Guidelines how to set up an ESD Protected Area (EPA)

- Implementing ESD safe materials and products should be performed according a specific logical ESD strategy. Without these specific ESD procedures it has little to no sense to install ESD safe products.

- Therefore we recommend to perform a pre audit described in the ESD plan of approach, on the next pages.

- This ESD plan of approach, must be based on recent recordings of the company, an overview of the measures to be taken in the field of protection against static electricity, as well as the facilities have to be taken in this context. A distinction is made between the necessary, preferably directly implementing provisions and recommended facilities that can be realized on longer terms.
Guidelines how to set up an ESD Protected Area (EPA)

Commonly used terms:

- **ESD** = electro static discharge (ESD)
- **ESDS** = electro static discharge sensitive (sensitive to static discharges)
- **EPA** = ESD protected area (ESD-safe area)
- **KvF** = Faraday cage
- **Pink Poly** = plastic film products with a non-rechargeable (pink) coating
- **Shielding** = packaging materials with a metallized (conductive) layer: These materials thus have a KvF function.

All our ESD products meet the applicable requirements as stated in the international standard IEC 61340-5-1.

We believe all the information in these pages including technical data to be reliable. However we make no warranties expressed or implied and assume no liability regarding any use of this information.

http://www.esdproducts.eu
Guidelines how to set up an ESD Protected Area (EPA)

All our ESD products meet the applicable requirements as stated in the international standard IEC 61340-5-1.

We believe all the information in these pages including technical data to be reliable. However we make no warranties expressed or implied and assume no liability regarding any use of this information.

http://www.esdproducts.eu
1. Yellow ESD label (EPA entering notification)
2. Yellow ESD label (EPA whereabouts notification)
3. Yellow ESD label (EPA leaving notification)
4. Wrist straps and footwear tester
5. Footwear tester plate
6. Footwear and wrist straps testing protocol
7. ESD linoleum
8. Worktop grounding cable
9. Shelves grounding cable
10. Conductive wrist straps
11. Antistatic mat
12. Connecting plug for grounding cables
13. ESD boxes
14. SMD cabinet
15. L-shape PCB holder
16. Soldering station in ESD version
17. ESD gloves
18. Ionizer
19. ESD tools
20. ESD bags
21. ESD laboratory chair
22. ESD shoes
23. ESD garments
24. Conductive binders
25. ESD waste bin
26. Alliance series ESD workbench
27. Classic series ESD workbench
28. Movable table
29. Shelving
30. Hygrometer
31. Grounding panel
32. Floor adhesive tape with ESD marks

http://www.esdproducts.eu
Guidelines how to set up an ESD Protected Area (EPA)

A. First step: Drafting your ESD procedure:

First it should be clearly defined which zones are EPA and which are not. Access to these areas can only be provided to those who are aware and comply with the preventive prescribed measures. This requirement applies to everyone, private operators, management, temporary employees, subcontract, maintenance personnel, visitors, ...

Of general interest: correctly adjusting the humidity.

All our ESD products meet the applicable requirements as stated in the international standard IEC 61340-5-1. We believe all the information in these pages including technical data to be reliable. However we make no warranties expressed or implied and assume no liability regarding any use of this information.

http://www.esdproducts.eu
Guidelines how to set up an ESD Protected Area (EPA)

B. Second step: General measures:

1. All areas where ESD safe work is being performed should preferably be marked as such; using special ESD warning shields or stickers and/or floor marking tape, the EPA’s can clearly be marked. Demarcation and defining the EPA (ESD Protected Area) all this to keep out and end off misunderstandings and unauthorized in these critical area(s) where ESD safe should be worked.

http://www.esdproducts.eu
Guidelines how to set up an ESD Protected Area (EPA)

B. Second step: General measures:

2. For the control of wrist strap, grounding cables, ESD shoes or heel grounders, it is necessary to provide and install a wrist-band/shoe-test station, in a prominent place, preferably at the entrance to the EPA.

Also the wristbands and grounding cables of the field service kits from any field staff can be checked here. It is recommended that the staff fill in each check, with date and initials, on the checklist hanging next to the tester.
Guidelines how to set up an ESD Protected Area (EPA)

B. Second step: General measures:

2.a. Access control: before entering the EPA wristbands, grounding cables and footwear always should be checked. Possible access may or may not be linked to an ESD Access System.

