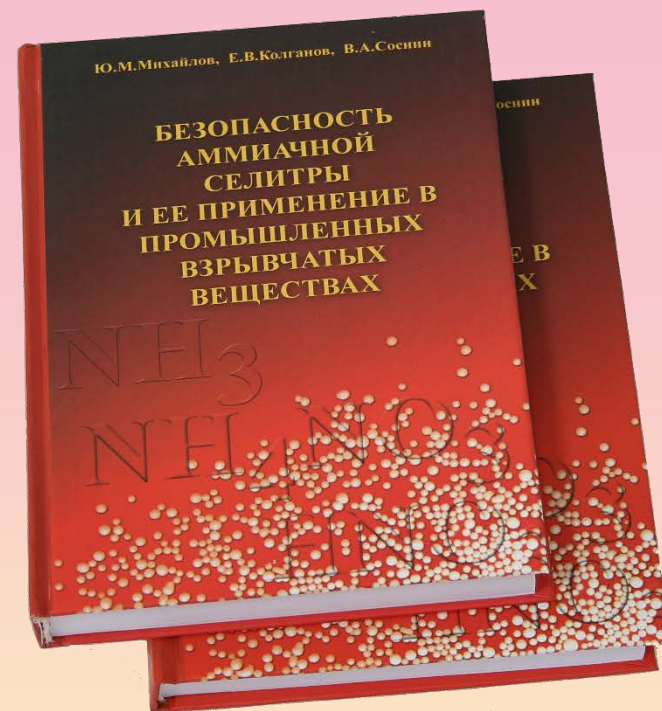


Mikhailov Yu.M., Kolganov E.V., Sosnin V.A.
**Safety of Ammonium Nitrate and its Application in
Commercial Explosives**
Dzerzhinsk, Limited Liability Company “Partner-plus”

The monograph presents the results of investigation of physical and chemical, fire hazard and explosive properties of different AN brands, covers the issues of its production and accidents connected with AN manufacturing, storage and application, quotes data concerning the compositions of AN commercial explosives and states The Regulations for Safe Transportation, Storage and Application of AN as well as the products on its base.

The book is intended for engineers and technical personnel of AN and commercial explosives production, for personnel of mining industry carrying out blasting operations and for students and lecturers of educational establishments.



JSC “GosNII “KRISTALL”
ul. Zelionaya 6, Dzerzhinsk
606007 Nizhegorodskaya oblast
Tel.: (8313) 24-39-05, 24-39-09
Fax: (8313) 24-40-84
Email: kristall@sinn.ru
www.niikristall.ru

CONTENTS

Preface	4
1. Introduction	6
2. Physical and chemical explosive properties of ammonium nitrate (AN)	16
2.1 Short characterization of main physical and chemical properties of AN	
2.2 Fire hazardous characteristics of AN	
2.3 Explosive properties of AN	
2.4 Explosion hazard of AN according to UNO and EC methods	
3. Accidents in production, storage and application of AN and the reasons of their origin	43
4. Ammonium nitrate production	55
5. The paths of improving AN quality	64
5.1 The reasons of AN caking	
5.2 The methods to prevent AN and mixtures on its base caking	
6. Application of AN in commercial explosive compositions	93
6.1 The influence of AN properties on commercial explosives characteristics	102
6.2 AN application in powdered commercial explosives	118
6.3 AN application in granular commercial explosives	132
6.4 AN application in slurry and emulsion commercial explosives	146
6.5 AN application for sensitization (gasification) of emulsion explosives	186
6.6 Porous AN application in commercial explosives	198
6.7 AN interaction with corrosive ores	215
Annex A. Project of The Regulations for Safe Transportation, Storage and Application of Ammonium Nitrate and the Products on its Base	243
Annex B. EC Publication	268
Annex C. The method of testing safe distances for transition of detonation and air shock wave in storage of AN and fertilizers on its base	287
References	289