

1. Record Nr.	UNISA996212664603316
Autore	Crowl Daniel A
Titolo	Understanding explosions [[electronic resource] /] / Daniel A. Crowl
Pubbl/distr/stampa	New York, : Center for Chemical Process Safety of the American Institute of Chemical Engineers, c2003
ISBN	1-282-77424-7 9786612774249 0-470-92528-0 1-59124-628-8 0-470-92520-5
Descrizione fisica	1 online resource (230 p.)
Collana	A CCPS Concept Book ; ; v.16
Disciplina	660.2804 660/.2804
Soggetti	Chemical processes - Safety measures Combustion Explosions
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Understanding Explosions; CONTENTS; PREFACE; ACKNOWLEDGMENTS; 1 INTRODUCTION; 1.1. Accident Loss History; 1.2. The Accident Process (AIChE, 2000); 1.3. A Case History-Flixborough, England; 1.4. Hazard Identification and Evaluation; 1.5. Inherently Safer Design; 2 FUNDAMENTALS OF FIRES AND EXPLOSIONS; 2.1. Gases and Vapors; 2.1.1. Flammability Diagram; 2.1.2. Estimating Flammability Limits; 2.1.3. Temperature Effect on Flammability; 2.1.4. Pressure Effect on Flammability; 2.1.5. Flammability of Gaseous Mixtures; 2.1.6. Minimum Ignition Energies; 2.1.7. Autoignition Temperature 2.1.8. Example Applications 2.2. Liquids; 2.2.1. Flashpoints of Mixtures of Liquids; 2.2.2. Example Applications; 2.3. Aerosols and Mists; 2.4. Dusts; 2.5. Hybrid Mixtures; 2.6. Kinetics and Thermochemistry; 2.6.1. Calculated Adiabatic Flame Temperatures (CAFT); 2.6.2. Example Application; 2.7. Gas Dynamics; 2.7.1. Detonations and Deflagrations; 2.7.2. Estimating Peak Side-on Overpressures; 2.7.3. Example Applications; 2.7.4. Pressure Piling and Deflagration to Detonation

Transition; 2.8. Physical Explosions; 2.8.1. BLEVEs; 2.8.2. Rapid Phase Transition Explosions; 2.9. Vapor Cloud Explosions
2.9.1. TNT Equivalency 2.9.2. TNO Multi-Energy Method; 2.9.3. Baker-Strehlow-Tang Method (AIChE, 1999a); 2.9.4. Computational Fluid Mechanics (CFD) Method; 2.9.5. Example Applications; 2.10. Runaway Reactions; 2.10.1. Steady-State and Dynamic Reactor Behavior; 2.10.2. Experimental Characterization; 2.11. Condensed Phase Explosions; 2.12. Fireballs, Pool, Flash, and Jet Fires; 2.13. Explosion Effects; 2.13.1. Thermal Exposure; 2.13.2. Overpressure Exposure; 2.14. Ignition Sources; 2.14.1. Static Electricity; 3 PREVENTION AND MITIGATION OF EXPLOSIONS; 3.1. Additional References
3.2. Inherently Safer Design 3.3. Using the Flammability Diagram to Avoid Flammable Atmospheres; 3.4. Inerting and Purging; 3.4.1. Vacuum Purging; 3.4.2. Pressure Purging; 3.4.3. Combined Pressure-Vacuum Purging; 3.4.4. Sweep Purging; 3.4.5. Siphon Purging; 3.4.6. Advantages and Disadvantages of the Various Inerting Procedures; 3.4.7. Inert Gas Blanketing of Storage Vessels; 3.4.8. Inert Purging and Blanketing during Drumming Operations; 3.5. Example Application; 3.6. Explosion Venting; 3.7. Grounding and Bonding; 3.8. Ventilation; 3.9. Sprinkler and Deluge Systems
3.10. Charging and Drumming Flammable Liquids 3.11. Example Application; 3.12. Charging Powders; 3.13. Electrical Equipment in Hazardous (Classified) Areas; 3.13.1. Protection Techniques; Appendix A DETAILED EQUATIONS FOR FLAMMABILITY DIAGRAMS; Part A: Equations Useful for Gas Mixtures; Part B: Equations Useful for Placing Vessels Into and Out of Service; Appendix B EQUATIONS FOR DETERMINING THE ENERGY OF EXPLOSION; B.1. Example Application; Appendix C FLAMMABILITY DATA FOR SELECTED MATERIALS; Appendix D PROCEDURE FOR EXAMPLE 3.2; Appendix E COMBUSTION DATA FOR DUST CLOUDS; REFERENCES
GLOSSARY

Sommario/riassunto

There are many different types of explosions, each with its own complex mechanism. Understanding explosions is important in preventing them. This reference provides valuable information on explosions for everyone involved in the operation, design, maintenance, and management of chemical processes, helping enhance understanding of the nature of explosions and the practical methods required to prevent them from occurring. The text includes:
Fundamental basis for explosions Explosive and flammable behavior and characteristics of materials Different types of explosions Fire a
