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Book Reviews

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Book Reviews

HANDBOOK OF ADHESIVES. I. Skeist, ed. 2nd edition Van Nostrand Reinhold, New York, 1977. 921 pp.

A generalization of the practical experience relating to adhesives use is just as complex as it is necessary. The reviewer knows of at least 45 reference books, 230 monographs and 80 collections of papers on adhesion, adhesives, and the formation of adhesive joints. In addition, only after 1970, 140 journal reviews of this subject appeared. At present, it seems, it is easier and cheaper to perform a detailed testing of any adhesive than to search out information on the results of these tests. In this situation, the achievement of the authors and the editor of this *Handbook of Adhesives* (republished after an interval of 15 years) is the more remarkable: they managed to consider all the more important problems in the practical development and application of adhesives. The breadth of coverage may be characterized by the following numbers: 75 authors, 56 chapters, 303 figures, 371 tables, 2250 literature references.

The book consists of three parts: Fundamentals (5 chapters), Adhesive Materials (35 chapters), and Adherends and Bonding Technology (16 chapters). It contains also definitions of 207 terms standardized by the ASTM.

All main classes of adhesives are discussed more or less fully, namely (the chapter numerals being indicated in the parentheses) inorganics, soluble silicate, phosphate, and hydraulic cements (6), animal glues (7), fish glues (8), casein (9), soybean and blood (10, 11), starch (12), cellulose (13), natural rubber (14, 15), butyl rubber and polyisobutylene (16), nitrile (17), styrene-butadiene (18), carboxylic (20), neoprene (21), polysulfide (22), phenolic (23), resorcinolic (24), amine containing (25), epoxies (26), polyurethane and polyisocyanate (27), poly(vinyl acetate) (28), vinyl acetate-ethylene (29), polyvinyl acetals (30), acrylics (32), anaerobic (33), cyanoacrylate (34), polyamides (35), polyethyleneimines (36), polyheteroarylenes (37, 38), silicones (39).

Most chapters follow the pattern of description of the raw materials, recipes, properties of the adhesives and joints, areas of application, examples. Parameters determining the properties of joints are considered separately (4), as well as the methods of their determination (5), and the basic joining

machinery (55). Attention is given also to the efficiency of adhesives in use (1, 2, 41, 56) including the rubber (42), electrotechnical (50), wood (43), automotive (51), construction (49), and abrasive (48) industries, and medicine (53). The book deals also with some problems related to that of glueing, namely the selection of silane coupling agents (40), application of sealants (45), water remoistenable adhesives (46), pressure-sensitive tapes (47), non-woven fabrics (52), and metallization of plastics (54).

The wide coverage of the book gave rise to several shortcomings. The theoretical side, which ought to serve as a foundation for the practice, is clearly neglected. Repetitions can be seen in different chapters. Many examples are described without due regard to foreign experience, also that in the U.S.S.R.

These defects do not lower the value of the Handbook. With it, specialists received a very useful volume, unique in its breadth of coverage and which will serve them as a daily guide in their practical work.

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ADHESIVES DIRECTORY 1977, by A. S. O'Connor & Co., Ltd., Richmond, Surrey. 194 pp. + chart. £2.75.

This (almost) pocket-sized directory contains a wealth of information for those involved in the industrial uses of adhesives in the U.K. and Europe. The titles of the sections in the book are indicative of its usefulness—Adhesives Classified by Types of Basic Materials, Adhesives Classified by End Use, Checklist for Adhesives Selection, Raw Materials, Plant and Equipment, Who's Who, Associations: Consultants, Books and Journals, Trade Names, Names and Addresses, Advertisers' Index, Adhesives Selection Chart.

Information contained in the volume is useful mainly to Europeans since proprietary adhesives, trade names, associations, people, etc., are all from the European community. For the benefit of such readers, instructions on the use of the book are given in four languages: English, French, German and Italian. The contents, however, are entirely in English.

This reviewer feels he may be excused for pointing out that the publisher listed for *The Journal of Adhesion* published it only during the year of its birth—1969!

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PHYSICO-CHEMICAL BASIS OF WETTING AND SPREADING [Russian], by B. D. Summ and Yu. V. Goryunov. Khimiya publishers, Moscow, 1976. 232 pp. Rub. 1.81.

The problems of wetting and spreading are so important for the formation of adhesive joints that I feel justified in describing Summ's and Goryunov's volume in this *Journal*. Its six chapters deal with: The thermodynamics of wetting—Wetting of real solids—Influence of physico-chemical factors on wetting—Spreading—Control of spreading with surface active substances—Effect of wetting on industrial and natural processes.

In the discussion of fundamental phenomena and the relevant theories (such as Young's equation of contact angles), the authors are, perhaps, too impartial. They present, on different pages, different opinions found in the literature without clearly choosing the correct one, and the reader is left with a confusing picture. This drawback is less important in the last two chapters which contain fewer theoretical considerations than the first four. The sixth chapter is a qualitative survey of the importance of wetting in many industries, including formation of metallo-ceramics, purification of steel, soldering, flotation, detergency, road building, manufacture of paints and many others.

There are 351 references more than a half of which are to Russian publications. The information supplied by the book on the Russian literature dealing with wetting is the most valuable feature of the text.

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