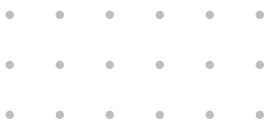




DORANKIS



ESD PRODUCTS | ESD TESTING | ZAP-SERIES | ESCAPE PROGRAMME



DORANKIS



MB "Dorankis" is a dealer of global supplier and manufacturer established in 1979, specializing in state-of-the-art Electrostatic Discharge (ESD) products for the electronics industry. Together with qualified manufacturer we can offer innovative and cost-effective solutions to combat ESD issues, providing partners with effective solutions to enhance profitability. With a commitment to excellence.

MB "Dorankis" organize deliver of world-class ESD product knowledge, enabling clients to surpass competitors. All products have achieved widespread success across Asia, Europe, the USA, and beyond, ensuring reliable protection against ESD in diverse markets.



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TOTAL SOLUTION FOR YOUR ALL ESD PROTECTION NEEDS

Award
(2018-2019)



SINCE 1979



Static Discharge
Palm Plate



ESD Access
Control System



Static Shielding Bags/
Moisture Barrier Bags



Permanent
Anti-static Bags



Zipper Bags



ESD Conductive
Floor Tiles



Footwear / Wrist Strap
Tester



ESD Access
Control

ESD PU Foam Stool



ESD PU Foam
Ergonomic Chair



ESD PU
Leather Chair



ESD Workbench

ESD CONTROL ITEMS

ESD PACKAGING

ESD FOOTWEAR

ESD CHAIR

ESD WORKSTATION

GROUNDING

STATIONERY / PACKAGING

ESD GARMENTS

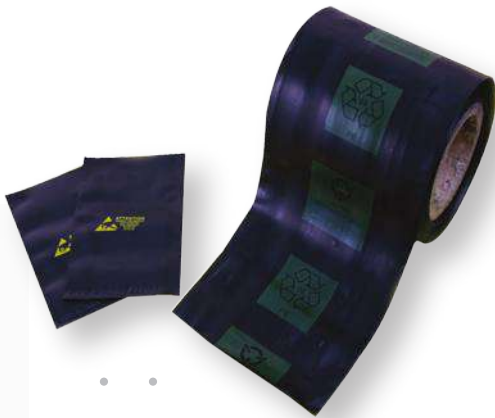
ESD ACCESSORIES

TEST & EQUIPMENT

ESD VINYL TILES

ESD PACKAGING

Conductive PE Bag/Roll



Material:

Conductive carbon PE material

Application:

Highly recommended for packaging and product handling applications which require fast grounding.

- ♦ It has low electrical resistance, allowing electrons to flow easily.

Size: Custom-made

Surface resistance: <10e4 Ohms

Static decay: < 0.5 sec

Colour: Black

Optional:

- ♦ Also available in roll tubing, cut sheets, bags.
- ♦ Printed & unprinted form
- ♦ Side Gusset or Bottom Gusset

Material:

Polyethylene compounds

Application:

Designed to prevent the build-up of static charge and protect components from ESD damages.

Size: Custom-made

Surface resistance: 10e8 - 10e10 Ohms

Static decay: < 2.0 sec

Colour: Other colours available or transparent

Optional:

- ♦ Also available in roll tubing, cut sheets, bags, zip lock bags
- ♦ Printed & unprinted form
- ♦ Side Gusset or Bottom Gusset

Antistatic PE Bag/Roll



Material: Polyethylene compounds

Application:

Designed to provide good resistance to triboelectric charging and also cushioning effect to protect content from being physically damaged.

Size: Custom-made

Surface resistance: 10e8 - 10e10 Ohms

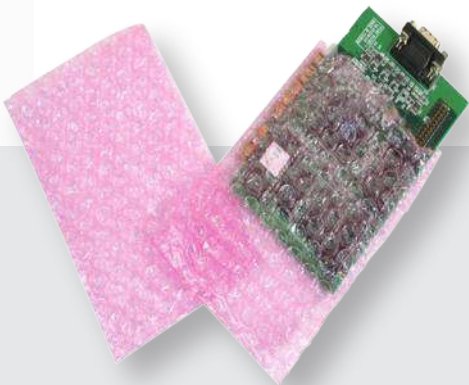
Static decay: < 2.0 sec

Colour: Pink

Optional:

- ♦ Single or double layer construction
- ♦ Air bubbles available in 10mm or 25mm
- ♦ Roll form available
- ♦ Antistatic or normal
- ♦ Bubble-in or bubble-out

Antistatic Air Bubble Bag



ESD PACKAGING

Material: 3 layers of film construction

Application:

Sensitive components such as MOS, CMOS, FET devices, etc can all be safely handled when packaged in transparent static shielding bags

Size: Custom-made

Thickness: 3.2mil & 2.2mil

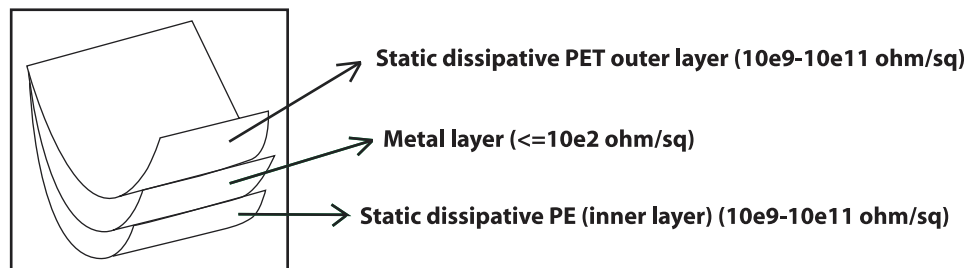
Surface resistance: $10e8 - 10e10$ ohm

Static Decay: <0.05 sec

Colour: Transparent

Optional:

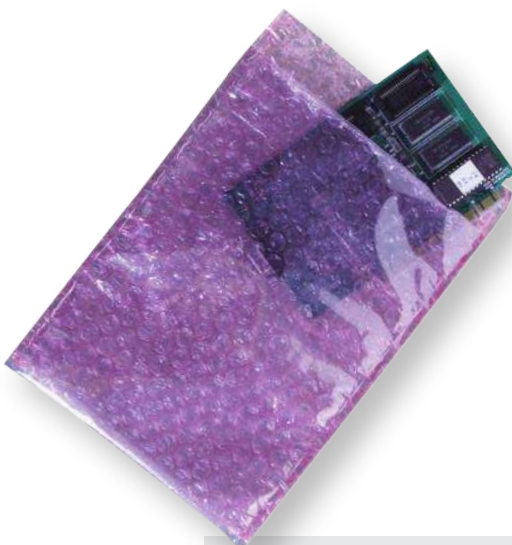
- ◆ Printed & unprinted form
- ◆ Available with zip-lock
- ◆ Amide & silicone free ultra low LPC cleanroom grade available upon request
- ◆ We also tailor-made to different thickness
- ◆ **Intrinsically permanent static dissipative PE inner layer ($10e6 - 10e9$ ohm) with negligible ultra-low sulphuric ion contaminants and free from other ionic contaminants available upon request.**



Static Shielding Bag



Static Shielding Bag with Air Bubble



Material:

Static shielding & air bubble

Application:

Idea for ESD protection as it combines the 'Faraday Cage' effect with an air gap, as well as providing physical protection

Size:

Custom-made

Surface resistance:

$10e8 - 10e10$ Ohms

Static Decay:

<0.05 sec

ESD PACKAGING

Moisture Barrier Bag

Application:

Puncture resistance and moisture barrier for dry packaging

Size:

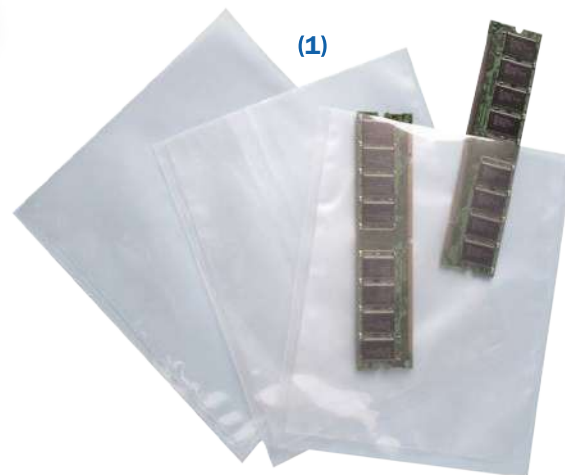
Custom-made

Features:

- ♦ Specially made component structure bag featuring proprietary static dissipative surfaces, high moisture barrier, good heat sealable, waterproof, vaporproof as well as grease proof protection properties for the packaging of electrostatic sensitive products
- ♦ Amide silicone free ultra low LPC cleanroom grade available upon request
- ♦ We also tailor made to different thickness and special surface resistivities

Option:

Antistatic/Normal



(1) Clear Moisture Barrier Bag

Material composition: PET/AL/PE

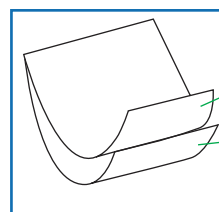
Thickness: 3.8mil & 4.8mil

Color: Clear transparent

Surface resistance: $10e8 - 10e10$ Ohms

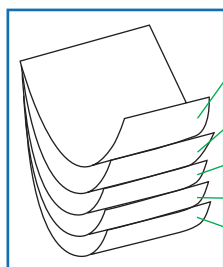
Static decay: <0.05 sec

MVTR: <0.016 gm/100 sq.in./day



Static dissipative PET (outer layer)
 $10e9 - 10e11$ ohm/sq

Static dissipative PE (inner layer)
 $10e9 - 10e11$ ohm/sq



Static dissipative PET (outer layer)
 $10e9 - 10e11$ ohm/sq

Metalized aluminium layer $\leq 10e2$ ohm/sq

PET layer

Metalized aluminium layer $\leq 10e2$ ohm/sq

Static dissipative PE layer (inner layer)
 $10e9 - 10e11$ ohm/sq

(2) Heavy Metalised Moisture Barrier Bag

Material composition: PET/AL/PE

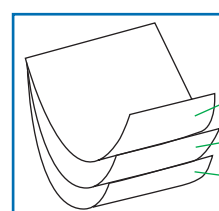
Thickness: 3.8mil & 4.8mil

Color: Silver

Surface resistance: $10e8 - 10e10$ Ohms

Static decay: <0.05 sec

MVTR: <0.016 gm/100 sq.in./day



Static dissipative PET (outer layer)
 $10e9 - 10e11$ ohm/sq

Aluminium layer $\leq 10e2$ ohm/sq

Static dissipative PE (inner layer)
 $10e9 - 10e11$ ohm/sq

(3) Aluminium Moisture Barrier Bag

Material composition: PET/AL/PE

Thickness: 5.8mil

Color: Silver

Surface resistance: $10e8 - 10e10$ Ohms

Static decay: 0.01 sec

MVTR: <0.0039 gm/100 sq.in./day

ESD PACKAGING

Material:

