Electrostatics in the Electronics Environment

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Charles E. Jowett

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Preface

Latent problems exist in the handling and processing of many materials having low electrical conductivity. Such materials when being transferred between storage and processing, or production equipment, often build up extremely high electrical charges.

Until recently, very few techniques were generally available for the working and solution of problems involving static electrification. Anyone seeking quantitative information or a means of estimating the magnitude of the accumulation of static electricity, must wade through: abcoulombs, newtons, dynes per statcoulomb, statfarads, abfarads, ergs per second and so on. Most engineers and chemists soon abandon the search for data, and revert to generalisations.

This book deals with the phenomenon of static electrification which is recognised by the presence of electrical charges, either stationary or moving, and through the interaction of these charges — this interaction being solely by reason of the charges themselves and their position, and not by reason of their motion.

Static electrification in electronics is an ‘uneven’ activity to a very unusual degree. Parts of it are ancient whereas other parts are completely up to date. Static electricity can cause damage to sensitive electronic devices and assemblies, and can create handling, packaging, sorting and storage problems. It can also be a safety hazard in explosion and fire risk areas during the manufacture of devices and equipment.

The facts as presented deal with the problems, the hazards of static electricity in all stages of electronics and the possible means of protection. The work can be read equally by newcomers, interested laymen, technicians and electrical and electronic engineers.

Grateful acknowledgement for invaluable help is given to the author's many associates, to the manufacturers who so generously furnished data and suggestions and to authors and publishers who permitted inclusion of important parts of the text.

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C.E.J.