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# Antistatic Textile (III)
# Japanese standard JIS L 1094:1997

***Have you ever received an electric shock from the car door when getting out on a dry day or from a door handle when standing on a nylon carpet? You may experience "static cling" when taking clothes out of the dryer especially if they are synthetics; you may even hear a crackle and if it is dark, you may even see a flash!***

The fabric surface can accumulate static electricity by frictional charging as it rubs against other materials. Relative humidity significantly affects surface resistivity of clothes since static charges escape through the moisture.

## Ways to improve the antistatic properties of fabrics

- Incorporating moisture retaining features on the fabric surface will reduce the surface resistivity.
- Integration of metal threads into yarns also reduces surface resistivity by delocalizing (earthing or grounding) these charges.

## Evaluation of antistatic properties of fabrics

Antistatic properties of fabrics can be evaluated by measuring the ease of charging and charge decay of fabrics. Garments made from fabrics which are difficult to "charge" or have rapid charge decay will possess good antistatic properties.

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Based on the charge decay half-life and the build-up of electrostatic charge, one can evaluate the easiness of generating static electricity and the charge retention characteristics.

Fabrics with good antistatic properties should not generate or accumulate static electricity easily.

***For more details, please refer to the chart on following page.***

***Have you ever heard of antistatic testing for Personal & Protective Equipment (PPE) ?***

For PPE, Antistatic testing is conducted to EN 1149, part 1,2 or 3, depending on the application.

For industrial clothing applications there are several levels of interest:

1. Elimination of risk of sparks within explosive atmospheres,
2. Elimination of static which may be attracted to clothing which then could contaminate Clean Room Operations,
3. Elimination of static which could affect sensitive electrical equipment.

| JIS L 1094:1997 - Testing methods for electrostatic propensity of woven and knitted fabrics<br>*The tests are classified into four types, depending on the purpose of test.* | | | |
|---|---|---|---|
| **Test Item** | **Purpose** | **Description** | **Unit** |
| A. Half-life measuring method | Evaluate the degree of fabric cling around a body or the attraction of dust to the fabric. | Test fabrics are charged in a corona discharge field and the time required to reduce the electrostatic potential by half is reported. | Seconds |
| B. Friction-charged electrostatic potential measuring method | Evaluate the degree of fabric cling around a body or the attraction of dust to the fabric. | Test fabrics are rubbed with a special cloth, and the electrostatic potential generated by friction is reported. | Volts |
| C. Frictionally charged electricity-amount measuring method | Evaluate the degree of dust attraction and the problems with discharging. | Test fabrics are rubbed with a special cloth, and the amount of electricity generated is reported. | $C/m^2$ |
| D. Friction-charged attenuation measuring method | Evaluate the degree of fabric cling around a body or the attraction of dust to the fabric as well as the problems with discharging. | Test fabrics are frictional charged using a rubbing cloth. The initial electrostatic potential generated and half-life are reported. | Volts and Seconds |

***SGS can test the electrostatic propensity of woven and knitted fabrics. Please contact us to get more information.***

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