Polyethylene compounds with non-migratory intrinsically ESD property

Application:

Designed to provide permanent protection against ESD damage to ESD sensitive components

Size: Custom-made

Size tolerance:

- ♦ Width & length (+6mm)
- ♦ Thickness (+10%)

Surface resistance: 10e5 - 10e8 Ohms

Static decay: <0.5 sec

Colour: Clear or other colour available

Optional:

- ♦ Available in cut sheets and bags
- ♦ Printed and unprinted form

Permanent Antistatic Bag/Sheet



Antistatic Zipper Bag

**Material:**

LDPE (Low density Polyethylene)

Application:

Resealable and designed for components where heavy static shielding protection is not required

Size: Custom-made

Surface resistance:

- ♦ Non-migratory (10e5 - 10e8 Ohms)
- ♦ Migratory (10e8 - 10e10 Ohms)

Colour: Transparent

Material:

Kraft paper 75gsm and 90gsm

Application:

Designed to protect IC tubes from ESD damage
Good physical & ESD protection for components shipped in tubes

Size: Custom-made

Size tolerance: Thickness (+/-10%)

Surface resistance: <10e4 Ohms

Color: Brown

Kraft Paper



ESD PACKAGING

Antistatic PE Foam



Material: LDPE

Surface resistance: $10e8 - 10e10$ Ohms

Colour: Pink

Application: Packing/ Cushioning/ Die cut tray

Size: Various size, thickness & die cut shapes

(Semi Rigid Foam)

Material: Polyurethane

Surface resistance:

- ♦ Conductive ($\leq 10e4$)
- ♦ Antistatic ($\leq 10e10$)

Color:

- ♦ Antistatic (Pink, grey, black)
- ♦ Conductive (Black)

Application: Packing/ layer pad

Size: Various size, thickness & die cut shapes

Antistatic/Conductive PU Foam



Antistatic/Conductive EVA Foam



Material: EVA

Surface resistance:

Conductive ($\leq 10e4$)

Antistatic ($\leq 10e10$)

Color:

Antistatic (Pink, grey, black)

Conductive (Black)

Application:

Packing/ layer pad

Size:

Various size, thickness & die cut shapes

GLOVES

Conductive Polyester Gloves



Material:

- ◆ Blended with micro polyester
- ◆ Filament yarn and high conductive
- ◆ Filament knitted fabric. (Lint-free)

Interval of Carbon Line: 10mm or 3mm

Surface Resistance: 10e5 - 10e6 Ohms

Antistatic/Cleanroom Latex Gloves

Material: Natural Rubber Latex
Purification Degree: Class 100, Class 10,000
Length: 9" & 12"
Colour: Natural Yellow
Features: Smooth or Textured
Surface Resistance: 10e7 - 10e9 Ohms



Cleanroom Nitrile Gloves



Material: 100% Nitrile Latex
Purification Degree: Class 100, Class 10,000
Length: 9" & 12"
Size: S/M/L
Colour: Milky White
Features: Smooth or Textured
Surface Resistance: max. 10e10 Ohms

GLOVES

Cleanroom Vinyl Gloves/PVC Gloves

Features:

No dust, Antistatic

Length: 10" & 12"

Purification Degree: Class 10, Class 100

Size: S/M/L/XL



Top Fit PU Gloves

**Features:**

Finger - coated gloves

Application:

- ♦ Used for weak electricity, IC, precise machine & relevant machine
- ♦ Can be recycled after cleaning with neutral detergent

Size: S/M/L

Palm Fit PU Gloves

Features:

Palm-coated gloves

Application:

Automatic weaving of fine nylon yarn, without sewing stitches, will not loosen is resistant to chemicals has anti-slipping performance, does not leave finger marks, and is comfortable to wear. Suitable for long-time operation

Size: S/M/L



ESD FOOTWEAR



ESD Shoes

(1) KS1098SV Standard Velcro



(2) KS1098SXV Standard Without Velcro



(3) KS1098AV 4 Air Hole with Velcro



(4) KS1098AXV Air Hole without Velcro



(5) KS1098SXVH Standard Half Heel without Velcro

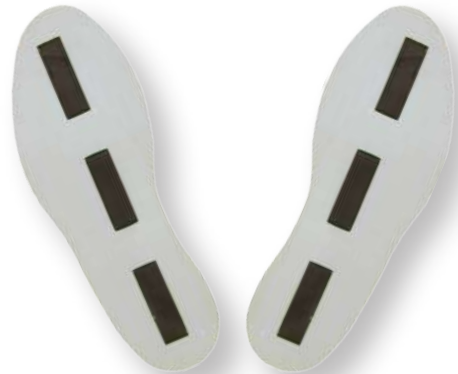


ESD FOOTWEAR

Thunder-Soft*

Product Features:

- ♦ Extra comfort - Smooth & does not cause irritation
- ♦ Anti-fatigue - Durable & long lasting
- ♦ Typical $10e5$ - $10e6$ Ohms (surface-to-bottom)
- ♦ Meet S20.20 & EN 61340-5-1 (with conductive shoe and conductive floor)
- ♦ Easy to use



Comfort: Selected material and design provides adequate ventilation Extra light weight

Cleanliness: Meticulously designed non-dirt-trapping shoe base minimize dirt contaminants in the cleanroom

Fitting: Sizes are carefully chosen and specially designed to fit both males & females

Maintenance: Free from unpleasant odors after washing. Uniquely designed shoe base makes cleaning fast.

Safety: Shoe base (sole) designed for maximum grip particularly on wet floor.

Body-to-ground resistance: $1 \times 10e5$ - $3.5 \times 10e7$ Ohm meets ESDA S20.20 & IEC 61340-5-1 Standards

Permanent ESD properties with zero or negligible static charge generation during walking activities

DOP free to eliminate outgassing contamination (for special premium grade)

Newly developed to meet ESD Association Standard S91 - 1995 (USA)

Size Available:

Female - F3(23.5cm), F4(24cm), F5(24.5cm), F6(25.5cm), F7(26cm), F8(26.5cm)

Male - M4(26cm), M5(26.5cm), M6(27cm), M7(28cm), M8(28.5cm), M9(29cm)

ESD FOOTWEAR

ESD Safety Shoe



Patent No. UI 20014207
Extra Comfort for
High Productivity (Standing Operations)

- Safety Toe Cap:**
Ability to meet the Safety SIRIM Standard (Malaysia) equivalent to ISO20345:2011
- Cleanliness:**
Inner sole is quality PU foam pad, provides adequate ventilation and extra light weight
- Body to Ground Resistance:**
1 x 10e5 - 3.5 x 10e7Ohm meets ESDA S20.20 and IEC 61340-5-1 standard
- Cleanliness:**
Registered pattern design of non-dirt-trapping shoe base minimize dirt contaminants in the cleanroom
- Fitting:**
Optimum size range to fit both male and female
- Maintenance:**
 - ♦ Free from unpleasant odor after washing
 - ♦ Registered pattern design makes cleaning a fast
- Slip Resistance:**
Rubber based shoe sole exhibits superior slip resistance compared to PVC and PU to minimize accidental falls on wet floor
- Permanent ESD Poperties:**
Utilizing mineral base (non-migratory) ESD technology instead of non-stable migratory ESD technology
- Application:**
Static Control Safety shoes for indoor working area

ESD/Cleanroom Sandal

Material: PVC
Surface Resistance: 10e5-10e7Ohm/sq
Color: Blue/Black
Size: 9", 10" and 11"



PP STRAP

Antistatic PP Strap

(Impregnated)

Material: Polypropylene polymer

Colour: Black or white

Applications:

- ♦ Permanent ESD properties
- ♦ Suitable for fully -automated machine
- Surface Resistance:** 10e8 - 10e10 Ohms
- Standard Size:**
- ♦ 12mm(w) x 1,500m(L)
- ♦ 9mm(w) x 2,000m(L)

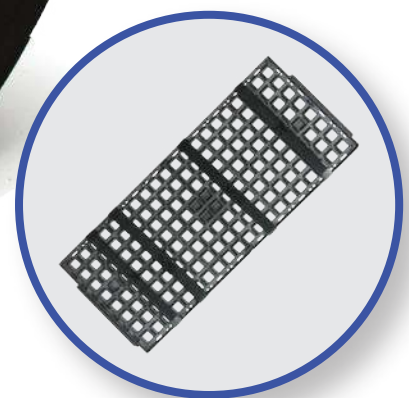
Static Dissipative PP Strap

Material: Polypropylene polymer

Colour: Black

Applications:

- ♦ Permanent ESD properties
- ♦ Suitable for fully -automated machine
- Surface Resistance:** 10e4 - 10e7 Ohms
- Standard Size:**
- ♦ 12mm(w) x 1,500m(L)
- ♦ 9mm(w) x 1,500m(L)



Product Specification

Tensile Strength:

- ♦ 72.0 Mpa (before baked)
- ♦ 66.6 Mpa (after baked)

Melting Point: 170 ± 5C

Core Diameter: 202mm

Special Size:

- ♦ 6mm x 2000m (only for antistatic)
- ♦ 14mm x 1500m

Recommended Baking Condition:

125C, 48hours. After baked the ESD properties still remains effective only for the Static Dissipative type of strap.

ESD CHAIR

ESD/Cleanroom Typist Chair



These chairs are ergonomically designed to provide continuous drainage of static charge to ground.