All our ESD products meet the applicable requirements as stated in the international standard IEC 61340-5-1. We believe all the information in these pages including technical data to be reliable. However we make no warranties expressed or implied and assume no liability regarding any use of this information.

http://www.esdproducts.eu
Guidelines how to set up an ESD Protected Area (EPA)

B. Second step: General measures:

3. Footwear: The same principle applies to us humans. We want to enter the EPA we need to check our ESD safe shoes. The range is very extensive and we make a distinction between ESD safe and ESD-safe safety shoes. When working ESD safe, consistently checking is really required, this is why you have to check your footwear and wristbands daily before entering the EPA.

All our ESD products meet the applicable requirements as stated in the international standard IEC 61340-5-1. We believe all the information in these pages including technical data to be reliable. However we make no warranties expressed or implied and assume no liability regarding any use of this information.

http://www.esdproducts.eu
Guidelines how to set up an ESD Protected Area (EPA)

B. Second step: General measures:

4. Wearing **ESD clothing** is strongly recommended so charges accumulated by motion, and *therefore friction of our normal clothes, can be shielded from the sensitive components.*

Why ESD clothing is so important?

All our ESD products meet the applicable requirements as stated in the international standard IEC 61340-5-1.
We believe all the information in these pages including technical data to be reliable. However we make no warranties expressed or implied and assume no liability regarding any use of this information.

http://www.esdproducts.eu
Guidelines how to set up an ESD Protected Area (EPA)

B. Second step: General measures:

4.a. ESD clothing: Why ESD clothing is so important? (video)

All our ESD products meet the applicable requirements as stated in the international standard IEC 61340-5-1.
We believe all the information in these pages including technical data to be reliable. However, we make no warranties expressed or implied and assume no liability regarding any use of this information.

http://www.esdproducts.eu
B. Second step: General measures:

5. ESD safe Workbenches provided by BASS-ESDproducts. All of these tables are to be connected via a resistor of 1 MOhm coupled to ground/earth.

All our ESD products meet the applicable requirements as stated in the international standard IEC 61340-5-1. We believe all the information in these pages including technical data to be reliable. However we make no warranties expressed or implied and assume no liability regarding any use of this information.

http://www.esdproducts.eu
Guidelines how to set up an ESD Protected Area (EPA)

B. Second step: General measures:

6. Earthing/grounding: The ESD standard IEC 61340-5-1/5-2 says that when one is performing his job sitting a wrist strap to ground always need to be worn. It is obvious that we also have to connect our workbenches and shelves to earth. We do this with grounding plugs and grounding cables (these are included in the table)

All our ESD products meet the applicable requirements as stated in the international standard IEC 61340-5-1.
We believe all the information in these pages including technical data to be reliable. However we make no warranties expressed or implied and assume no liability regarding any use of this information.

http://www.esdproducts.eu
Guidelines how to set up an ESD Protected Area (EPA)

B. Second step: General measures:

7. Tools: Certainly not unimportant because with this tool one comes closest to the ESD sensitive components, so it is strongly recommended to use ESD safe tools.

All our ESD products meet the applicable requirements as stated in the international standard IEC 61340-5-1. We believe all the information in these pages including technical data to be reliable. However we make no warranties expressed or implied and assume no liability regarding any use of this information.

http://www.esdproducts.eu
Guidelines how to set up an ESD Protected Area (EPA)

B. Second step: General measures:

8. ESD Chairs: Here you have a wide choice from our collections that give us the assurance and guarantee that the seats are really ESD safe.

All our ESD products meet the applicable requirements as stated in the international standard IEC 61340-5-1. We believe all the information in these pages including technical data to be reliable. However we make no warranties expressed or implied and assume no liability regarding any use of this information.

http://www.esdproducts.eu
Guidelines how to set up an ESD Protected Area (EPA)

B. Second step: General measures:

9. Trolley's: For transporting goods within the EPA, it is important they don't generate static charge caused by friction of the wheels.

All our ESD products meet the applicable requirements as stated in the international standard IEC 61340-5-1. We believe all the information in these pages including technical data to be reliable. However we make no warranties expressed or implied and assume no liability regarding any use of this information.

http://www.esdproducts.eu
Guidelines how to set up an ESD Protected Area (EPA)

B. Second step: General measures:

10. All ESDS components and printed circuit boards should be stored throughout the company and transported in an ESD-safe packaging with KvF function; this may be in the type of a static shielding bag or a container of conductive plastic. The shielding bags can be sealed with ESD with special warning stickers.

