

# ESD Testing - Practical tips

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# ESD testing – practical tips

- Topics
  - Walking test
  - Floor measurement probes
  - 1 M $\Omega$  series resistance in floor connections & wrist straps
  - New NPR ESD specification & test protocol



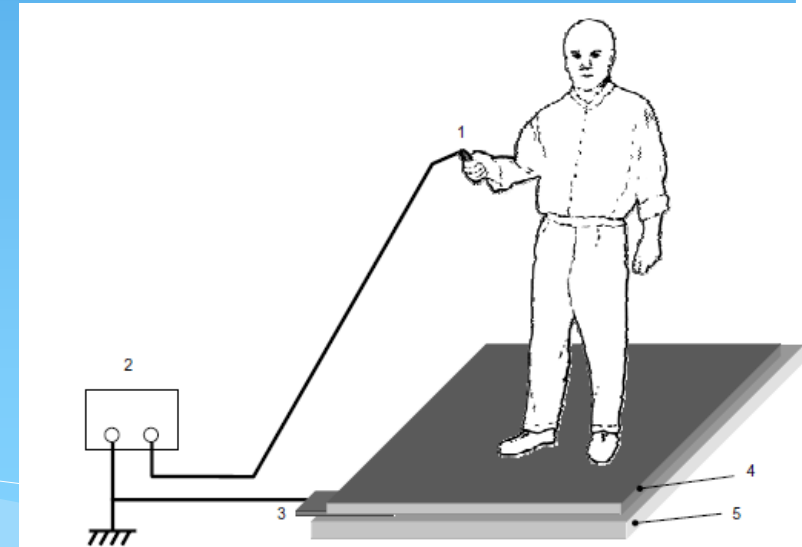
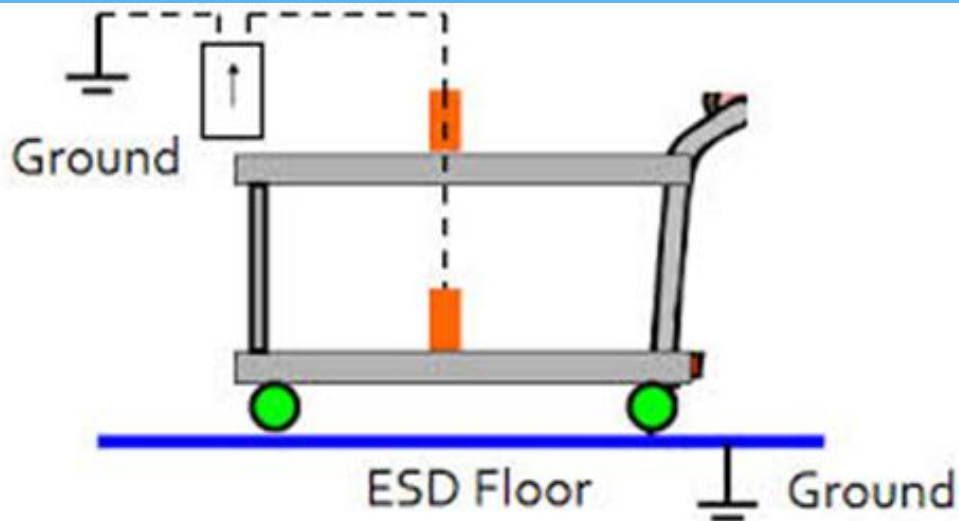
What IS protected here, actually?

Would “Low ESD Risk Area” not be a better name?

## ESD testing – practical tips → Walking test (footwear & vehicles)

Things to keep in mind during a walking test:

- Material combination?
- Surfaces free of contamination?
- Expected result ( $\Omega$ )?
- Impedance known between electrode and point of floor contact?