- Material:**
Antistatic PU leather, chrome plated cylinder, polished aluminium chair base
- Surface Resistance:**
10e5 to 10e8 Ohms
- Colour:**
Blue & black
- Adjustable Height:**
Low (290mm) & Height (510mm)



ESD/Cleanroom Typist Chair



- Material:**
Antistatic PVC leather, chrome plated cylinder, polished aluminium chair base
- Surface Resistance:**
10e5 to 10e8 Ohms
- Colour:**
Blue & black

ESD Stool



- Material:**
ESD PVC Leather
- Adjustable Height Range**
- Seat cover to ground resistance:**
107 - 109 Ohms
- Static decay:**
< 0.01 sec
- Castor:**
3 Normal, 1 ESD Nylon, 1 Metal

ESD Stool PU Foam



- Material:**
Back & Seat : PU Foam (Polurethane type)
- Seat Height Range from Ground:**
Typist : 400mm - 560mm
Drafting : 500mm - 800mm
- Seat Pan Size:** W330mm x D330mm
- Colour:** Black
- High Adjustable:** Lever action with gas lift
- Seat Cover to Ground Resistance:** 10e6 - 10e9 Ohms

ESD CHAIR

ESD PU Foam Ergonomic Chair

Material:
Back & Seat : PU Foam (Polurethane type)
Seat Height Range from Ground:
Typist : 400mm - 560mm
Drafting : 500mm - 800mm
Seat Pan Size: W400mm x D410mm
Back Rest Size: W360mm x H240mm
Color: Black
High Adjustable: Lever action with gas lift
Seat Cover to Ground Resistance: 10e6 - 10e9 Ohms



Optional : round footrest, stair chair base with pedaling circle, ESD nylon castor, stainless steel castor, ESD glide & air filter.

ESD CHAIR TEST STANDARD

- ANSI/ESD S20.20
- ANSI/BIFMA X5.1-2017 (R2022)



Alloy Five-Star-Foot
Diameter: 535mm



Metal Chroming Five-Star-Foot
Diameter: 480 mm



ESD CHAIR METAL CASTOR
Type: pin type
Diameter: 50mm



ESD PA CASTOR
Type: pin type



ESD GLIDDER
Type: pin type



Foot ring plastic type
Diameter: 400mm
Foot ring chrome type
Diameter: 460mm (18")

ESD CHAIR

ESD Chair Cover

Cover-fit*

Application:

- ♦ Designed to fit the existing old chair
- ♦ Simple installation

Surface to Ground Resistance:

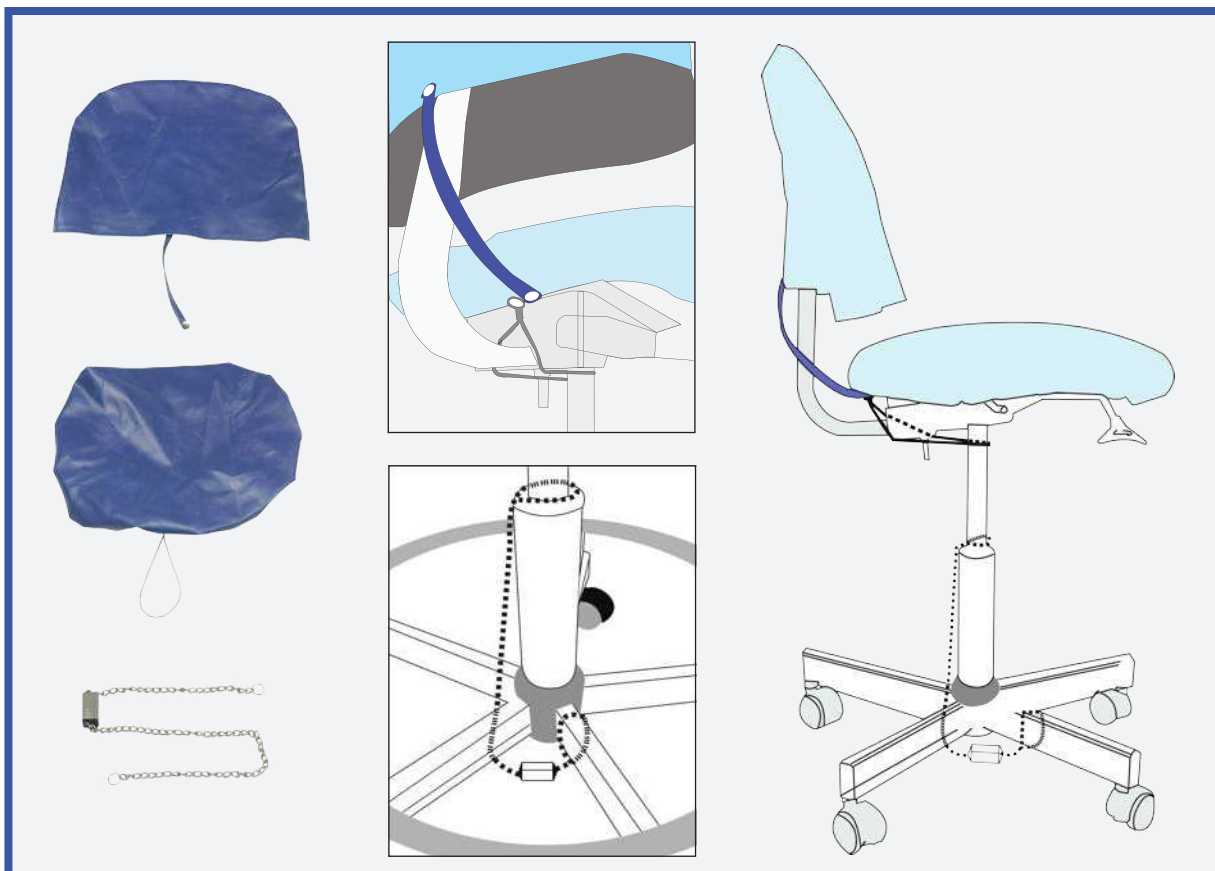
10e6 - 10e8 Ohms

Static Decay: 0.05sec

Material:

ESD PVC Leather for back rest and seat,
stainless steel grounding bar

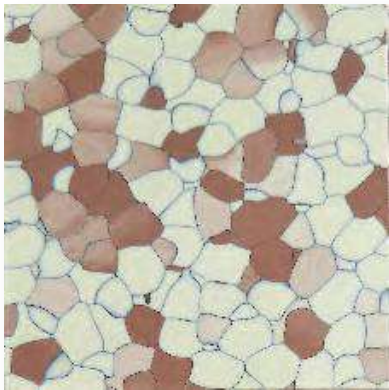
Colour: Black and blue



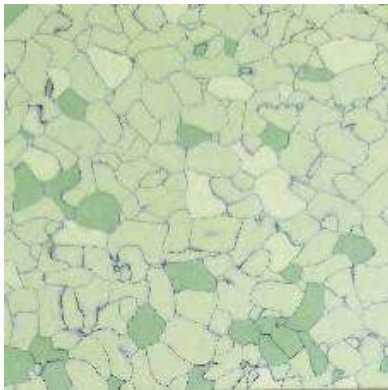
ESD CONDUCTIVE VINYL FLOORING TILES



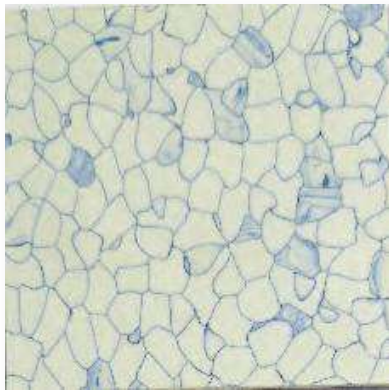
Size:600mm X 600mm , 610mm X 610mm 900mm X 900mm
Thickness:2.0mm, 2.5mm, 3.0mm



TK - 8605



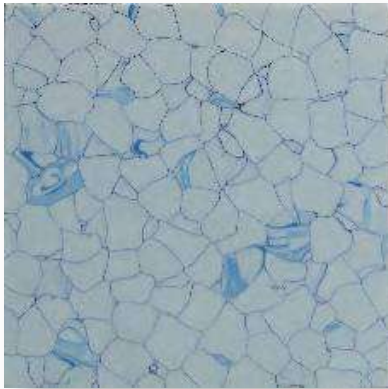
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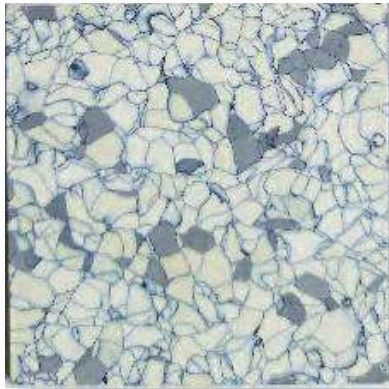
TK - 808



TK - 805



TK - 8613



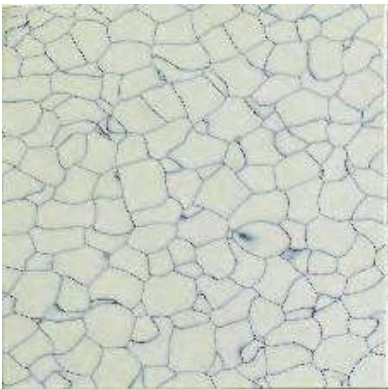
TK - 8616

ESD CONDUCTIVE VINYL FLOORING TILES

NOTE: ESD Floor must be tested & Certified by an iNARTE, USA qualified, Certified ESD Engineer using the instruments prescribed by applicable standards in the presence of the customer.



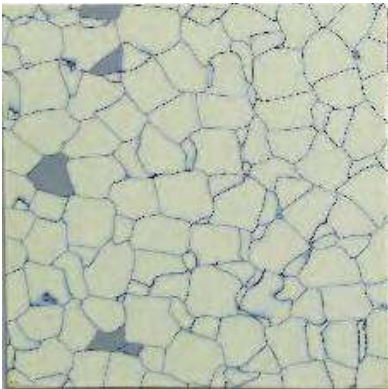
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Thickness:2.0mm, 2.5mm, 3.0mm



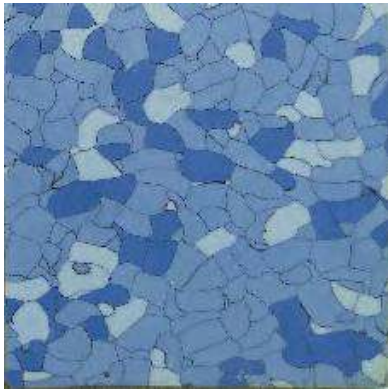
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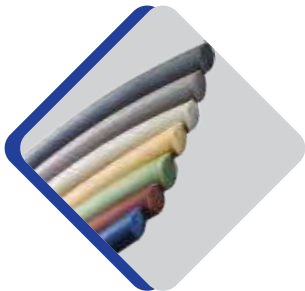
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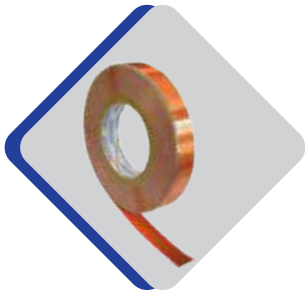
TK - 8603



