

**Review of:  
Black Powder  
Manufacturing,  
Testing, and Optimizing**

Ian von Maltitz  
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As Mr. von Maltitz states in the preface, this work is not merely a second edition of his earlier book, *Black Powder Manufacture, Methods and Techniques*, as reviewed in *Journal of Pyrotechnics* No. 7 (Summer 1998). Despite similarities in its content and organization, the new book has been overhauled from cover to cover and has been greatly expanded. This rewriting reflects recent changes in approaches to small-scale powder making and testing methods, as well as a substantial body of new practical knowledge.

Like the original work, this book does not delve deeply into theory. It is mainly a practical guide for the amateur pyrotechnist and a compilation of facts for the pyro historian. In these objectives, however, it succeeds quite brilliantly as what must surely be the most concise and complete reference available on the subject of Black Powder. While an exhaustive discussion of the specific improvements to the book is not possible in a short review, the most significant are summarized below.

Chapter one, "Safety First", has been substantially expanded and includes several new and useful cautions. The author's counsel on keeping batches small, sticking to the safer methods, and giving forethought to the possible consequences of an accident is good advice for anyone who works with pyrotechnic materials. While this reviewer would still suggest a more pointed emphasis on not making powder in a residence, the list of safety tips is very pertinent and the

author's approach is quite responsible.

A much more comprehensive treatment of raw materials is very evident in the new book. Various types and grades of commercial potassium nitrate, and several types of sulfur, are discussed. The amateur will find the comparative usefulness and economy of these various types and grades to be quite informative.

The real treasure-trove of new materials information, however, concerns charcoal, to which two new and separate chapters have been dedicated. The first of these describes the basics of charcoal, and also includes a very comprehensive list of charcoals made from various woods and other materials. The relative merits of many of these charcoals in powder making are discussed. The second chapter on charcoal is devoted to charcoal-making methods, and will be of interest to those who wish to make various charcoals for themselves. The importance of charcoal to the qualities of finished Black Powder is frequently overlooked, and the author's thorough treatment of this subject is very useful.

Also new to the book are two chapters on milling. The first of these describes a number of

types of mills, and their applicability to both commercial and amateur powder making. The other chapter deals specifically with ball milling. Several types of ball mills and milling media are discussed, as are wet and dry milling methods. Safety precautions specific to milling are included.

Finally, several chapters are devoted to the testing of Black Powder. A large variety of test methods, both historical and modern, are presented and compared, and those adaptable to amateur experimentation are discussed in detail.

The book incorporates many new charts, graphs, tables, and illustrations, as well as a number of useful and interesting appendices. The appendices include a description of the author's visit to Goex's Moosic, Pennsylvania Black Powder plant, specifications for commercial Black Powder, and useful data on lift charges for various types of aerial shells.

Even more than Mr. Von Maltitz's original book, *Black Powder Manufacturing, Testing, and Optimizing* is a notably readable and practical work that will be of use to both amateur pyrotechnists and historians.