cuff*



*Standard Hood*



*ESD Shoe Cover Booties with Velcro*



*Cap*



*Round Collar*



*Standard Collar*

*Labcoats*



*Smocks*





## Conductive / Static Dissipative PVC Shoes

Product Code : DY6002

Static control footwear provides the most effective and reliable way to remove static charges from personnel. When used in conjunction with proper flooring, it gives superior control of ESD compared to other grounding methods like wrist straps, which may be less durable and cumbersome to the user.

### Function:

- Sizes : 220 - 300mm
- RTG < 35MΩ
- To minimize static charge generation
- To drain human static charge away through conductive / static dissipative flooring
- Machine Washable

Resistance of Shoes (ANSI/ESD STM9.1-2006)	Resistance to Ground (ANSI/ESD STM97.1-2006)
< 1.0 x 10 <sup>8</sup> Ω (COND, Conductive)	< 1.0 x 10 <sup>7</sup> Ω (COND, Conductive)
< 1.0 x 10 <sup>9</sup> Ω (SD, Static Dissipative)	< 3.5 x 10 <sup>7</sup> Ω (SD, Static Dissipative)



## Econ Grade - Static Dissipative PVC Shoes

Product Code : DY6002

This shoe has a two-piece construction of PVC top material and a unique one piece molded static dissipative PVC sole.

- Sizes: 220 - 300mm
- RTG < 35MΩ
- Low Cost
- Single Piece Molded Sole
- Excellent Electrical Properties
- Non-Marking, Non-Slip Sole
- Machine Washable

Resistance of Shoes (ANSI/ESD STM9.1-2006)	Resistance to Ground (ANSI/ESD STM97.1-2006)
< 1.0 x 10 <sup>9</sup> Ω (SD, Static Dissipative)	< 3.5 x 10 <sup>7</sup> Ω (SD, Static Dissipative)





## Static Dissipative PU Shoes Product Code : DY6002

These PU shoes offer superb comfort, and they are suitable for operations that require long hours of standing.

- Sizes : 220 - 300mm
- RTG < 35MΩ
- Single Piece Molded Sole
- Excellent Electrical Properties
- Non-Marking, Non-Slip Sole
- Machine Washable
- Better cushion at insole and heel portion



SHPU-4E-II-SD-BR



SH-PU-4E-SD-REV A

Resistance of Shoes (ANSI/ESD STM9.1-2006)	Resistance to Ground (ANSI/ESD STM97.1-2006)
< 1.0 x 10 <sup>9</sup> Ω (SD, Static Dissipative)	< 3.5 x 10 <sup>7</sup> Ω (SD, Static Dissipative)



## Static Dissipative PVC Booties Product Code : DY6002

These booties have a three-piece construction of upper static dissipative polyester fabric, a PVC top and a unique one piece molded static dissipative PVC sole. This one-piece sole design allows human body static charges to dissipate via the insole to the ESD floor.

- Sizes : 220 - 300mm
- RTG < 35MΩ
- Single Piece Molded Sole
- Excellent Electrical Properties
- Non-Marking, Non-Slip Sole



SH-08-SD-GD



SH-08-SD-ST

Fabric Surface Resistance (-GD, 5mm checked)	Fabric Surface Resistance (-ST, 5mm parallel)
10 <sup>5</sup> to 10 <sup>6</sup> Ω	10 <sup>8</sup> to 10 <sup>10</sup> Ω

Resistance of Shoes (ANSI/ESD STM9.1-2006)	Resistance to Ground (ANSI/ESD STM97.1-2006)
< 1.0 x 10 <sup>9</sup> Ω (SD, Static Dissipative)	< 3.5 x 10 <sup>7</sup> Ω (SD, Static Dissipative)

# SAFETY FOOTWEAR



## Static Dissipative Safety Booties (PU/PU)

Product Code : DY6008

- Steel toe cap
- Sizes : 220 - 300mm
- RTG < 35MΩ

Resistance of Shoes (ANSI/ESD STM9.1-2006)

< 1.0 x 10<sup>9</sup> Ω

Surface Resistance of fabric (ESD STM2.1-1997)

10<sup>5</sup> to 10<sup>9</sup>Ω

Resistance to Ground (ANSI/ESD STM97.1-2006)

< 3.5 x 10<sup>7</sup> Ω



Grey



Light Yellow



Navy Blue



White



Pink



Sky Blue



## Static Dissipative Safety Shoes (PU/PU) - S1

Product Code : DY6002

These safety shoes are made of either microfiber PU or leather upper. They come with a mesh lining, steel toe cap, PU/PU outsole and a silver fiber PU insole.