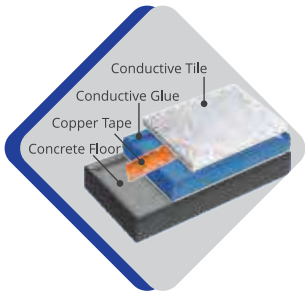
TK - 8604



PVC Welding Rod



Copper Foil



Structure

ESD CONDUCTIVE VINYL FLOORING TILES

■ TECHNICAL SPECIFICATIONS



TILE SIZE
610 X 610mm
600 X 600mm
25 Tiles/box



WEIGHT
EN430
3450 g/m²



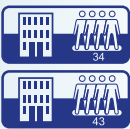
TOTAL THICKNESS
EN428
2.0mm/3.0mm



GENERAL PERFORMANCE
EN649
ASTM F1913
ASTM F1700



CLASSIFICATION
EN685



ELECTRICAL BEHAVIOUR
(surface to ground resistance)
En1081
IEC 61340-4-1 ANSI/ESD 7.1
R₁/R₂ 2.5X10⁴ - 1X10⁶ Ω -Static Conductive
1X10⁶ - 1X10⁹ Ω -Static Dissipative



ELECTRIC BEHAVIOUR (body voltage)
IEC 61340-4-5
ANSI/ESD STM 97.2
EN1815 < 100v Typical Reading: <30V



ABRASION RESISTANCE
EN 180 10581 Type 1



RESIDUAL INDENTATION
EN 433 approx. 0.03mm



SLIP RESISTANCE
AS/NZS 4586 R9
EN 13893 Class DS ≥ μ0.30



DIMENSIONAL STABILITY
EN 434 ≤ 0.25%



REACTION TO FIRE
EN 13501-1 Class Bfl-s1



COLOR FASTNESS
ISO 105-B02 ≥ 6



WHEEL PRESSURE
No influence



CHEMICAL RESISTANCE
Offers excellent resistance



IMPACT SOUND ABSORPTION
approx. 4dB



Static Decay < 0.1 sec
Electrical Resistance in combination with
ESD shoes IEC 61340-4-5
ESD STM 97.1 < 3.5 X 10⁷ Ω



APPLICATIONS
ESD Control products are recommended for use in electronics manufacturing, wafer fabrication, product assembly, inspection and storage, laboratories, clean rooms, defence establishments and pharmaceutical industries.

STATIC DISSIPATIVE FILM

3962 Series

Type	Name	ESD Property	Sealability	Adhesive	Thickness	Remarks
3962	Static Dissipative Clear Film (Thin)	Both Sides	Not Sealable	Absent	0.06mm	Clear
3962A	Static Dissipative Clear Film with adhesive	One Side	Not Sealable	Present	0.08mm	Clear
3962AW	Static Dissipative White Film with adhesive	One Side	Not Sealable	Present	0.09mm	Opaque White
3962P	Static Dissipative Clear Film with PVC	One Side	Sealable	Absent	0.16mm	Clear
3962S	Static Dissipative Clear Film	One Side	Sealable	Absent	0.12mm	Clear
3962G	Static Dissipative Clear Film with hot melt glue	One Side		Present	0.08mm	Clear

Surface Resistivity: 10e7 - 10e9 ohm/sq *
Life Span for ESD Property: Intrinsically Permanent
* Tested at RH: 65%

GARMENTS

Garment/Clothings

Material:

100% polyester with continuous conductive yarns arranged in a striped and grid pattern at 5mm intervals. It effectively dissipates static charges generated from human movement

Applications:

- ♦ It is ideal for cleanroom environment and electrostatic sensitive workplace
- ♦ It is washable, durable and has good ventilation

(1) Cleanroom Smock/Jumpsuit/Pants

Surface Resistance: $10e5 - 10e8$ Ohms

Colour:

Blue, green, white, yellow, pink in grid/stripe pattern

Size:

- ♦ XS, S, M, L, XL, XXL
- ♦ Custom-made available upon request

(2) Cap/Hood

Surface Resistance: $10e5 - 10e8$ Ohms

Color:

Blue, green, white, yellow, pink in grid/stripe pattern

Size:

- ♦ Free-size
- ♦ Custom-made available upon request



WORKSTATION



ESD Rubber Mat



Colour Option:
Blue, Green & Gray

Applications:

The product features a 2 layer construction that is strongly bonded together.

It can be used on the floor or table

Top layer:

Static Dissipative (Green/Grey) - provide static free surface

Bottom layer:

Conductive (Black) - allows static charge to be drained away effectively

Type of Surface: Dull/Shining

Surface Resistance:

- ♦ Top Layer: $10e6$ - $10e8$ Ohms
- ♦ Bottom Layer: $10e3$ - $10e4$ Ohms

Surface Resistance:

- ♦ Top Layer: less than $10e8$ Ohms
- ♦ Bottom Layer: less than $10e3$ Ohms

Size:

- ♦ 1,000mm x 10m x 2mm
- ♦ 600mm x 10m x 2mm

Grounding Cord

Applications:

Designed for connecting table mats to floor mats as well as for grounding floor mats, equipment and personnel etc directly to building ground.

*Grounding cord with 4 sharp point c/w 10ft straight cord

Peelable Sticky Mat

Application:

Is ideal for cleanroom environment in controlling small particles and dust where foot-borne contamination is critical.

Material: Polyethylene

Color: Blue

Size:

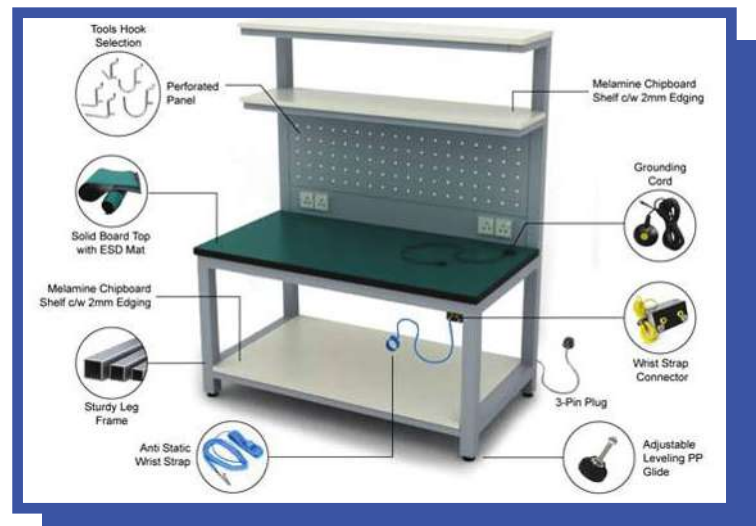
- ♦ 26" x 45" x healters
- ♦ 24" x 36" x healters

*Each layer is numbered



WORKSTATION

ESD Workbench



ESD ACCESS CONTROL SYSTEM

Human Body Electrostatic Discharge Devices



Palm Plate



Standing Ball

ESD Turnstile System



ESD Dual Footwear & Wrist Strap Tester



GROUNDING



Applications:

Wrist strap is the first line of defense in the battle against ESD. The purpose is to provide a rapid and continuous drain of static charges. For people who work mainly sitting down, grounding is best achieved by wearing wrist strap with coil cord which is connected to a grounding point. A wrist band and coil cord make up a wrist strap and can be supplied separately.

Model:

- ♦ Velcro band w/strap, black
- ♦ Elastic w/strap, light blue
- ♦ Cordless w/strap, blue
- ♦ Metal band w/strap, black

Grounding Cord



Wrist Strap



Applications:

- ♦ Standard coiled grounding cord length: 9ft, 10ft & 12ft
- ♦ Standard 1 MegaOhm built-in resistor
- ♦ Come with an alligator clip, which fits over the banana jack on the ground cord to provide an alternate connection to ground

Colour:

Blue & black

Applications:

Heel strap provides a reliable path for static charge to drain to ground when they are in contact with conductive/dissipative flooring. It is suitable for mobile personnel when with strap are not practical. Available in 1 MegaOhm resistor

Surface Resistance:

Less than 10^5 Ohm

Size:

- ♦ 1 size fits many shoe sizes
- ♦ Easy to wear with adjustable velcro strap
- ♦ To be effective, the straps must be worn on both feet

Heel/Toe Strap



STATIONERY

Conductive Grid Tape



Application:

Permanently static free with excellent shielding properties providing reliable protection against ESD damage to sensitive components.

Material: OPP

Surface Resistance:

- ♦ Outer: $10e11$ Ohms
- ♦ Inner: $10e6$ Ohms

Color: Brown with big/small logo

Size:

- ♦ 12mm(W) x 36m(L) x 0.05mm(T)
 - ♦ 18mm(W) x 36m(L) x 0.05mm(T)
 - ♦ 24mm(W) x 36m(L) x 0.05mm(T)
 - ♦ 48mm(W) x 36m(L) x 0.05mm(T)
 - ♦ Lot roll 990mm(W) x 36m(L) x 0.05mm(T)
- Custom widths available upon request

Applications:

A comfortable and flexible antistatic crepe paper capable of withstanding temperature up to 80°C for 30 minutes. It can be cleaned, removed, designed as an enhanced general purpose/professional painting product for non-critical applications.

Surface Resistance:

- ♦ Outer : $10e9$ - $10e11$ Ohms
- ♦ Inner : $10e9$ - $10e11$ Ohms

Roll Size:

- ♦ 1010mm (usable:990mm) x 1700m
- ♦ 1270mm (usable: 1250mm) x 1700m

Total Thickness: 0.140 +/- 0.005mm

Anti-Static Paper Masking Tape

(with High Adhesion Power)



Anti-Static Paper Masking Tape



Material:

Proprietary cellulose polymer

Surface Resistance:

$10e8$ - $10e10$ ohm

Color: Clear

Size:

- ♦ 12mm(W) x 45m(L) x 0.05mm(T)
 - ♦ 18mm(W) x 45m(L) x 0.05mm(T)
 - ♦ 24mm(W) x 45m(L) x 0.05mm(T)
 - ♦ 48mm(W) x 50m(L) x 0.05mm(T)
- *Custom width available upon request

Rafia String



Material: Polypropylene

Surface Resistance:

Less than $10e10$ Ohms

Weight: 2kg/roll

Colour: Pink

STATIONERY

Sticker/Label



Applications:

- ♦ A range of ESD caution logos & stickers are designed to identify electrostatic sensitive areas and static sensitive components.
- ♦ All labels/stickers are printed in yellow with ESD caution logo/messages in black.