All our ESD products meet the applicable requirements as stated in the international standard IEC 61340-5-1. We believe all the information in these pages including technical data to be reliable. However we make no warranties expressed or implied and assume no liability regarding any use of this information.

http://www.esdproducts.eu
Guidelines how to set up an ESD Protected Area (EPA)

B. Second step: General measures:

11. Pink poly products, such as the rose packing bags and bubble foil, are not rechargeable (antistatic). These products however have not KvF function and are intended primarily as a non-rechargeable or disposable packaging for temporary use only used in the EPA. The anti-static coating in the plastic evaporated namely, under the influence of UV light, after a period of time, and loses its effect (the typical pink color is in this case becomes more pale).

All our ESD products meet the applicable requirements as stated in the international standard IEC 61340-5-1.
We believe all the information in these pages including technical data to be reliable. However we make no warranties expressed or implied and assume no liability regarding any use of this information.

http://www.esdproducts.eu
Guidelines how to set up an ESD Protected Area (EPA)

B. Second step: General measures:

12. The first and most important step in ESD safe working is to make sure that there are NO static materials in the EPA are present. The use of static rechargeable (packaging) materials, coffee cups, plastic folders, trash bags, etc., in an EPA should be avoided whenever possible.

http://www.esdproducts.eu
Guidelines how to set up an ESD Protected Area (EPA)

B. Second step: General measures:

13. To ensure an adequate internal control it is strongly recommended to provide the ESD coordinator within the company off a surface resistivity meter and an electrostatic field meter.

All our ESD products meet the applicable requirements as stated in the international standard IEC 61340-5-1. We believe all the information in these pages including technical data to be reliable. However we make no warranties expressed or implied and assume no liability regarding any use of this information.

http://www.esdproducts.eu
Guidelines how to set up an ESD Protected Area (EPA)

B. Second step: General measures:

14. Floor: This is provided and should conform to EN / IEC 61340. In case of optimization at standing work ESD anti-stress mats can be offered. The maintenance of an ESD floor should be done with appropriate detergent aims to prevent the floor to become insulation by using ordinary cleaning agents.

All our ESD products meet the applicable requirements as stated in the international standard IEC 61340-5-1.

We believe all the information in these pages including technical data to be reliable. However we make no warranties expressed or implied and assume no liability regarding any use of this information.

http://www.esdproducts.eu
Guidelines how to set up an ESD Protected Area (EPA)

B. Second step: General measures:

15. Warehousing and stock must be stored in proper packaging and custom carrying racks or cabinets. The packaging of ESD sensitive components must be done in the right packaging. Pink bags do not protect against static charges and may only be used within the EPA. Sensitive components (without housing) which will transported outside the EPA should be put in Shielding bags or Moisture barrier bags (if they are susceptible to oxidation).

All our ESD products meet the applicable requirements as stated in the international standard IEC 61340-5-1. We believe all the information in these pages including technical data to be reliable. However we make no warranties expressed or implied and assume no liability regarding any use of this information.

http://www.esdproducts.eu
Guidelines how to set up an ESD Protected Area (EPA)

B. Second step: General measures:

16. **ESD Cleaning & maintenance:** The installation of an ESD Protected Area (EPA) is very important and requires expertise. Even more important, and all too often overlooked, is the maintenance of these ESD protected areas. ESD conductive (dissipative surfaces), floor as well as table, should be treated with appropriate ESD-cleaners and cleaning utilities to assure these conductive properties are preserved. The use of ESD vacuum cleaners according the ESD Standards is of utmost importance not want to cause damage to ESD sensitive components within the EPA.

All our ESD products meet the applicable requirements as stated in the international standard IEC 61340-5-1. We believe all the information in these pages including technical data to be reliable. However we make no warranties expressed or implied and assume no liability regarding any use of this information.

http://www.esdproducts.eu
Guidelines how to set up an ESD Protected Area (EPA)

B. Second step: General measures:

17. In addition taking the necessary ESD measures, it is important that all personnel, directly or indirectly, in contact with ESDS products is well aware of the phenomenon of ESD. B.A.S.S. ESDproducts provides special **ESD courses** and **training** which explains and shows the dangers of dealing with electrostatic charges, how you can recognize and protect ESDS devices getting damaged by ESD.