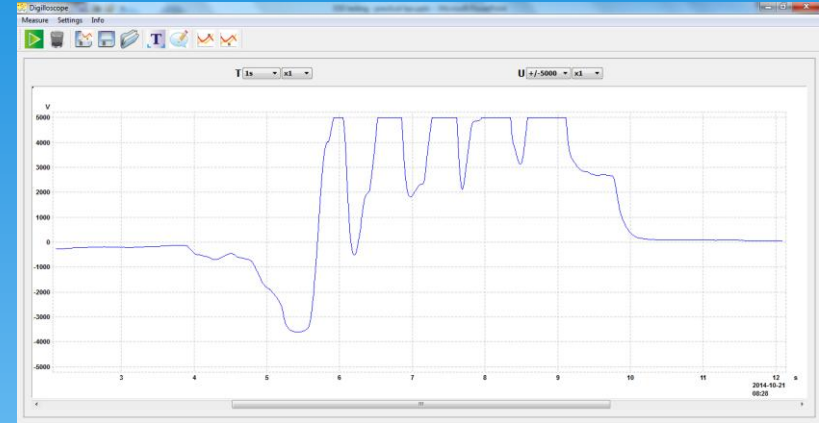
ESD testing – practical tips → Walking test (footwear & vehicles)

## → Material combinations

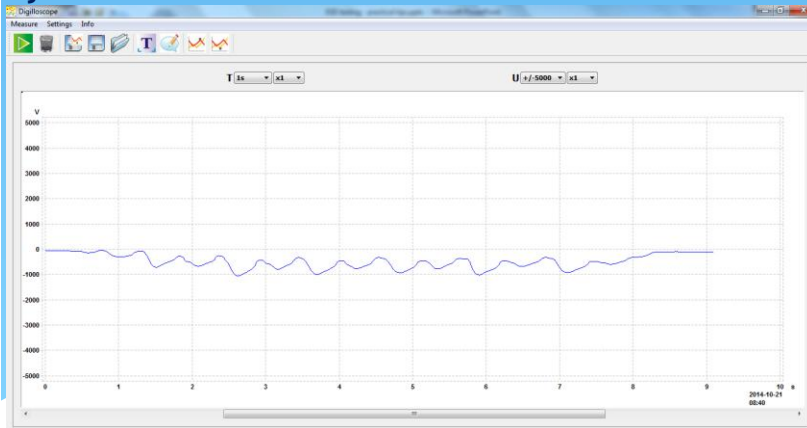
Synthetic rubber + Polycarbonate



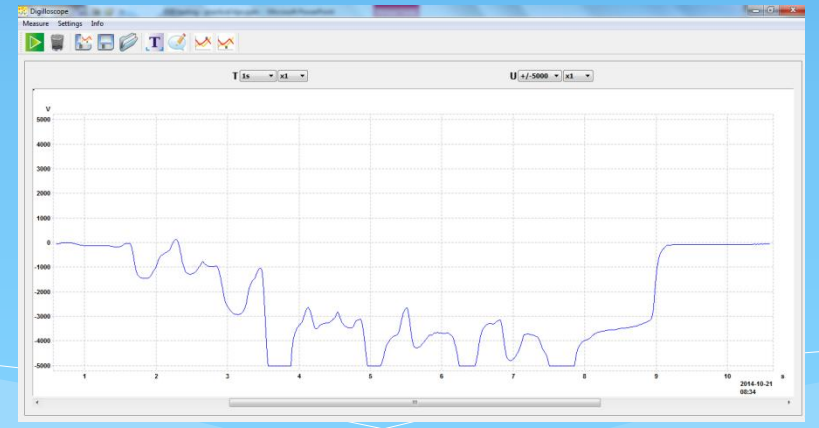
Synthetic rubber + foam packaging



Synthetic rubber + Hard anodized Aluminum



Synthetic rubber + POM



## ESD testing – practical tips → Floor measurement probes

*Things to keep in mind using floor measurement probes:*

- Surfaces free of contamination?
- Type of test?
- Usage of cleaning agents?
- Test weight?