Size:

35mm x 50mm

*Other sizes and design available upon request

ESD/Cleanroom Clip Board



Material:

Antistatic blue PVC covering

Surface Resistance:

10e8 - 10e10 Ohms

Size:

A4

ESD/Cleanroom Ring Binder



Surface Resistance:

10e8 - 10e10 Ohms

Color: Blue and clear

Size: A4

Rings:

2/4 rings available

*Rigid type made from acrylic is also available

ESD Retractable Pen



Material:

Low particular polystyrene material

Ink: Black, red & blue

Application:

Intrinsically permanent ESD properties

Surface Resistance:

10e8 - 10e9 Ohms

*With/without logo

ESD Signage

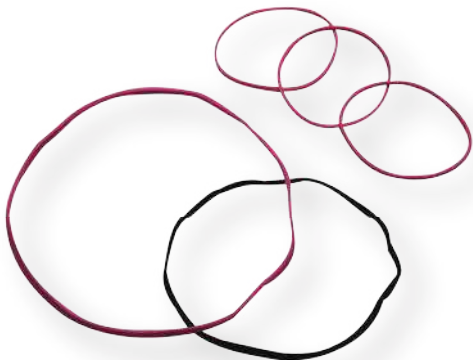


Applications:

- ♦ Black text on a yellow background
- ♦ To be used with each EPA according to ESDA S20.20 & IEC regulations
- ♦ Available in paper or plastic with various sizes

RUBBER

Rubber Band



Normal rubber bands can easily generate exceptionally high static voltage in your static free workstation. Therefore using conductive or antistatic rubber band could solve your wrapping problems with no static charge generated

- (1) Conductive Rubber Band**

Surface Resistance:
10e2 - 10e4 Ohms

Color: Black

Size: Custom made
- (2) Antistatic Rubber Band**

Surface Resistance:
10e8 - 10e10 Ohms

Color: Pink

Size: Custom made

Finger cots



(1) Antistatic Finger Cots

Applications:
Use in the semi conductor & microelectronics industry, electronic assembly and biological & pharmaceutical industry, suitable for dust-free environment

Size: S, M, L

Surface Resistance: 10e8 - 10e10 Ohms

Pack:
1440pc/bag, 20 bag/case (plastic bag)

(2) Sulphur Free Finger Cots

Pack:
100pcs/case

(3) Super Thickness Anti-Slip Finger Cots

Pack:
500pcs/case

(4) Static Dissipative Finger Cots

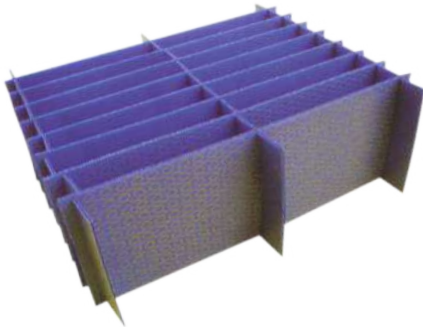
Pack: 1440pcs/bag

Surface Resistance: Max. 10e8 Ohm

CORRUGATED BOXES



ESD Divider



Surface Resistance:

- ♦ 10e9 - 10e11 Ohms (Antistatic range)
- ♦ 10e4 - 10e6 Ohms (Conductive range)
- *Permanent ESD properties
- *Various color

Corrugated Sheet Box

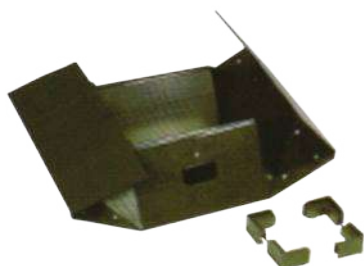


Corrugated sheet box irregular corrugated sheet recommend for different shapes of components packing, circulation and storage

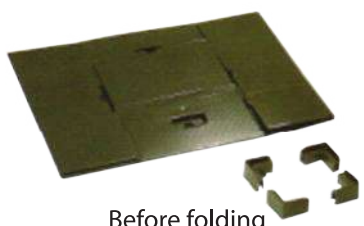
Corrugated Plastic Foldable Sheets



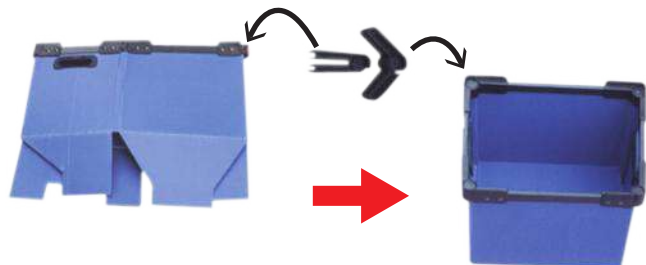
After folding



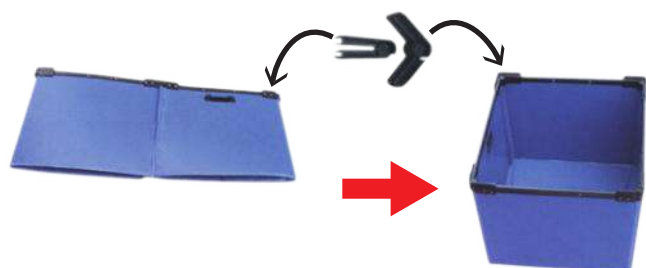
While folding



Before folding



Corrugated sheet + Reinforced Frame + Rivet



Corrugated sheet + Reinforced Frame + Stackable corner + Rivet

INJECTION MOULDED CONTAINERS



• •
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• •

ESD ACCESSORIES

Applications:

Designed to clean off any dust particle or debris without damaging the ESD sensitive components

Type of Bruches:

- ♦ Paint brush type
- ♦ Toothbrush type

Bristle: Hard/soft

Handle: Metal/plywood

*Users should be grounded during use

Brushes



Velcro Band



Applications:

To bundle tubes, boxes, tray etc

Materials:

- ♦ Nylon coated with conductive carbon c/w velcro
- ♦ Metal buckle

Colour:

Various colour & length upon request

*Available in antistatic and conductive

Applications: Traps dust & dirt

Materials: LDPE & adhesive

Colour: Semi transparent & blue

Size:

- ♦ 160mm, short handle
- ♦ 160mm, long handle
- ♦ 80mm, short handle

Roller handle:

Handheld "I" type/"T" type

*Handle available in stainless steel or plastic

Sticky Roller



Tweezer



Material:

Carbon fibers synthetic plastic

Feature:

Good rigidity, durability, resistant to acid & alkali, can with stand high temperatures up to 200 C & does not generate dust

ESD ACCESSORIES

Antistatic Spray



Applications:

- ♦ For coating insulative surfaces that help to keep reduce static discharge generation
- ♦ Forms a conductive patch upon application

Easy to use:

Spray or wipe on

Surface resistance:

10e7 - 10e9 Ohms

Antistatic Cleaner



Applications:

Suitable to clean and remove contamination (grease, finger marks, dirt etc) from all types of static control surfaces for eg: table top, antistatic mat

Easy to use:

Spray or wipe on

*Safe on any surface

*Does not leave a build-up that can form an insulative layer

ESD Epoxy Paint



Applications:

- ♦ To make a non-ESD surface static dissipative or to enhance the properties of an existing ESD surface.
- ♦ Excellent for use on old or new concrete floors

Surface Resistance: 10e8 Ohms

Colour: Black

Self-life: 1 year

*Resistant to most chemicals, fire & abrasion resistant.

ESD Paint



Application:

To make a non-ESD surface static dissipative

Surface Resistance: 10e5 - 10e7 Ohms

Colour: Grey, light blue

Self-life: 1 year

TEST & EQUIPMENT

Surface Resistivity Meter 110

Applications:

- ♦ The SRM-110 is a surface resistivity and surface resistance to ground checker with a range from $10e3$ to $10e12$ ohm/sq and insulative reading.
- ♦ Ideal for measuring floors, chairs, work surface and others ESD controlled materials or products

Colours:

- ♦ Dissipative (yellow)
- ♦ Insulative (red)

Dimension: 130mm x 65mm x 31mm

Weight: 20gm

Power Supply: 9V battery

Calibration: Recommended every 12 months



Wrist Strap and Footwear Tester



Applications:

- ♦ Wrist strap must remain electrically safe for the users all the time, thus it is important to test every wrist strap regularly.
- ♦ Wrist strap tester is ideal for measuring the resistance of a wrist strap.
- ♦ Before testing, ensure that the band is making good contact with your skin.
- ♦ It's lightweight and can be easily mounted on walls at door entrances or production line.
- ♦ Simple to operate and its results are indicated by red LED (Fail) & green (Pass)

Dimension: 100 x 65 x 25mm

Weight: 120gm

Power Supply: 9V battery

Wrist strap measurement range:

750k - 100 Mega Ohm

Footwear checker measurement range:

750k - 100 Mega Ohm

*By adding the stainless steel foot plate (14" x 14" x 2mm), this tester has the ability of measure footwear & heel strap

TEST & EQUIPMENT

Electrostatic Voltmeters (Trek) Model P0876A



Measurement Range: 0 to +2kV DC

Accuracy:

Better than +/- 5% of full scale over the recommend probe-to-surface separation of 15mm +/- 10mm

Applications:

- ♦ Measuring charge accumulation in LCD manufacturing processes
- ♦ Measuring static charge in semiconductor production
- ♦ Accurately measures surface voltage over a wide range of probe-to-surface spacing
- ♦ Monitors the voltage level of small areas to determine charge accumulation
- ♦ DC stable for drift-free operation in ionized environments
- ♦ Measure charge accumulation in difficult-to-reach locations

Features:

- ♦ Portable, Self-contained
- ♦ Battery-powered
- ♦ Easy to operate
- ♦ Large LCD display
- ♦ Two range
- ♦ Interchangeable cups
- ♦ Analog output
- ♦ Meets requirements of EIA-541 standard
- ♦ Point contact measurement of small areas

Display: 1/2" x 3 1/2" digit LCD

Range: **Resolution:**

200nC 0.1nC

20nC 0.01nC

Accuracy: 2%

Output: 0 to +/- 2 volt analog

Drift: 0.1pC/sec. Typical

Battery:

- ♦ 9 volt Eveready #216 or equivalent
- ♦ NEDA #1604. Battery life over 400 hours.

