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## **Book Review**

Materials Handbook — a concise desktop reference, François Cardarelli, Pub 2000, ISBN 1-85233-168-2. 595 pages, £80

The author has attempted to draw together, in one concise practical handbook, the properties of a wide range of materials. He has achieved this considerable task, for which he should be commended, by he says 'concentrating on the most common industrial materials in each class'. He includes, as he says in the introduction, 'properties most often required by engineers and scientists', with links to additional sources via appendices. Good use is made of internet references, but it remains to be seen whether these will stand the test of time.

All the data in the handbook has been taken from other sources. The book is divided into 16 chapters, two of these being appendices and bibliography, the rest covering different material groups. The author has chosen to split them up into: ferrous metals and their alloys (including irons and steels, nickel, and cobalt); common non-ferrous metals; less common non-ferrous metals; semiconductors; superconductors; magnetic materials; insulators and dielectrics; miscellaneous electrical materials; ceramics and glasses; polymers and elastomers; minerals, ores and gemstones; rocks and meteorites, timbers and woods; and building and construction materials. Not everyone would agree with this breakdown, especially his classification of ferrous materials, and it might have been done differently, e.g. corrosion resistant materials might merit a chapter on their own.

Much of the information in the book is presented in tabular form. Some of the tables list property data; in others, applications are described. The tables contain huge amounts of useful relevant information and are the main strength of the book. Some of the supporting text, while it certainly provides an interesting background, concentrates on history and extraction details and is not immediately relevant for engineers. One criticism of the book is the referencing of the tables. The tables are listed on a separate plastic covered card, which also serves as a bookmark. It is not clear whether it was intended that the index was loose or whether it should have been bound into the text. It should at least be attached to the spine via a cord. The information on the list of tables does not give the reader much insight into their contents. This is poor, considering that most of the information in the book is in tabular form.

The property information tends to be room temperature data and is typically density, elastic modulus, tensile strength, electrical and thermal conductivity, and specific heat capacity. Data on elevated temperature performance and creep and fatigue were omitted. It is, of course, a concise desktop manual, so one should perhaps not be too surprised at this.

The author's main area of expertise appears to lie in electochemistry and the metallurgy of rare metals. This comes through in detailed chapters on, for instance, less common non-ferrous metals and electrical materials. In both cases, there is a good deal of written text, backed up with extensive references and bibliographies to complement the tabular data. For areas outside the author's apparent expertise, the text is more limited. For instance, the first chapter on ferrous materials is fairly short and contains only general references. The same is true for the chapter on polymeric materials. In some ways it seems that the author wanted to write a book on his own subject area, but that the publisher insisted he include other areas to make it sell. This may seem slightly harsh, but there is less information on materials of wider applicability.

I have used the book in my capacity as a lecturer, both for information and to check students' recommendations for materials selection. In the latter sense, the book was extremely useful and I was able to find all their suggestions.

The book is suitable as a first starting point for investigation and reference and would be a useful addition to an engineer's personal library. It contains enough information to give an insight into a particular material and provide a source of other references for more investigation.

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