- Steel toe cap
- Sizes : 220 - 300mm
- RTG < 35MΩ
- Excellent Electrical Properties
- Non-Marking, Non-Slip Sole
- Anti-Fatigue, Anti-Odour removable insole



Resistance of Shoes (ANSI/ESD STM9.1-2006)

< 1.0 x 10<sup>9</sup> Ω

Resistance to Ground (ANSI/ESD STM97.1-2006)

< 3.5 x 10<sup>7</sup> Ω



SH-09P-SD-35M-BK



SH-13P-SD-35M-BK



SH-09P-SD-35M-MW



SH-13P-SD-35M-MW



**Static Dissipative Safety Shoes  
(PU/RUBBER) - S1 SRA**  
Product Code : DY6008

Resistance of Shoes  
(ANSI/ESD STM9.1-2006)

< 1.0 x 10<sup>9</sup> Ω

Resistance to Ground  
(ANSI/ESD STM97.1-2006)

< 3.5 x 10<sup>7</sup> Ω

- Steel toe cap
- Sizes : 37 - 47
- RTG < 35MΩ



SF025-35M



SF036-35M



SF037-35M



**Static Dissipative Safety Shoes  
(PU/PU) - S1P SRC / S3 SRC**  
Product Code : DY6008

Resistance of Shoes  
(ANSI/ESD STM9.1-2006)

< 1.0 x 10<sup>9</sup> Ω

Resistance to Ground  
(ANSI/ESD STM97.1-2006)

< 3.5 x 10<sup>7</sup> Ω

- Composite toe cap
- Composite Midplate
- Metal Detector Friendly
- Sizes : 36 - 48 ( HS-523-35M )
- Sizes : 37 - 47 ( HS-015-35M )\*
- RTG < 35MΩ



HS-523-35M (S1P SRC)



HS-015-35M (S3 SRC)\*



Composite Toe Cap  
(Metal Detector Friendly)



Composite Midplate (Anti-Puncturing)



**Static Dissipative Entry Level  
Safety Shoes (PU/PU) - S3 SRC**  
Product Code : DY6008

Resistance of Shoes  
(ANSI/ESD STM9.1-2006)

< 1.0 x 10<sup>9</sup> Ω

Resistance to Ground  
(ANSI/ESD STM97.1-2006)

< 1.0 x 10<sup>9</sup> Ω

- Steel toe cap
- Steel Midplate
- Sizes : 36 - 47
- RTG < 1GΩ
- Water Resistant



HS-1102





**Static Dissipative Slip-Resistant Safety Shoes (PU/RUBBER) - S1 SRC**  
**Product Code : DY6003**

- Steel toe cap
- Sizes : 37 - 47
- RTG < 1GΩ



Resistance of Shoes (ANSI/ESD STM9.1-2006)	Resistance to Ground (ANSI/ESD STM97.1-2006)
< 1.0 x 10 <sup>9</sup> Ω	< 1.0 x 10 <sup>9</sup> Ω



**Static Dissipative PU Slippers**  
**Product Code : DY6002**

This is a single piece molded static dissipative PU slipper.

- Sizes : 34/35 - 47/48
- RTG < 10MΩ



Resistance of Shoes (ANSI/ESD STM9.1-2006)	Resistance to Ground (ANSI/ESD STM97.1-2006)
< 1.0 x 10 <sup>8</sup> Ω	< 1.0 x 10 <sup>7</sup> Ω



**Conductive Rubber Outsole**  
**Product Code : DY6002**

These conductive rubber outsoles can be sewn with the DY6000 static dissipative fabric and buckle to make ESD control booties. These booties can be worn over normal shoes, without affecting comfort or movement.

- Outsole Sizes : Flat (S, M, L, XL and XXL)
- Outsole Sizes : Raised Edge (S, M, L and XL)
- RTG < 10MΩ

Resistance of Outsole (ANSI/ESD STM9.1-2006)	Resistance to Ground (ANSI/ESD STM97.1-2006)
< 1.0 x 10 <sup>7</sup> Ω	< 1.0 x 10 <sup>7</sup> Ω



SD FLAT RUBBER SOLE

SD RASIED EDGE RUBBER SOLE



**Static Dissipative Insole**  
**Product Code : DY6002**

These static dissipative insoles provides extra cushioning for humans wearing conductive or static dissipative footwear, while offering superb resistance to ground.

