

In the following chapters a large number of exothermic reactions, in particular decomposition reactions but also other primary and secondary reactions, are dealt with in detail making use of the above test methods for various conditions and substances. This material not only gives an indication of the range of substances which may constitute a thermal hazard but also a good account of the wide range of information contained in the literature including the author's own achievements. Of particular interest to those who have responsibility for safety in the chemical industry is the chapter which discusses the various incidents having occurred. In 16 case histories the causes which have led to these incidents, mainly in the chemical industry, are described in detail.

The two concluding chapters consider the more practical problems to determine the practical conditions for a runaway reaction to occur, to identify the thermal hazard and to provide suitable protective measures, for instance emergency relief systems. The book concludes with a table containing the safety characteristic data of 177 substances.

The monograph of Grewer is an outstanding account of the state-of-the-art in controlling thermal hazards of chemical reactions. It reflects the long-standing experience of the author in safety related problems in the chemical industry. The book is written in a clear and concise form and is well illustrated by tables and figures. Thus the book is of great value and particular interest to all chemists, chemical engineers and physicists who are interested in process safety in the chemical and other process industries.

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**Landolt-Börnstein Numerical Data and Functional Relationships in Science and Technology, New Series, Group IV: Macroscopic Properties of Matter, Editor in Chief: W. Martienssen Vol. 8 Thermodynamic Properties of Organic Compounds and their Mixtures**

Editor: K.N. Marsh

Subvolume A Enthalpies of Fusion and Transition of Organic Compounds

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Springer Verlag continues the renewal of its famous 6th Edition from the 1950s and has found experts from the Thermodynamics Research Center at the Texas A&M University to prepare the above mentioned volume. Besides this first subvolume A on Enthalpies of Fusion and Transition of Organic Compounds, further subvolumes — B on Densities of Aliphatic Hydrocarbons: Alkanes, Alkynes, and Alkenes, C on Vapor

Pressure of Aliphatic Halohydrocarbons, D on Densities of Cyclic Hydrocarbons, E on Densities of Aliphatic Hydrocarbons and F on Densities of Aromatic Hydrocarbons — are in preparation.

Subvolume A contains experimental data on the enthalpies of solid–solid and solid–liquid transitions for 2441 organic compounds, a total of 3682 data sets also including some data about phase transitions of liquid and plastic crystals, however, for a rather small minority of liquid crystalline compounds only, as data on liquid crystals are compiled and printed in Volume IV/7 (seven subvolumes up to now). Phase transitions of polymers are not included at all.

The book is divided into three chapters. A short chapter about basic concepts of enthalpies of fusion and transition including a description of definitions, of thermodynamic principles and of types of phases introduces the subject of the data compilation. A second small chapter gives a brief review of the experimental methods used to determine the enthalpies of transition and fusion including both direct and indirect methods. Finally, the authors write about the scope of the book and how they made the evaluation and selection of the data. This is a usual amount of text in a Landolt-Börnstein volume which is not necessarily a textbook about the subject. Its main part is, of course, the data compilation in chapter 3. All previous relevant compilations, among them the two review papers by W.E. Acree in *Thermochimica Acta* 189 (1991) 37 and 219 (1993) 97 and, of course, the older Landolt-Börnstein tables from the 6th Edition, Vol. II, Part 4 from 1955 and the 5th Edition from 1929, but also the TRC Source Database, the TRC Datafiles collection, and Chemical Abstracts were used to extract the data. All data were rated and evaluated on the basis of accuracy and reliability to find out the ‘best’ numerical values. An evaluation to provide recommended values is generally not an easy task because of different experimental methods used, different sample quality, sometimes missing accuracies in the original sources and many other problems. Rigorous rules are difficult to state. Thus the evaluation was entirely based on the judgement of the compilers who did an excellent job as one can see from the results in this book.

The present volume IV/8A provides the tabulated original and evaluated values, together with auxiliary information, including how these values were collected and evaluated. The data are ordered by the compound gross formula in accordance to the Hill indexing system. Each compound is characterized by its chemical name, gross formula, Chemical Abstracts Service Registry Number (CASRN) and its molar mass. An alphabetical Chemical Name Index and a CASRN Index are printed at the end of the book. All data are given in the following manner: for each phase transition the two phases under consideration are stated, the phase transition temperature and its uncertainty, the enthalpy of this phase transition and its uncertainty, the sample description and purity (including information about the original source of the sample, the methods of purification, the final purity of the sample, and the method used to determine its purity), the method which was used to determine the temperature and the enthalpy of the phase transition and finally the references are listed. Most important for all users of this data collection is the fact that the compilers state selected and recommended values for all considered phase transitions of each single compound. It is this certainty to get the most reliable and up-to-date values for the phase transitions

under consideration, that makes this book (in accordance with the aim and the philosophy of the Landolt-Börnstein series) especially valuable.

The volume will be useful to a wide community of researchers and engineers, but also to students and faculties in Chemistry and Chemical Engineering Departments at universities as data on the enthalpies of phase transitions are important from both practical and theoretical points of view in many areas of chemistry, chemical engineering and material science. Specialists in the field will highly appreciate the state-of-the-art and the quality of the compilation which will certainly improve the quality of future research in this field by providing recommended data for so many organic compounds. The data presentation is done in very good quality. Typesetting from a camera-ready copy produced by the editor guarantees that no printing errors could occur during the production of the book itself. The final book is a sound piece of work. It will have a long life at a high level of frequent use. The price of 3375 DM probably prevents scientists and engineers from purchasing it for their own use. However the reviewer hopes that it can be found in every good scientific library for the use of everybody who is interested in this matter.

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