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## Choosing the Right ESD Glove

When choosing gloves for use in ESD and Cleanroom work, many parameters must be considered. The most important of which are:

1. Resistance of the glove from the object being held to the operator's hand
2. Triboelectric generation
3. Contamination
4. Personnel Sensitivity to Glove Materials

The ESD Association is currently writing a test method to assist in determining the ESD properties of gloves.

The test methods now being considered are for resistance testing of all gloves including nitrile. Old test methods only measured the resistance of gloves not being worn, it did not give the true capabilities of gloves to be effective after the operator's hand has perspired.

### TEST PROCEDURES

Resistance - Palm to Fingers

This test records the resistance leaving the first electrode on the palm of the glove through the second electrode on each finger of the glove separately.

Resistance - Finger to Body

Measured at 10 volts, this test records the resistance between electrodes being touched by the gloved hand and the wrist.

Resistance - Palm to Body

Again measured at 10 volts, this test records the resistance reading between the electrode being grasped by the gloved hand and the wrist.

Triboelectric Charge Generation - Charged Plate

The gloved hand rubs the aluminum plate vigorously five times remaining in contact with the plate at all times. As the last stroke is completed, the gloved hand is removed at speed from the aluminum plate. At this point the voltage readings are recorded.

### NOTES:

EN 61340-5-1 paragraph 5.2.6 Gloves and finger cots: "Gloves and finger cots made from electrostatic conductive or electrostatic dissipative material are essential if hand tools are used. Gloves and finger cots made from low charging material are permitted only in circumstances when hand tools are not used. Where gloves and finger cots are removed in the EPA, they should not be placed in close proximity to ESDS."

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Handling	Handling gloves are worn to protect the operator's hands. In an EPA the gloves should be conductive or static dissipative.
Assembly	Assembly gloves are worn to prevent components and assemblies from becoming contaminated. In an EPA the gloves should be conductive or static dissipative.



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### THE CHOICE OF ESD GLOVES

There are several types of ESD-safe gloves that are commonly used including nitrile gloves, vinyl gloves, latex gloves and fabric gloves.

Glove Type:	Characteristics:	Uses / Application:
Nitrile Gloves	Made from synthetic latex which is a great option for workers who are allergic to latex, plus they are inherently anti-static. Nitrile gloves are also much more puncture resistant than rubber gloves and offer resistance to many types of solvents and chemicals. These gloves are usually more expensive than latex or vinyl gloves.	Electronics Biotec Aerospace Science Lab Examination General Purpose
Vinyl Gloves	Vinyl gloves are another option for latex-sensitive workers. Vinyl gloves usually fit baggier than latex gloves, but the material is very soft. These gloves are less durable and less puncture resistant than nitrile and latex gloves.	Electronics Biotec Aerospace Science Lab Examination General Purpose
Latex Gloves	Latex gloves are the gloves most people think of when rubber gloves are mentioned. These gloves are affordable, fit well, durable and very elastic. The major disadvantage with latex gloves is that they cannot be worn by workers with a latex allergy.	Electronics Biotec Aerospace Science Lab Examination General Purpose
Fabric Gloves	There are many variations when it comes to fabric gloves. Some hot gloves are used when handling "hot" circuit boards; the gloves dispel ESD while providing comfort for the worker. Some fabric gloves have a non-slip material on the palm and fingers for superior handling. Nylon gloves are another option. These gloves can be found in stretch, low-lint and lint-free varieties. Fabric gloves are also reusable and many times they can be washed without losing their anti-static properties. The reusable quality of fabric gloves makes them cost-effective compared to disposable gloves.	Electronics Biotec Aerospace Science
Finger Cots	Finger cots are another option for ESD protection. They come in a variety of materials and provide ESD protection with more mobility than gloves.	Electronics Biotec Aerospace Science

#### NOTE:

Wearing gloves does not negate the need for wrist straps or other effective personnel grounding methods.