

**ESTAT-Garments “Protective clothing for use in the manufacturing of electrostatic sensitive devices”, EC Contract No. G6RD-CT-2001-00615.  
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## **Executive publishable summary**

The main objective of the project is to supply the standards body IEC TC101 (Electrostatics) with a basis to qualify the effectiveness of clothing used for the ESD-safe handling (commonly named ESD-garments) of ESD (ElectroStatic Discharge) sensitive devices and to develop appropriate test methods for the characterisation of such ESD protective garments. The approach is aimed at achieving an understanding of the electrophysical processes regarding composite textile materials as well as the total system, including the sensitive devices. This means that the project also offers the following objectives: 1) a physical basis for understanding the electrostatic processes within composite materials at large (i.e. not just the ones used for ESD-garments preparation), 2) an understanding of the complete system (operator, ordinary clothing, ESD-garments, ESD sensitive electronics), 3) providing results for manufacturers of garments and yarns to give them an incentive for product improvements.

The main purpose of ESD-garments in electronics industry is to protect sensitive electronics from ESD damage caused by a charged person (operator). Thus any good test method for ESD protective garments should assess garment's ability to provide ESD protection. During the first project year a lot of effort has been paid for the assessment of risks for ESD damage of electronic components with reference to garments. In addition to the study of failure mechanisms and thresholds for damage of novel electronic devices, electrostatic processes on and in ESD fabrics, related to electrostatic discharges, have been under study. The studies have shown that ESD threats to electronic components with reference to garments are not the same as those of charged garments in flammable atmospheres. It is not only a question of lower ESD risk levels in electronics industry than in flammable atmospheres but also partially different mechanisms for a catastrophic ESD event. The studies have resulted in a list of potential factors which should be taken into account, together with ESD withstand data of devices, when evaluating test methods for ESD garments as well as for garment fabrics. Such an evaluation of existing test methods is running with carefully selected state-of-the-art ESD fabrics and garments used in electronics industry. The evaluation of the existing test methods should be completed by the mid-term of the project in September 2003.

The main aim of the three-year project will be basis for standardisation of test methods and requirements for garments used in electronics industry. Recommendations for the use of the garments (including personnel safety aspects) will also be given. Critical milestones are planned at the mid-term, when a decision will be made whether new methods have to be developed or modifications of existing test methods are preferable, and by the 24<sup>th</sup> month when new methods/modifications for interlaboratory tests will have been developed.