- Getting familiar with the phenomenon Electro Static Discharge (ESD)
- Identifying the damage that ESD can cause
- Learning methods to prevent ESD damage

- History
- ESD, what is....
- Electrostatic charges
- Electrostatic discharges
- ESD damage
- ESD damage models
- How to prevent ESD damage
- Why now also aggregates?
- Trends.
Guidelines how to set up an ESD Protected Area (EPA)

B. Second step: General measures:

C. How far should you go?
You certainly do not have to work in a cleanroom to work ESD safe. However, there are a number of measures which should be taken care of:

1) The EPA work has been done and will therefore be contaminated. It is very important to clean the ESD floor in a proper manner by using the correct cleaning products. It's better (safer) just to use only water to mop the floor or use an ESD-safe detergent.
2) Clothing: An item that is all too often neglected but is a very important part in your link of ESD safe working. This ESD clothing will ensure that electrostatic loads on your body and clothing will be shielded from your sensitive components.

How far should you go in here ... this will have to show your risk analysis. Here is a list of extras that you can implement over time:

Overview ESD-Products:
• ESD-Chairs
• ESD-Cleaning
• ESD-Clearance Corner
• ESD-Garment
• ESD-Office Supplies
• ESD-Packing / Shipping
• ESD-Personal Grounding
• ESD-Storage
• ESD-Test / Measuring Equipm.
• ESD-Workbenches
• ESD-Workstation Products

http://www.esdproducts.eu
Guidelines how to set up an ESD Protected Area (EPA)

B. Second step: General measures:

"Measuring is knowledge"
"ESD standard" - "don't live by them, implement them"

* IEC 61340-2-1 Measurement methods - Ability of materials and products to dissipate static electric charge.
* IEC 61340-2-3 Methods of test for determining the resistance and resistivity of solid planar materials used to avoid electrostatic charge accumulation.
* IEC 61340-3-1 Methods for simulation of electrostatic effects - Human body model (HBM) - Component testing.
* IEC 61340-3-2 Methods for simulation of electrostatic effects - Machine model (MM) - Component testing.
* IEC 61340-4-1 Standard test methods for specific applications - Electrical resistance of floor coverings and installed floors.
* IEC 61340-4-3 Standard test methods for specific applications - Footwear.
* IEC 61340-4-5 Standard test methods for specific applications - Methods for characterizing the electrostatic protection of footwear and flooring in combination with a person.
* IEC 61340-5-1 Protection of electronic devices from electrostatic phenomena - General requirements.

http://www.esdproducts.eu
Guidelines how to set up an ESD Protected Area (EPA)

<table>
<thead>
<tr>
<th>EPA Check List</th>
<th>NA</th>
<th>OK</th>
<th>!</th>
</tr>
</thead>
<tbody>
<tr>
<td>Define responsibilities / contacts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Train the managers and contacts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Define the ESD sensitivity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analyze the space and surroundings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Define the required materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact suppliers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Release the new materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Install EPA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Release the EPA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Train the staff</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrate the EPA in the audit plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perform corrective measures</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All our ESD products meet the applicable requirements as stated in the international standard IEC 61340-5-1. We believe all the information in these pages including technical data to be reliable. However we make no warranties expressed or implied and assume no liability regarding any use of this information.

http://www.esdproducts.eu
## Guidelines how to set up an ESD Protected Area (EPA)

All our ESD products meet the applicable requirements as stated in the international standard IEC 61340-5-1. We believe all the information in these pages including technical data to be reliable. However, we make no warranties expressed or implied and assume no liability regarding any use of this information.

http://www.esdproducts.eu

<table>
<thead>
<tr>
<th>MATERIALS Check List</th>
<th>NA</th>
<th>OK</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foot straps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clothing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wriststraps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>grounding cords</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor Mats</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workbench</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Table Mats</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fieldkit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Packaging</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Contact B.A.S.S. - ESDproducts®

Bruno Depré
ESD - ambassador - owner

Barones Ludwina de Borrekenslaan 35
B-2630 Aartselaar
tel +32 3 230 19 75
fax +32 3 230 19 78
Mob +32 489 312 680
Skype: bruno.depre
sales@esdproducts.eu

http://www.esdproducts.eu/en