Probe acc. to NEN 1081

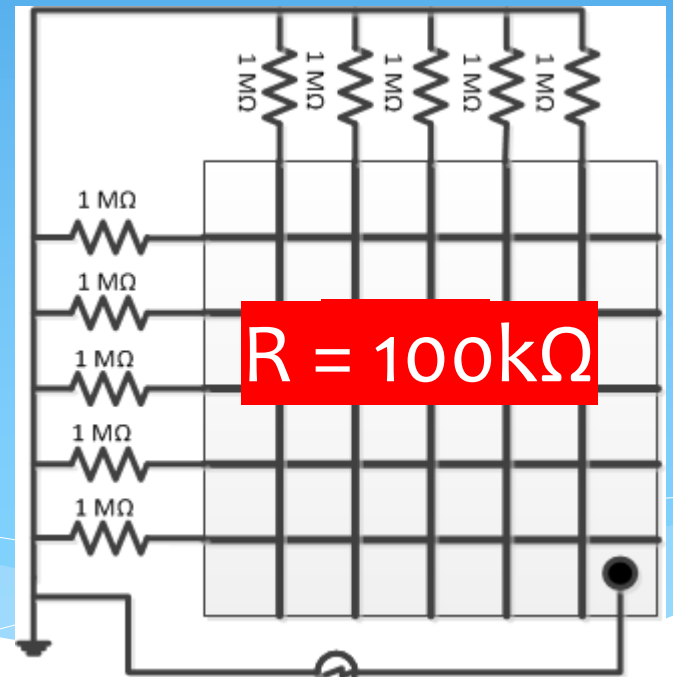


Probe acc. to IEC61340-4-1

ESD testing – practical tips → 1 MΩ series resistance in floors & wrist straps  
→ floor grounding

*Things to keep in mind about the commonly installed 1 MΩ series resistance:*

- Electrical safety?
- Test voltage?
- Grid wise grounding?



ESD testing – practical tips → 1 MΩ series resistance in floors & wrist straps

## → Wrist strap grounding

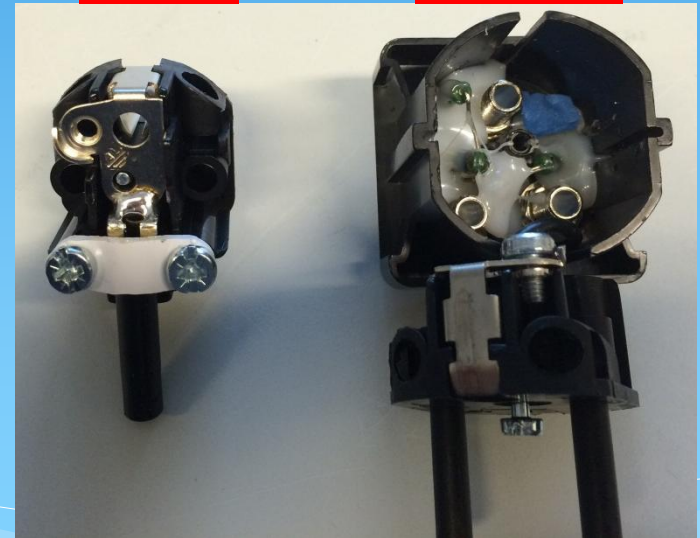
*Things to keep in mind about the commonly installed 1 MΩ series resistance:*

- Electrical safety?
- Test voltage?
- When is an EBP with 1 MΩ needed?



R= 0 Ω

R= 1 MΩ



ESD testing – practical tips

## → Introduction new NPR ESD specification & Test protocol

NPR: Nederlandse Praktijk Richtlijn

- To provide guidance when ordering and commissioning new ESD floors
- NPR will allow for:
  - plan & planning guidance
  - role definition of parties involved
  - Test method to be applied
  - Independent technical appeal protocol
- → *This NPR can also be used for the entire EPA environment* ←