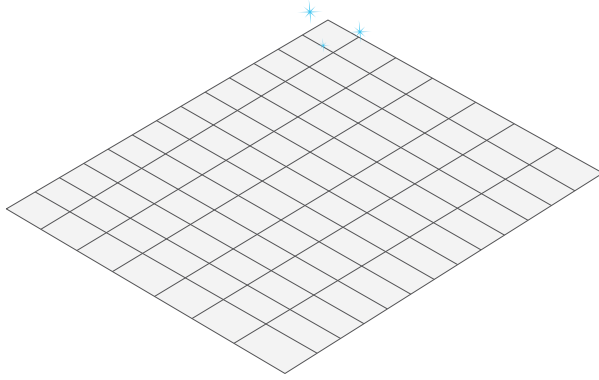
- Sizes : 220 - 300 mm
- RTG < 35MΩ
- Excellent Electrical Properties
- Machine Washable

Resistance of Insole (ANSI/ESD STM9.1-2006)	Resistance to Ground (ANSI/ESD STM97.1-2006)
< 1.0 x 10 <sup>9</sup> Ω	< 3.5 x 10 <sup>7</sup> Ω

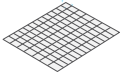
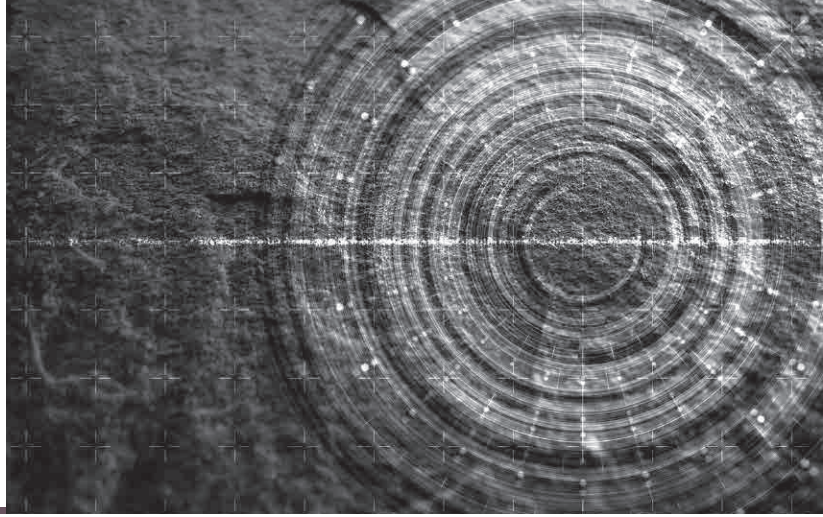


SH-PU-INSOLE-SD-35M

SH-INSOLE 2SIDE A/S CANVAS



FLOORING



**Conductive Vinyl Tiles**  
**Product Code : DY1007**

The Flexco ESD Flooring is renowned in various industries for its high quality and durable conductive vinyl tiles. The high standards in manufacturing and strict quality testing enable us to provide lifetime warranty for the electrical properties of the tiles.

**Applications:**

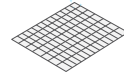
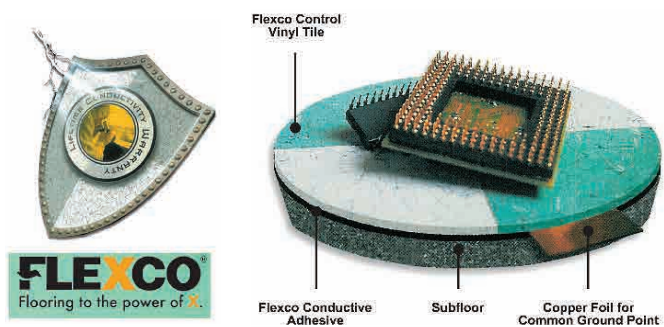
- Electronics manufacturing, clean rooms, stores/ warehouses, assembly, test and inspection, wafer or fiber optics fabrication
- Hospital surgeries, intensive care units, radiological facilities
- Computer/data processing installations, hard disk drive industries, access panels
- Explosive environments, munitions facilities, chemical processing
- Pharmaceutical, medical device manufacturing

- Material** : Conductive Vinyl  
**Available Sizes** : 1ft X 1ft / 2ft X 2ft / 3ft X 3ft  
**Available Thickness** : 2mm / 3mm  
**Accessories** : Conductive 2-part Epoxy Adhesives/ Welding Bead/Copper Grounding

Foil

**Electrical Resistance** : 25KΩ to 1MΩ

*Remarks: Detail Specifications and ESD Flooring consultation and Certification services available upon request.*



**Premium ESD Paint**  
**Product Code : DY1007-ACL**

This single-part system is an economical alternative to ESD epoxy or ESD tile that will save you money in material and labor related expenses. Trouble-free to install and maintain, this full-bodied paint allows for effortless mixing and application. Its rich viscosity ensures even distribution of conductive material and supreme coverage that leaves a nice sheen.