Dimensions: 6" x 3 1/2" x 2 1/8" (15cm x 9cm x 5.5cm)

Weight: 8 1/2 oz.(0.24kg) with battery

Nanocoulomb Meter 284



Dual Bench Mount



Applications:

- ♦ Two banana jacks that enable two people to ground wrist strap simultaneously.
- ♦ Ten feet ground cord with ring terminals
- ♦ Available with 1 MegaOhm resistor

TEST & EQUIPMENT

Applications:

Stat-Watch Workstation Monitor has an independent circuitry, designed to continuously monitor the connections to earth of the Wrist Strap and Work Surface.

ESD Work Surface:

An audible and visual warning is given in case the Surface-to-Ground resistance exceeds the safe threshold for work surfaces

Pass Threshold: 0.75M Ohms - 10M Ohms for wrist strap under 10 M ohms for work surface

Indications: Pass - Green LED

Fail - Flashing Red LED for wrist strap steady Red LED for MAT Audible Alarm for fail modes

Power Supply: 9V/100 mA DC

Dimensions: 80L x 50W x 25H MM

Weight: 75g approx

Calibration: Recommended every 12 months

Mounting: An MS powder coated bracket is provided for mounting the monitor conveniently under the table.

Workstation Monitor Stat Watch



Static Charge Meter (Digital)



Application:

It is to measure static voltage on objects & surfaces

Specification: Auto Zero setting

Measurement Range: 1"/0-20,000 volts

Accuracy: +/- 10%

Power: 9v battery

Dimension: 60 x 120 x 30mm

Weight: 125gm

Applications:

- ♦ The 65mm via 2.5kg weight electrodes are designed to comply with IEC 61340-5-1/2 technical report, EN100 015/1 European Standard and US Standards.
- ♦ Used for point-to-point resistance, surface resistivity and resistance to ground measurement.

Testing & Measuring Probes





Model 5802i
Critical Environment Benchtop Blower

Features

- ±3V or better balance ±1V with the optional external feedback system
- Cleanliness rated at ISO 14644 Class 4 (Fed Std. 209E Class 10)
- Options for sensor input, FMS connection, alarms, and management control
- Unique airflow directing collimator option
- Auto-clean system option
- Provides the best corona-based ESD protection for maximizing yields

Benefits

- Designed for use in an environment with a controlled level of contamination
- Increased control with immediate notification of alarms; prevention of unauthorized adjustment power/fan speed
- Significantly improves airflow delivery with faster discharge times from greater distances
- Automates emitter point cleaning, reducing maintenance costs and time

5802i Specifications

Airflow	108 cfm (typ)
Audible Noise	61 dB (typ) fan high, 52 dB (typ) fan low (measured 1' front of blower)
Balance	Better than ±1V (typ) with external sensor, ±3V (typ) without sensor
Cleanliness	Meets ISO 14644 Class 4 (Fed Std. 209E Class 10)
Controls	Power/fan speed slide switch with off/low/high (optional preset fixed high speed), balance adjust, optional sensor gain adjust, sensor type selection, FMS connections
Discharge *	Better than 1 sec @ 1' (1000-100V) with collimator, better than 2 sec @ 1' (typ) without collimator (measured in-line from center of fan)
Emitters	Titanium (8 per fan), ISO 14644 Class 4 (Fed. Std. 209E Class 10)
Indicators	Green power, red fault with optional audible alarm
Technology	Steady-state DC
Temperature	Operating Env: 50-90°F (10-32°C), 30-70% RH (non-condensing)
Options	External sensor inputs with FMS connection, audible alarm, collimator, internal preset fan speed on high, power cord bracket, auto-clean system
Ozone	0.008 ppm (typ)
Voltage	24 VDC
Enclosure	Aluminum chassis with epoxy-polyester powder coat
Mounting	Tilt lock mounting stand with optional wall mount bracket
Dimensions	10.5"H x 7.6"W x 5"D (26.7 x 19.3 x 12.7 cm)
Weight	3 lbs (1.36 kg)



Model 5822i
Critical Environment In-tool Ionizer

Features

- ±3V or better ±1V with the optional external feedback system
- Facility Monitoring System (FMS) connection and audible alarm
- Separate control box
- Cleanliness rated at ISO 14644 Class 4 (Fed. Std. 209E Class 10)

Benefits

- Provides the best corona-based ESD critical environment protection available for maximizing yields
- Faster response to ionization failure with notification through tool or FMS
- Allows the blower to be situated close to the target area for fast electrostatic discharge
- Designed for use in an environment with a controlled level of contamination

5822i Specifications

Airflow	20.5 cfm (typ)
Audible Noise	<56 dB (typ), measured 1' from blower
Balance	±3V or better balance (±1V with optional external feedback system)
Cleanliness	Meets ISO 14644 Class 4 (Fed Std. 209E Class 10)
Controls	Balance adjust, sensor gain adjust, slow/off/fast fan switch, variable slow fan speed
Discharge *	2-2.5 sec @ 1' (±1000V-100V) measured in-line from center of fan
Emitters	Tungsten alloy, 8 per blower (titanium optional)
Indicators	Control Box: green power, red fault
Technology	Steady-state DC
Temperature	Operating Env: 50-95°F (10-35°C), 30-65% RH (non-condensing)
Voltage	24 VDC @ 1A ext power supply (100-240 VAC 50/60 Hz) or tool power
Enclosure	Stainless steel
Mounting	2 mounting screw holes bottom of blower 1.20" (3.05 cm) apart
Dimensions	Blower: 4.5"H x 3.3"W x 2.4"D (11.5 x 8.3 x 6.1 cm) Control Box: 1.0"H x 5.2"W x 2.4"D (2.5 x 13.2 x 6.0 cm)
Weight	Blower: 1.14 lbs (0.51 kg) Control Box: 0.56 lbs (0.25 kg)



Model 6422e / 6422e-AC
Point-of-Use, In-tool Ionizing Blower

Features

- IsoStat technology
- Small form factor available in Steady-state DC ion emission blowers
- 24 VDC or 24 VAC input
- Fan-stall indication and alarm output
- Facility Monitoring System (FMS) interface
- Operational failure alarm
- U-bracket mounting
- Auto-clean system

Benefits

- Intrinsically balanced; no calibration needed
- Offers fast discharge times in confined areas
- Can connect directly to either equipment's power source or wall power
- Faster response to failure with notification
- Immediate notification if the fan stops rather than continue operations without ionization
- Flush or angled mounting means the blower will reach constrained spaces
- Reduced maintenance time, longer emitter point life, and assured balanced performance

6422e / 6422e-AC Specifications

Airflow	23 cfm (typ)
Balance	±20V @ 1' (30 cm)
Cleanliness	Meets ISO 14644 Class 5 (Fed Std. 209E Class 100)
Discharge *	<4 sec @ 1' (1000-100V) 24 VAC (<5 sec @ 1' 24 VDC)
Emitters	Tungsten wire, internally shielded
Indicators	Green power, red alarm
Technology	Steady-state DC
Temperature	Operating Env: 50-95°F (10-35°C), 20-60% RH (non-condensing)
Ozone	<0.004 ppm (typ)
Voltage	Input: 24 VDC (±10%) 6W max or 24 VAC (±10%) 50-60 Hz 6W max Output: 5-6 kV at emitter points
Mounting	U-bracket, factory installed
Dimensions	4.95"H x 4.10"W x 2.48"D (125 x 104 x 63 mm) with bracket 4.36"H x 3.26"W x 2.48"D (111 x 83 x 63 mm) without bracket
Weight	12.7 oz (357g) with bracket, 11.2 oz (314g) without bracket



AEROSTAT® PC2
Benchtop Ionizing Blower

Features

- Discharge time of <2 seconds at 1 foot (30 cm)
- Lightweight, compact and quiet for unobtrusive use
- Local alarm LEDs, Facility Monitoring System (FMS) connection and optional audible alarm
- ±10V self-balancing (Micropulse) technology
- Built-in manual emitter point cleaner
- Integrated heater for warm airflow

Benefits

- Fast, targeted neutralization of static charges
- Directed ionization designed for workbench or in-tool areas
- Worry-free ionization status can easily be locally monitored and at a remote location
- High precision balance ensures controlled and consistent ion output
- Minimizes the time required to perform normal maintenance
- Ensure a user-comfort environment

PC2 Specifications

Air Filter	30 ppi open cell polyurethane foam (optional)
Air Velocity	400 fpm fan high, 325 fpm fan med, 275 fpm fan low (typ)
Air Volume	Cubin feet per minute, 130 scfm max (high speed, typ)
Airflow	cfpm, 130 scfm max (fan high)
Alarm	Fault and fan stall (standard), audible alarm (optional)
Audible Noise	65 db @ 1' (30 cm) down centerline, 1' off center (fan high)
Balance	0 ±10V
Connectors	IEC320/C14 AC power cord outlet, FMS fault alarm output connector (RJ-9)
Controls	Power on/off, fan speed low/med/high, emitter point cleaner knob
Coverage	1'W x 4'L (30 x 122 cm) area
Current	140 mA
Discharge *	2 sec @ 1' (1000-100V) fan high
Emitters	Stainless steel
Indicators	Green power on, red fault alarm, red fan stall alarm
Ozone	<0.05 ppm (measured 1' in front of blower)
Technology	Micropulse AC ionization
Temperature	Operating Env: 50-95°F (10-35°C), 30-60% RH (non-condensing)
Voltage	100-240 VAC 50/60 Hz
Enclosure	Powder-coated aluminum chassis
Mounting	Metal stand with skid resistant rubber feet
Dimensions	9.1"H x 6.8"W x 3.3"D (23.1 x 17.3 x 8.4 cm) with stand
Weight	2.8 lbs (1.25 kg) with stand



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AEROSTAT® XC2

Extended Coverage Ionizing Blower

Features

- Large, near symmetric ionization area coverage
- Weight saving design
- Easy to use, built-in emitter cleaner
- ±10V self-balancing (Micropulse) technology
- Local alarm LEDs, Facility Monitoring System (FMS) connection and optional audible alarm
- Integrated heater for warm airflow

Benefits

- Designed for complete static neutralization across the entire work surface area
- Light enough to be easily mounted on or above the work surface
- Ensures consistent, balanced performance over a long time
- Long-term balance stability
- Ionization status can easily be monitored locally and at a remote location
- Ensure a user-comfort environment



TOP GUN™ 3

Ionizing Air Gun

Features

- Lightweight, ergonomic design
- Flow control valve for adjustable airflow
- Electrically balanced ion output
- Integrated, replaceable filter-nozzle
- Ionization indicator light

