
Technical Bulletin SP-11

Static Dissipative Sheet Products for Ultra-Clean Environments

C-300™ and C-350™ Coated Surfaces

C-300™ and C-350™ Static Dissipative Surfaces

SciCron Technologies applies proprietary, clear, static control coating to a variety of plastic sheet products. This coating technology prevents charge generation on the sheet surfaces, thereby controlling particulate attraction and preventing electrostatic discharge (ESD) events. These characteristics are permanent and totally independent of humidity.

Each of these coating types can be described as a cross-linked polymer matrix containing a dispersion of extremely finely divided and extremely uniform conductive metal oxide particles. The coatings are inherently conductive in the optimum part of the static dissipative range of surface resistivity. They provide rapid static charge decay without the potential for harmful arcing. The high cross-link density and cure of the polymer matrix make the surfaces more abrasion resistant and more chemically resistant than the base plastic, thereby improving the durability of the plastic sheets in service. The harder C-300 coated plastics are recommended for applications which are flat (not bent), while the softer C-350 coated plastics are recommended for applications in which the plastic sheet must be bent in a heat forming operation.

These coatings are applied to clear, tinted, and opaque acrylic, polycarbonate, PVC, and CPVC plastics that are often used in ultra-clean applications and environments.

Manufacturing Process

SciCron Technologies manufactures its static dissipative sheet products in a state-of-the-art coating facility in which the application and curing of the coatings take place in certified Class 100 cleanrooms. The coatings are formulated without silicones, plasticizers, and halogenated flame retardants. In addition, plastic sheet substrates which are free of these potential contaminants are selected for coating, so that the final sheet products are suitable for applications in ultra-clean environments.

Applications

C-300 and C-350 surfaced plastics are appropriate for use in cleanrooms in the semi-conductor, electronic, micro-manufacturing, pharmaceutical, bio-medical industries, and explosive environments. Applications include; perimeter windows, transparent room partitions, equipment enclosures and covers, laminar-flow air containment screens, mini-environment glazing panels, pass-thru modules, and desiccator boxes and cabinets. These static dissipative materials are helping to prevent contamination and electrostatic discharge related defects in a wide range of ultra-clean processes, including Class 1 (ISO Class 3) wafer fab cleanrooms, Class 0.1 (ISO Class 2) mini-environment enclosures, and various applications in the mining industry. They have been approved by many semiconductor manufacturers for use in such ultra-clean applications. Several of these manufacturers have evaluated SciCron Technologies coated static control plastics for ionic, atomic, and molecular outgassing and have found that outgassing of contaminating entities is well below threshold levels. Additional testing for weight loss under vacuum conditions at elevated temperatures has confirmed that outgassing from these sheet products is minimal.

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