**Staticide® Premium ESD Paint**

You will have reliable static control with durability and alternative colors. Designed for interior concrete floors, this series of water-based polyurethane paints offers a bright color palette. The paints are perfectly suited for electronics manufacturing, assembly, and ESD protected areas (EPAs) where static control is of high importance.

This selected grade of ESD paint is formulated with the finest high-tech materials for consistent static protection, quality control, industrial toughness, and beauty with the following features:

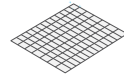
- Water-based polyurethane
- Non-hazardous
- Non-flammable
- Biodegradable
- Static dissipative
- Conforms to ANSI/ESD S20.20-2007 Standard

- Material** : Water-based Polyurethane  
**Electrical Resistance** : 1X10<sup>6</sup> to 1X10<sup>8</sup> Ω (Average)  
**Coverage** : 250-300 sqft per gallon at 2mils



**REMARKS**  
*Detail specifications available upon request*





## Static Dissipative Anti-Slip Floor Mat

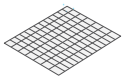
Product Code : DY1003-SD-AS

This anti-slip mat comes with either small diamond or big circle shape pattern to meet different requirements. Rubber or PVC material available.

- Thickness : 2mm and 3.2mm
- Dimension : 1M or 1.2M (width) and 10M (length)
- Surface Resistance :  $10^7$  to  $10^9\Omega$  (ESD S4.1, 12% RH 48 hrs)

### REMARKS

Highly recommended for use in conjunction with Dou Yee ESD SAFE Shoes



## Anti-Fatigue Floor Mat

Product Code : DY1003

Coming in standardized sizes, it allows this floor mat to be strategically placed at individual workstations. It is made of durable static dissipative surface laminated with thick rubber foam base. The foam base provides relief for the feet without compromising on ESD protection requirements. Diamond-patterned embossed surface offers excellent traction. A yellow safety border is highly visible with the ESD logo embedded at corners to alert workers of ESD controlled areas. All edges are tapered for safety to prevent tripping.

### Physical Properties

Length x Width	910 mm x 610 mm +/- 10 mm 1840 mm x 610 mm +/- 10 mm
Thickness	20 mm +/- 5 mm
Colour	Safety Yellow / Black
Surface	Diamond Embossed (Anti Slip)

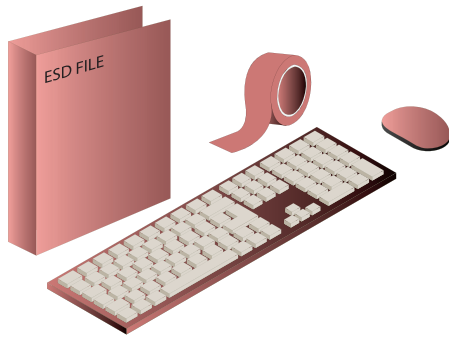
### Electrical Properties

Surface Resistance	$1.0 \times 10^6$ to $1.0 \times 10^7 \Omega$
Resistance to Ground	$1.0 \times 10^6$ to $1.0 \times 10^9 \Omega$
Charge Decay Time (1000-10V)	< 2 Seconds
Grounding Cord	10 ft with Cord with Alligator Clip and Banana Jack

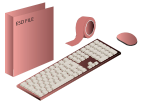


### REMARKS

Highly recommended for use in conjunction with Dou Yee ESD SAFE Shoes



# ACCESSORIES



**Static Dissipative Waste Paper Bin**  
**Product Code : DY5400**

The 5075 Static Dissipative Wastebasket is ideal for cleanrooms, manufacturing, inspection, quality control and research industries where static control is crucial. This sturdy, high-density polyethylene container dissipates static electricity and does not tribo-generate. It contains no carbon, dyes, or additives that slough or outgas, making it suitable for all applications demanding cleanliness.

**ACL Staticide®**



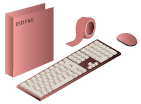
**Conductive Waste Bin**  
**Product Code : DY2007**

The WEZ Conductive Waste Bin is made from permanently conductive PP material, and it is ideal for use in electrostatic protected areas.

