

1. Record Nr.	UNINA9910829974103321
Titolo	Energetic materials [[electronic resource]] : particle processing and characterization // edited by Ulrich Teipel
Pubbl/distr/stampa	Weinheim, : Wiley-VCH, 2005
ISBN	1-280-55790-7 9786610557905 3-527-60392-1 3-527-60493-6
Descrizione fisica	1 online resource (645 p.)
Altri autori (Persone)	TeipelUlrich
Disciplina	662.2 662.208
Soggetti	Explosives Size reduction of materials Crystallization
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	Energetic Materials; Table of Contents; Preface; List of Contributors; 1 New Energetic Materials; 1.1 Introduction; 1.1.1 Applications of Energetic Materials; 1.2 Application Requirements; 1.2.1 Explosives; 1.2.2 Solid Rocket Propellants; 1.2.3 Propellant Powder; 1.3 New Energetic Materials; 1.3.1 CL-20; 1.3.1.1 Synthesis and Availability of CL-20; 1.3.1.2 Chemical and Thermal Properties of CL-20; 1.3.1.3 Sensitivity and Phase Behavior of CL-20; 1.3.2 Octanitrocubane; 1.3.3 TNAZ; 1.3.1.1 Chemical and Thermal Properties of TNAZ; 1.3.3.2 Synthesis and Availability of TNAZ; 1.3.4 ADN 1.3.4.1 Synthesis and Availability of ADN 1.3.4.2 Thermal Behavior of ADN; 1.3.4.3 Long-term Stability of ADN; 1.3.4.4 Processability of ADN; 1.3.4.5 Safety Properties of ADN; 1.3.5 FOX-7 (1,1-Diamino-2,2-dinitroethylene); 1.4 Conclusion; 1.5 Acknowledgments; 1.6 References; 2 Size Reduction; 2.1 Fundamentals of Size Reduction; 2.1.1 Material and Crack Behavior; 2.1.2 Size Reduction Energy; 2.1.3 Selection Criteria for Size Reduction Processes; 2.2 Size Reduction Processes; 2.2.1 Pinned Disk Mill; 2.2.2 Jet Mill; 2.2.3 Colloid Mills;

2.2.4 Grinding by Ultrasonic Energy
2.2.5 Rotor Stator Dispersing System
2.2.6 Agitator Ball Mill; 2.3
References; 3 Crystallization; 3.1 Fundamentals of Crystallization; 3.1.1
Thermodynamics and Kinetics; 3.1.2 Crystallization Apparatus and
Process; 3.1.2.1 Melt Crystallization; 3.1.2.2 Cooling Crystallization;
3.1.2.3 Evaporation Crystallization; 3.1.2.4 Precipitation and Reaction
Crystallization; 3.1.3 Crystal Defects; 3.2 Crystallization of Energetic
Materials; 3.2.1 Introduction; 3.2.2 Crystallization and Product Quality;
3.2.2.1 Definition of Product Quality; 3.2.2.2 Process Problems and
Product Quality
3.2.2.3 Product Quality of Energetic Materials
3.2.3 Crystallization of
HMX and RDX; 3.2.4 Crystallization of CL 20; 3.2.5 Crystallization of
NTO; 3.2.5.1 Kinetics of NTO Crystallization; 3.2.5.2 Control of Size
and Shape by Recrystallization; 3.2.5.3 Seeded Cooling Crystallization;
3.2.5.4 Scale-up of Crystallizer; 3.2.6 Phase Stabilized Ammonium
Nitrate (PSAN); 3.2.6.1 Introduction; 3.2.6.2 Understanding and
Measuring of the Phase Transitions; 3.2.6.3 Improving the Phase
Behavior; 3.2.6.4 Production Process; 3.2.7 Crystallization of ADN; 3.3
Simulation; 3.3.1 Introduction
3.3.2 Molecular Modeling of Energetic Materials
3.3.2.1 Molecular
Structure of Energetic Materials; 3.3.2.2 Molecular Modeling of
Dimethylnitramine; 3.3.2.3 Molecular Modeling of RDX; 3.3.2.4
Molecular Modeling of HNIW (CL 20); 3.3.2.5 Molecular Modeling of
Processing Aids; 3.3.2.6 The Crystal Surface; 3.3.2.7 Crystal
Morphology; 3.3.2.8 A Procedure for Molecular Modeling Simulations;
3.3.2.9 Case Study: RDX Crystal Morphology; 3.3.2.10 Simulation of
Other Phenomena; 3.3.3 Simulation of Crystallization Processes;
3.3.3.1 Scope of the Calculation Procedure
3.3.3.2 Simulation of a Crystal Growth Process

Sommario/riassunto

Incorporation of particular components with specialized properties allows one to tailor the end product's properties. For instance, the sensitivity, burning behavior, thermal or mechanical properties or stability of energetic materials can be affected and even controllably varied through incorporation of such ingredients. This book examines particle technologies as applied to energetic materials such as propellants and explosives, thus filling a void in the literature on this subject. Following an introduction covering general features of energetic materials, the first section of this b
