

Book Reviews

Richard E. MARK: Handbook of Physical and Mechanical Testing of Paper and Paperboard Vol. I Marcel Dekker Inc., New York 1983. 672 pp.

The first volume of the handbokk published in the United States in 1983 deals with the physical and mechanical testing of paper and paperboard through 640 pages.

The various chapters are authored by widely known leading experts of the special fields.

The first part of the handbook is compiled by A. H. Nissan and is entitled by "Introduction to Paper Testing" and "Retrospect and Prospect of Physical and Mechanical Testing of Paper and Paperboard".

The second part of the book details the "Theory and Test for Mechanical Parameters" including the following chapters:

R. W. Perkins, jun: Models for Describing the Elastic, Viscoelastic and Inelastic Mechanical Behaviour of Paper and Board

Tetsu Uesaka: Specimen Design for Mechanical Testing of Paper and Paperboard

V. C. Setterholm and D. E. Gunderson: Observation of Load-Deformation Testing

J. A. Johnson, K. A. Bennett and H. M. Montrey: Failure Phenomena

P. Koseth and A. de Ruvo: The Measurement of Viscoelastic Behaviour for the Characterization of Time-, Temperature-, and Humidity-dependent Properties

C. Fellers: Edgewise Compression Strength of Paper

J. W. Koning, Jun.: Corrugated Fiberboard

R. E. Mark and P. P. Gillis: Mechanical Properties of Fibers

H. Hollmark: Mechanical Properties of Tissue

In the third part of the book the subject of "General Instrumentation" is dealt with according to the next subchapters:

J. L. de Yong: Conditioned Test Atmospheres

J. M. Mendel and C. V. Davis: Data Aquisition and Processing by Mini or Microcomputers

H. R. Schuierer: Equipping the Paper and Board Testing Laboratory

H. R. Schuierer: Interlaboratory Reference Systems

The enclosure contains the list of testing standards.

Comprehensively it can be stated that the first volume of the handbook discusses the testing materials paper and paperboard at an up-to-date high standard and with high-level mathematical tools.

The book is very useful in the university and high-school education and may command interest among researchers and engineers engaged in paper producing and processing industry, as well as in printing industry.

J. ERDÉLYI

WILLIAMS O. A.: *Pneumatic and Hydraulic Conveying of Solids*, Chemical Industries, Edited by: H. HEINEMANN. Volume 13: Marcel Dekker, Inc., New York and Basel 1983. 336 pp.

Pneumatic and hydraulic conveying of solids are often used in chemical plants. This book is an excellent comprehensive presentation of the topic. The first part of the book deals with the pneumatic conveying. Conveying systems working either with negative or positive or negative and positive pressure are shown. There are three main problems in each pneumatic and hydraulic system: to feed solids into the conveying pipeline at the flow rate desired, to convey solids in the pipe without choking and to separate solids from the fluidstream at the end of the pipeline. The author gives easy-to-understand explanations of phenomena influencing above problems and shows how to solve them by appropriate choosing of equipments and control systems. In the chapter titled *Pneumatic System Design Calculations* a method of calculation for the dilute phase system is presented and shown by three examples both in English and metric units.

The sluice systems are treated in the second part of the book. The author draws our attention to right, economic and safe operation of a sluice system and its main parts instead of being immersed in the theory of frictional losses. The frictional losses are taken into account by an increase of 30% of water losses. The last chapter deals with water balance calculations.

The book helps us to select and operate pneumatic and hydraulic conveying systems.

A. VERBA

H. P. BLOCH, J. A. CAMERON, F. M. DANOWSKI, JR. R. JAMES, JR. J. S. SWEARINGEN, M. E. WEIGHTMAN: *Compressors and Expanders: Selection and Application for the Process Industry* Chemical Industries, Edited by: H. HEINEMANN. Vol. 8, Marcel Dekker, Inc., New York and Basel 1982. 328 pp.

This is an excellent book for engineers engaged in process industry choosing and operating compressors and expanders but being no experts of these machines. In the first introductory chapter the authors draw our attention to the most important features and limitations of compressor technology. The next chapter gives limitations and selecting factors of various compressor types. In the next six chapters there are detailed informations about centrifugal and axial turbocompressors, positive displacement, rotary and thermal compressors and turboexpanders, e.g. constraints of reference diameter, number of stages, peripheral speed and impeller efficiency; range of compressor types; general design features as: horizontally or vertically split casings, barrel type, built-in intercooling, etc.; seals, rotor dynamics and bearings, material selection; performance characteristics including surging effect and typical applications are shown in detail. A very important and useful part of this book is the chapter of calculation procedures. Starting with the given values, as gas molecular weight, suction temperature, suction and discharge pressures, molecular flow rate, etc., we get the main dimensions and performances of the machine to choose. The calculation methods are made clear by excellent sample calculations. Remaining chapters deal with driver selection, installation, operation, maintenance and materials of construction. A right driver selection for a large compressor is one of the most important factors in the economy of the process plant. In the chapter *Installation, Operation, and Maintenance* we read detailed maintenance procedures which will help maintenance departments in analyzing problems. Authors prefer predictive maintenance to periodic inspection and the reviewer agrees with them. The last chapter gives useful points of view for proper selection of materials.

I recommend this book to chemical and mechanical engineers, who concern themselves with compressors or turboexpanders.

A. VERBA

Design and Application of Small Standardized Components Data Book 757 Vol. 2 Stock Drive Products, New York 1983. 784 pp.

The "Design and Application of Small Standardized Components; Data Book 757" was published by the "Stock Drive Products" (US) which is mainly a supplier of components and sub-assemblies. It is a 780 page handbook and a practical guide for the design and application of geared, electric spring, and belt drives of several types and for the design and construction of shafts, bearings couplings and shock isolation. It also includes a robotics design section.

In the calculations, equations and tables mainly the conventional English/US units are used, but it serves a large variety of conversion tables. Owing to its handbook character it provides information needed for the selection and use of components offered by SDP.

L. VARGA