

**TECHNICAL CHEMISTS'
HANDBOOK: TABLES AND
METHODS OF ANALYSIS FOR
MANUFACTURERS OF INORGANIC
CHEMICAL PRODUCTS**

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Technical Chemists' Handbook: Tables and Methods of Analysis for Manufacturers of Inorganic Chemical Products by George Lunge

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GEORGE LUNGE

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WORKS BY GEORGE LUNGE, Ph.D., Dr.Ing.

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TECHNICAL CHEMISTS' HANDBOOK.

TABLES AND METHODS OF ANALYSIS FOR
MANUFACTURERS OF INORGANIC CHEMICAL
PRODUCTS

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1910



PREFACE

IN 1883 I published in German a collection of tables and analytical methods for manufacturers of sulphuric acid, nitric acid, soda, potash, and ammonia.

In 1884 an English edition of that work was published by me, with the co-operation of the late Dr Ferdinand Hurter, under the title, *The Alkali Makers' Pocketbook*. A second, enlarged edition was published by us in 1891 as *The Alkali Makers' Handbook*. Subsequently a third, thoroughly revised German edition was published by me, but the death of Dr Hurter, and lack of time on my part, prevented the publication of a corresponding English edition.

When the need of a further German edition arose, I resolved, not merely, as in the past, to bring both the numerical data and the analytical methods up to date, which meant replacing many of the tables by new ones and changing a great part of the text, but also to enlarge the scope of the book, so as to include a number of additional important inorganic chemical industries. New chapters were accordingly added, treating of feed-water for boilers, of the manufacture of coal-gas, of calcium carbide and acetylene, of the raw materials and products in the manufacture of fertilisers, of aluminium salts and the manufacture of alumina, and of the manufacture of calcareous cements. In the preparation of this edition, I availed myself of the assistance of Dr Berl.

The additions thus included, and the general revision of the work, made it, to all intents and purposes, a new book, and the

title of that German book was accordingly changed to a *Handbook for the Inorganic Chemical Industries*.

It was natural that this book should also be offered to English and American chemists, and this is done in the present *Handbook*. Its aim, like that of its predecessor, *The Alkali Makers' Handbook*, is to effect, as far as possible, the most important task of establishing uniformity among practical chemists, buyers and sellers, and analysts, in regard to both the numerical data employed in their work and the analytical methods used for the control of processes, and for the testing of the resulting products.

The importance of making use of the most reliable numerical data has been fully recognised in the preparation of this edition, and all the analytical factors have been recalculated on the basis of the atomic weights published by the International Committee for 1908. Also, all the tables of specific gravities and other tables have been selected from among the most recent and reliable determinations.

In regard to the analytical methods, they are again chosen as before, on the principle agreed to by the German Society of Alkali Makers, that only *one* method should be given for each analytical operation, as well as for the preparation of standard solutions and for sampling the materials, in order to avoid discrepancies such as might arise should two or more methods be included. The method chosen should always, of course, be that which permits the greatest degree of accuracy possible that can be attained in a well-appointed works laboratory by a properly trained chemist. In cases where there was a choice between equally accurate methods, that occupying least time or least apparatus, or which was already widely known and employed, has been preferred. Many new methods have accordingly had to be omitted, but in all cases such omission has been justified by means of a careful examination of the relative merits of the processes under consideration, and only such methods as were found thoroughly reliable have been included. Also, a considerable number of tables of specific gravities of solutions not previously

worked out, or which were unsatisfactory, have been very carefully checked and extended.

Where necessary, reference is made to the more complete treatment of the subject matter in my larger treatise, published in German as *Chemisch-technische Untersuchungsmethoden* (5th edition, 3 vols., 1904-5). Of the English edition of this work, edited by Dr Charles A. Keane, under the title *Technical Methods of Chemical Analysis*, the first volume is now being published, and is referred to in the text as *Tech. Meth.*

My special thanks are due to Dr Keane for linguistically revising the text of this English edition, a task which has been rendered necessary through my absence from England for more than thirty years.

THE AUTHOR.

ZÜRICH, 1909.

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