Benefits

- Maximum user comfort prevents operator fatigue and increases productivity
- Airflow use that meets the specific application requirements
- Protects ESD-sensitive components and assemblies
- Insures air contacting the target area is clean
- Eliminates the guesswork of ionization at target area

XC2 Specifications

Air Velocity *	620 fpm @ 12", 435 fpm @ 24", 325 fpm @ 36", 265 fpm @ 48" fan high
Airflow	95 cfm fan low, 150 cfm high fan
Alarm	Fault and fan stall (optional)
Audible Noise	58 dB fan low, 70 dB fan high (measured 2' in front of blower)
Balance	0 ±10V
Cleanliness	Meets ISO 14644 Class 6 (Fed Std. 209E Class 1000)
Connectors	IEC AC power cord outlet, FMS fault alarm output connector
Controls	Power on/off, fan speed control low/med/high, emitter point cleaner pushbutton, balance adjust, heater on/off (optional)
Coverage	3'W x 6'L (91 x 183 cm) area
Current	Input: 0.5A, 55W max (no heater); 3.5A, 420W (with 100-120 VAC heater); 1.9A, 460W (with 220-240 VAC heater)
Discharge **	1.0 sec @ 1' (1000-100V) high fan
Emitters	Stainless steel
Indicators	Green power on, red fault alarm, red fan stall alarm
Ozone	<0.05 ppm (measured 1' in front of blower)
Technology	Micropulse AC ionization
Temperature	Operating Env: 50-95°F (10-35°C), 30-60% RH (non-condensing)
Temperature	Warm air: 4-5°F (2-3°C) measured 1' in front of blower
Voltage	100-240 VAC 50/60 Hz 0.5A 55W max (no heater) 3.5A 420W (with 100-120 VAC heater) 1.9A 460W (with 220-240 VAC heater)
Mounting	Powder-coated steel stand with skid resistant rubber feet
Enclosure	Powder-coated aluminum chassis
Dimensions	14.13"W x 7.2"H x 6.55"D (35.9 x 18.3 x 16.6 cm) with stand
Weight	7 lbs (3.2 kg) with stand

Top Gun 3 Specifications

Airflow	2.4 scfm @ 30 psi (68/min, 2 bar) 4.6 scfm @ 60 psi (130/min, 4 bar) 7.4 scfm @ 100 psi (210/min, 7 bar)
Air Hose	Static dissipative polyurethane 7' or 14' standard, 5' or 14' with optical sensor (integral to gun and control module)
Air Pressure	Pressure relief in nozzle complies with OSHA requirements
Audible Noise	76 dbA @ 30 psi input (2 bar), 89 dbA @ 60 psi input (4 bar), 97 dbA @ 100 psi input (7 bar) (measured 24" (600 mm) from nozzle)
Balance	±15V
Blow-off Force	180g @ 100 psi, 2" diameter target 3" from the gun
Discharge *	1.3 sec @ 6" (15.2 cm), 30 psi (±1000-100V), 0.5 sec @ 2" (5 cm), 60 psi (±1000-100V)
Filter	0.01 micron rating; replacement filters available
Gas	Connection: 1/4" NPT (female) Supply: Clean dry air (CDA) or nitrogen (N ₂) (100 psi max)
Temperature	Operating Env: 32-104°F (0-40°C), 30-60% RH (non-condensing)
Ozone	0.001 ppm measured 18" (450 mm) from gun, operation @ 15 psi (1 bar)
Voltage	Input: 120 VAC, 60 Hz, 0.2A, 230 VAC, 50 Hz, 0.1A
Enclosure	Gun: Static dissipative polycarbonate/ABS blend Cable: static dissipative polyurethane
Dimensions	6.45"H x 5.20"W x 3.35"D (does not incl. flanges) (164 x 132 x 85 mm)
Weight	Gun: 6.5 oz (185g) Air hose: 1.25 ounces/ft (115g/m)

ZAP-SERIES

Features:

- ♦ A Needle-less ESD Control Technology
- ♦ Cuts >80% of Tribo-Charging Voltage due to lubricating effect
- ♦ Saves >80% of Total Maintenance Cost
- ♦ Eliminates Ionizer Problems such as needles maintenance and high voltage
- ♦ Preventive approach to static build up

Applications:

- ♦ Water pick and place
- ♦ Bowl Feeder
- ♦ Large Machines
- ♦ PCB Inspection

1

Zap-Air

Humid Air Humidifier



2

Zap-Up

Innovative ESD Shoe



Thunder-Soft*



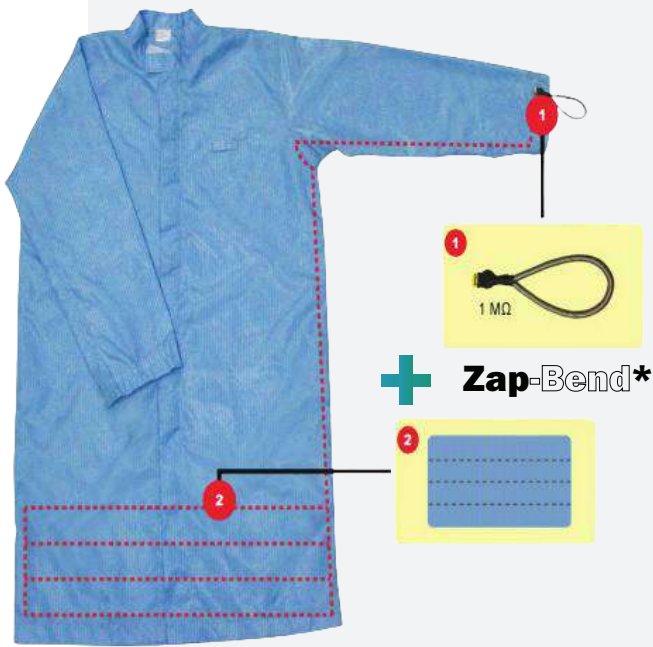
Features:

- ♦ Ultra-Low Body Voltage
- ♦ Effective over a wide range of floor resistance
- ♦ Ergonomically comfortable
- ♦ Superior cleanliness

ZAP-SERIES

3

Zap-On ESD Garments



Application:

Empowering ESD Grounding Strategies without the need for wrist straps

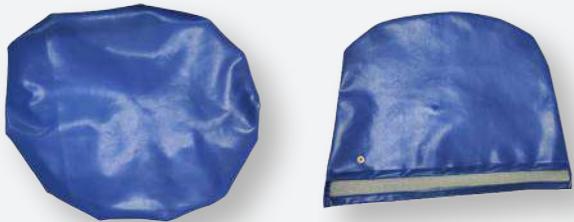
- ♦ Dramatically improve the electrical contact integrity & typically reduce at least 10 times the electrical resistance at the sewing joints (between 2 sections) of an ESD Smock.
- ♦ Saves time & resources of managing & replacing frequently worn out conventional ESD smocks due to its unique design, eliminating the concern for wear & tear at the sharp bend or at sewing joints during normal wearing, washing & drying process.
- ♦ Saves cost due to longer shelf life for extended usage because of its long lasting ESD property.

Application:

Introducing Zap-Cover, the ultimate solution for achieving low human body voltage and ensuring S20.20 compliance. Acting as a permanent static dissipative medium, Zap-Cover establishes a unique electrical link between the smock and the chair, providing unrivaled static control.

4

Zap-Cover Chair Cover



5

Zap-Roller



Application:

Zap-Roller revolutionizes equipment grounding by providing effortless, reliable grounding for both movable and non-movable equipment. Say goodbye to the challenges posed by unstable electrical resistance found in traditional ESD castors made from carbon fiber.

- ♦ High Conductivity
- ♦ Reliable Contact to Ground
- ♦ Fast Installation

ESCAPE

ELECTROSTATIC CONTROL AND PREVENTION ENGINEERING

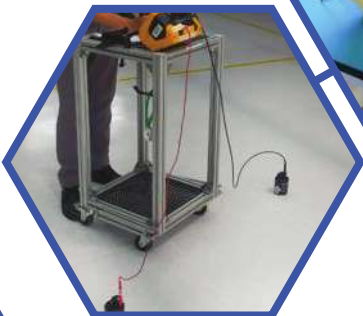
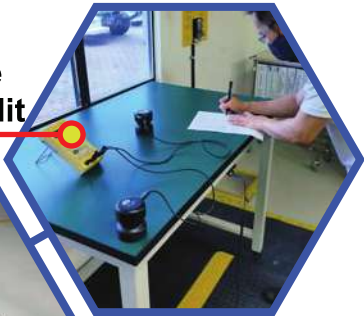
Your Trusted Partner for Total Solution to Total Protection



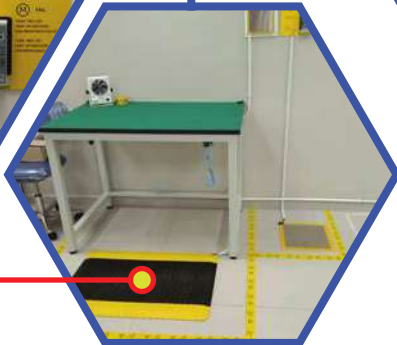
**Bonding /
Grounding / Earthing**



**ESD On-Site
Testing & Audit**

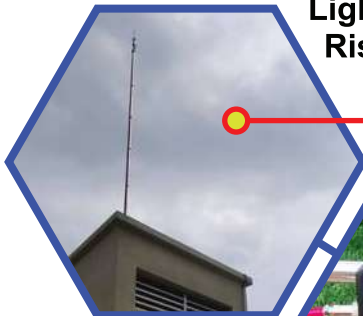


**ESD Training /
ESD Trouble-shooting**



**Static
Electricity Control**

**Lightning Protection System
Risk Assessment Services
(IEC62305-2)**

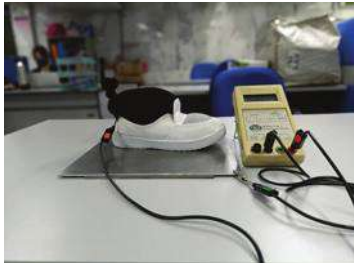


We offer a **"One Stop Total Solution"** to all your Lightning Protection, Surge Protection and Tricky Earthing Problems

We provide comprehensive **Design, Advice, Technical Guidance** and **Solution-Oriented Products**

We have the **Expertise, Experience** and **Hands-on Know-how** to provide you total Solution

ESD TESTING SERVICES



ANSI/ESD STM2.1

Electrostatic Discharge Susceptible
Items, Garments - Category 2:
Groundable Static Control Garment

ANSI/ESD STM 11.11

Surface Resistance Measurement
of Static Dissipative Planar
Materials

ANSI/ESD SP15.1

In-Use Resistance Testing of
Gloves and Finger Cots

ANSI/ESD STM4.1

Electrostatic Discharge Susceptible
Items - Worksurfaces - Resistance
Measurement

ANSI/ESD STM 11.12

Volume Resistance Measurement
of Static Dissipative Planar Materials

ADV 11.2

- CPM Pull Test
- Static Field Test

ANSI/ESD STM 7.1

Flooring Materials

ANSI/ESD STM 11.13

Two-Point Resistance Measurement

ANSI/ESD STM 97.1

Floor Materials and Footwear-
Resistance Measurement in
Combination with a person

ANSI/ESD STM 9.1

Footwear- Resistive Characterization

ANSI/ESD STM 12.1

Seating - Resistance Measurement

ANSI/ESD STM 97.2

Floor Materials and Footwear-
Voltage Measurement in
Combination with a person

GUIDELINE FOR ESD PROTECTION

Electrostatic Discharge

What is Static Electricity?