The ESD logo comes standardized on every WEZ containers

**WEZ SUISSE**

Electrical Properties	
Surface Resistance (Black)	< 10 <sup>4</sup> Ω (DIN 53482)



**Staticide Spray**  
**Product Code : DY5400**

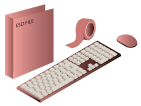
ACL Staticide® is an inexpensive, easy-to-use topical antistatic solution and it is a highly-effective method for long-term static control. It is widely used in a broad range of industries, as well as in the office.

Available in several different formulations, Staticide is packaged in gallons or ready-to-use quart bottles with spray nozzles. It is easily applied on walls, ceilings, floors, carpets, fixtures, work surfaces, tools and equipment, conveyor belts, clothing and other materials. On a hard surface, one gallon of Staticide will cover several thousand square feet, and last from weeks to months, depending on the application.



**ACL Staticide®**

*REMARKS*  
*Detail specifications available upon request*



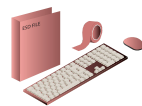
**Staticide Mat & Table Top Cleaner**  
**Product Code : DY5400**

ACL Mat & Table Top Cleaner is a multi-purpose neutral cleaner that is designed for production areas. It is the ideal cleaner for areas in which static-sensitive devices are assembled, tested, and handled, but can also be used in areas that require a mild but effective cleaner. This non-abrasive formula is safe to use on workstations, tabletops and anti-static mats (rubber and vinyl).

It effectively removes flux residues, oily finger-marks, grease, nicotine, dirt, grime and inorganic contaminants. It also removes dirt on table mats and other antistatic mats without degrading the surface's antistatic properties.

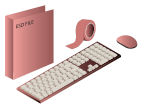


**ACL Staticide®**



**Static Dissipative Page Protectors / Card Holders**  
**Product Code : DY3007**

These static dissipative page protectors / cardholders contain stable properties and a non-contaminating surface that is suitable for cleanroom environments. They can be used as chart holders, document holders, badge holders and etc.

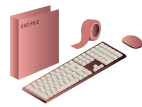


**Static Dissipative Files and Document Holders**  
**Product Code : DY3007**

Made from homogenous vinyl, this static dissipative ring binder is ideal for use in ESD control workstations to hold traveler charts, process charts and ESD page protectors.

It is commonly available in blue for A4 size, with various thickness/capacity.

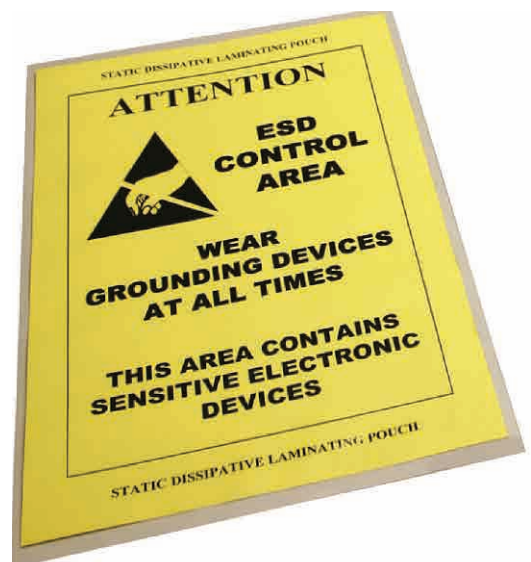
- 1" (2 rings)
- 2" (2 rings)
- 2" (3 rings)
- 3" (2 rings)
- 3" (3 rings)



**Static Dissipative Laminating Pouch**  
**Product Code : DY3007**

This is a high quality, pre-trimmed polyester/ EVA Permanent Static Dissipative laminating pouch. Simply place your documents, work instructions, ISO certificates, machine layouts, ESD warning signs, etc into this laminating pouch and insert the sealed edge into the laminator. In just seconds, you will have a permanently sealed static dissipative pouch for use in your ESD sensitive work area.

Available in both A3 and A4 sizes.



**REMARKS**  
 Detail specifications available upon request

# DOU YEE

Global Capability, Local Focus

## HEAD OFFICE

SINGAPORE

2304 Bedok Reservoir Road Bedok Industrial Park C Singapore 479223

Tel: (65) 6444 2678

Fax: (65) 6743 7172

Email: [s2\\_marketing@douyee.com.sg](mailto:s2_marketing@douyee.com.sg)



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Certificate SG02/54422