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BOOK REVIEWS

Kazantsev, G.F., Barbin, N.M., Brodova, I.G., Vatolin, N.A., Moiseev, G.K., and Bashlykov, D.V., *Pererabotka loma i otkhodov tsvetnykh metallov v ionnykh rasplavakh* (Processing of Scrap and Waste Nonferrous Metals in Ionic Melts),

Yekaterinburg: Ural'sk. Otd. Ross. Akad. Nauk, 2005, 210 pp.

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The monograph devoted to a rather topical subject was prepared by a group of specialists from institutes affiliated with the Ural Division of the Russian Academy of Sciences: Institute of Metallurgy, Institute of High-Temperature Electrochemistry, and Institute of Metal Physics. The authors summarized the results of mostly their own studies in the field of theoretical foundations and technology of processing of nonferrous-metal secondary raw materials.

The book comprises an introduction, seven chapters, and reference lists for each chapter separately. The brief introduction (pp. 3, 4) notes that the many years' studies carried out at the institutes of the Ural Division demonstrated the possibility and advisability of processing of secondary raw materials (scrap aluminum and aluminum alloys, copper, zinc, and tin) in ionic melts and, in particular, in molten halides of alkali and alkaline-earth metals. The authors considered it appropriate to include into the monograph evidence concerning use of light metals and their alloys in various fields of technology and to present data on selected physicochemical properties of nonferrous metals.

Chapter 1 (pp. 5–43) is mostly devoted to application of aluminum alloys. Also presented is evidence concerning the composition of certain aluminum alloys, both cast and wrought. There is no escape from mentioning that a considerable part of the material presented in Chapter 1 bears no direct relation to the problem under discussion. Chapter 2 (pp. 44–81) considers the equipment used in processing of various kinds of secondary raw materials containing nonferrous metals. Unfortunately, the companies manufacturing such equipment in Russia or CIS countries are not named by the authors.

Chapter 3 (pp. 82–103) briefly discusses the properties of molten electerolytes and presents a number of tables with data on the physicochemical properties of individual molten compounds and mixtures of these. Among issues related to refinable metals, only melting of scrap aluminum under a layer of molten salts is very briefly considered. Chapter 4 (pp. 104–150) mainly includes results obtained when studying the remelting of aluminum alloy shavings under a layer of flux composed of molten salts. Chapter 5 (pp. 151–167) considers remelting, under a layer of halide fluxes, of a complex scrap constituted by various cables, bimetals, and oxidized secondary aluminum. The brief Chapter 6 (pp. 168–184) describes application of fluxes composed of molten salts in modification of certain aluminum alloys. The final Chapter 7 (pp. 185–199) discusses remelting of wastes containing copper, zinc, tin, and titanium.

On the whole, the book by G.F. Kazantsev and co-authors contains useful recommendations concerning use of molten salts as fluxes in processing of secondary raw materials containing, primarily, aluminum and, to a lesser extent, other nonferrous metals. Despite the positive assessment of the monograph written by the group of authors, there is no escape from mentioning the certain incoherence of the structure of the book, its narrowly applied nature, and its overloading with reference data and other materials that bear no direct relation to the technologies discussed. Probably, the authors should have more clearly formulated the subject of the monograph in the introductory part. In fact, the book is only devoted to remelting of secondary raw materials containing nonferrous metals and, primarily, aluminum. Separation or reduction processes occur in remelting only in some cases. The term "processing of scrap and wastes" presumes, in its modern understanding, a deeper processing of the starting secondary raw ma-

terials, with not only remelting, but also the subsequent separation of components. It seems that, in compiling the reference tables, primarily for individual metals and salts, the authors did not always select the best source of these data.

The monograph by Kazantsev and co-authors is of interest for engineers and technicians working in the field of utilization of secondary aluminum-containing raw materials and is also of use for specialists in processing of various secondary raw materials in nonferrous metallurgy.

A. G. Morachevskii