Static electricity is an electrical charge at rest created mainly by friction and separation causing an imbalance of electrons. The magnitude of the static electricity depends greatly on the type of materials, speed of separation, contact pressure, relative humidity of the environment, etc.

What is Electrostatic Discharge (ESD)?

It is the sudden transfer (discharge) of static electricity from one subject to another. It is a microspark.

What problems Static Charges have to all of us?

In our daily activities, a person may feel a shock if the electrostatic discharge is 3,000 volts or more. However, modern electronic components such as IC chips cannot even withstand charges of less than 500 volts causing it to be damaged without us noticing or realising the consequences. As technology is fast catching up, an electronics component becomes even more sensitive to the slightest amount of electrostatic discharge.

This has led us to realise how critical ESD is to us in our modern society causing many companies to invest substantially in such critical areas to protect the sensitive components.

How static charge is generated?

Triboelectrification

Is the charge that is generated when two kinds of material come into contact and then separated. These two objects become charged by gaining electrons from the other. The magnitude and polarity of the charges depends upon the characteristics of the two materials and are affected by several factors like surface condition, size of contact area, speed of separation and humidity.

Field Induction

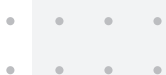
Static charge on an object creates an electrostatic field that extends to the surrounding and can induce the charge on the objects that are placed nearby and causes them to become charged. Once it comes into contact with the ungrounded ESD sensitive devices, the amount of unbalanced charges will immediately transfer which may cause the device to be damaged permanently.

What are the Solutions to ESD?

Virtually it is impossible to completely eliminate ESD in the production environment. We can minimise the problem by:-

Grounding

This eliminates static charges by building up rapidly. Grounding drains all static charge built up instantly, making it the most common option used in the electronic industry. Grounding includes personnel grounding devices such as wrist straps and workstation grounding devices such as ESD chairs.



Neutralisation

This method eliminates static charges through ionization. In this method, ions are created artificially to neutralise charges on both insulators and isolated conductors. However, neutralisation through ionization should go parallel with grounding as it only reduces the probability of an ESD event occurring.

Protection

Protect by isolating electronics components from charged objects, fields, and insulator transportation. Using the Faraday Cage concept, this concept emphasize that static charges cannot penetrate conductive materials.

Prevention

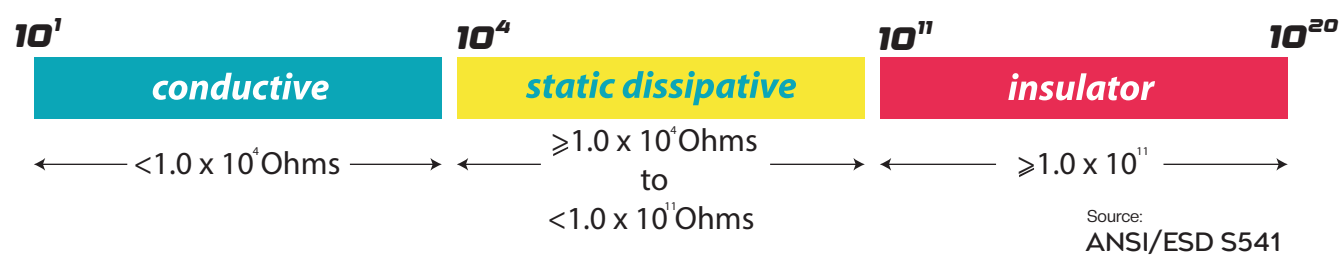
The best solution to an ESD problem is prevention and only you can prevent this from happening. The person in charge should be aware of events ESD could happen, understand the application of ESD and ensure ESD DOES NOT happen. Training should be carried out to ensure everyone is knowledgeable of ESD awareness in ESD – sensitive areas followed by enforcement.

However, the ultimate responsibility lies with everyone and this makes everything possible

ESD Material Classification

- 1. Conductive - good shielding, allows charges to drain quickly, eliminates charges buildup
- 2. Static dissipative - drains a charge to ground moderately, minimal shielding, minimizes charge buildup.
- 3. Insulative - unable to drain a change to ground. Static charge build- up remains on the insulators.

Surface Resistance: ESD Association Standard (USA)



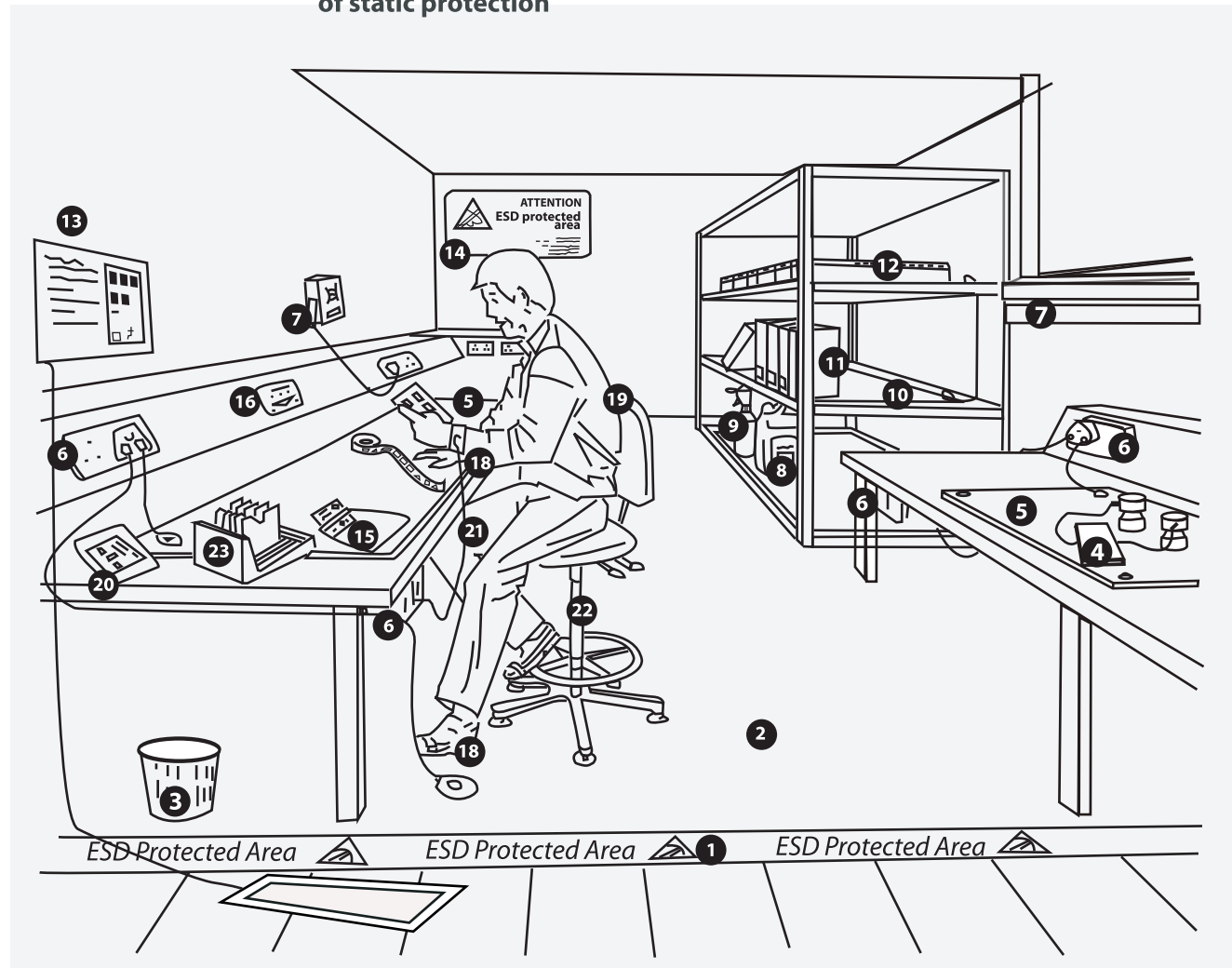
Static Electricity always exists

In today's workplace, the life and reliability of modern semiconductors require an environment where static electricity is continuously and totally drained to ground. Therefore, an Electrostatic Protected Area (E.P.A) must be established at all stages of receipt, storage, assembly test and transport of electronic devices.

EXAMPLE OF AN EPA (ELECTROSTATIC PROTECTED AREA)

How to establish an EPA

1. **Boundaries.** Clearly mark & identify the visible boundaries of your EPA for so that everybody aware of its existence
2. **Clearing.** Ban all static generating materials from entering your EPA
3. **Grounding.** All workstation & surfaces must be properly grounded in your EPA
4. **Personnel.** All working personnel and visitors must be properly grounded in your EPA
5. **Handling & transportation.** Protect your components with ESD safe materials
6. **Training & awareness.** Ensure that all personnel is properly trained and aware at all aspects of static protection



① Floor marketing tape

② Flooring

③ Waste basket

④ Meters and probes

⑤ Bench mat

⑥ Earth bonding points and earth facility

⑦ Ionisers

⑧ Floor polish

⑨ Bench top Cleaner

⑩ Shelving

⑪ Ring binders

⑫ Shipping tube holders

⑬ Footwear tester

⑭ Signs

⑮ Labels and tapes

⑯ On-demand wrist strap testers

⑰ Wrist strap and heel grounder

⑱ Garments

⑲ Packaging

⑳ Ground cords

㉑ Chairs

㉒ PCB handling

