1.

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Pubbl/distr/stampa	Torino : Giappichelli, 2000
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Altri autori (Persone)	Civitarese Matteucci, Stefano
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Nota di bibliografia	Includes bibliographical references (p. 171-176) and indexes. Includes bibliographical references and index.
Nota di contenuto	Electrostatic Ignitions of Fires and Explosions; CONTENTS; 1 Basic Concepts; 1.1 The Electrostatic Charge; 1.1.1 Electrons, Protons, and Ions; 1.1.2 Charge Distribution: Point, Space, and Surface Charges; 1.2 The Electric Field; 1.2.1 Mapping Electric Fields; 1.2.2 Dielectrics; 1.2.3 Dielectric Breakdown; 1.3 Ground Potential; 1.3.1 Grounding; 1.3.2 Bonding; 1.4 Requirements for a Fire or an Explosion; 1.4.1 Ignitable Mixture; 1.4.2 Separation; 1.4.3 Accumulation; 1.4.4 Discharge; 2 Separation and Accumulation of Charge; 2.1 Mechanisms of Charge Generation; 2.2 Charge Alignment 2.3 Contact and Frictional Charging2.3.1 Surface Charging; 2.3.2 Powder Charging; 2.4 Double Layer Charging; 2.5 Charging of Drops, Mists, and Aerosols; 2.6 Two Phase Flow; 2.7 Charge Separation at Phase Boundaries; 2.8 Charge Relaxation; 2.9 Host Material; 2.9.1 Bulk Conductivity; 2.9.2 Surface Conductivity; 2.9.3 Apparent Conductivity;

2.10 Separation vs. Relaxation; 2.10.1 Constant Voltage Case; 2.10.2 Constant Amperage Case; 2.11 Induction; 3 Discharge; 3.1 Classification of Discharges; 3.2 Characteristics of Discharges; 3.2.1 Corona Discharge; 3.2.2 Brush Discharge
3.2.3 Bulking Brush Discharge3.2.4 Propagating Brush Discharge; 3.2.5 Spark or Capacitor Discharge; 3.2.6 Lightning; 4 Minimum Ignition Energies; 4.1 Testing of Materials; 4.2 Minimum Ignition Energy, MIE; 4.2.1 MIEs of Gasses and Vapors; 4.2.2 MIEs of Dusts; 4.2.3 MIEs of Hybrid Mixtures; 4.2.4 MIEs in Enriched Oxygen Atmospheres; 4.2.5 MIEs of Explosives; 5 Discharge Energies; 5.1 Ignitions by Electrostatic Discharges; 5.2 Capacitive Discharges; 5.2.1 Human Sparks; 5.2.2 Clothing; 5.3 Brush Discharges; 5.3.1 Brush Discharges in Spaces; 5.3.2 Brush Discharges at Surfaces
5.4 Bulking Brush Discharges5.5 Propagating Brush Discharges; 5.6 Corona Discharges; 6 Electrification in Industrial Processes; 6.1 Charges in Liquids; 6.1.1 Streaming Currents; 6.1.2 Charge Relaxation in Liquids; 6.1.3 Liquid Conductivity; 6.1.4 Antistatic Additives; 6.1.5 Sedimentation; 6.2 Charges in Mists; 6.2.1 Washing; 6.2.2 Splash Loading; 6.2.3 Steaming; 6.2.4 Carbon Dioxide; 6.2.5 Charge Decay from Mists; 6.3 Charges in Powders; 6.3.1 Streaming Currents in Powders; 6.3.2 Charge Compaction in Powder Bulking; 6.3.3 Charge Relaxation in Powders; 6.4 Surface Charges
6.4.1 Triboelectric Charging6.4.2 Humidity; 6.4.3 Conductive Cloth and Plastics; 6.4.4 Neutralizers; 6.5 Intense Electrification; 6.6 Phase Separation Charges; 7 Design and Operating Criteria; 7.1 Grounding and Bonding; 7.1.1 Insulation from Ground; 7.1.2 Spark Promoters; 7.2 In-Process Relaxation Times; 7.2.1 Quiescent Relaxations; 7.2.2 Relaxation Downstream of Filters; 7.3 Simultaneous Operations; 7.4 Sounding Pipes; 8 Measurements; 8.1 Multimeters; 8.2 Electrometers; 8.3 Electrostatic Voltmeters; 8.4 Fieldmeters; 8.5 Faraday Cage; 8.6 Radios; 9 Quantification of Electrostatic Scenarios
9.1 Approximations

Sommario/riassunto

Tom Pratt, a long-time process safety practitioner and lecturer in electrostatic safety, wrote this book to educate industry in the basics of electrostatics. It offers a selected collection of information designed to give readers the tools they need to examine the hazard potential of common industrial processes. Among the topics addressed are separation and accumulation of charge, discharge, minimum ignition energies, discharge energies, electrification in industrial processes, design and operating criteria, measurements, quantification of electrostatic scenarios. A selection of case histories