

Preface—Second Edition

Some time has passed since the first edition of *Refractories for Aluminium: Electrolysis and the Cast House* was published. The author, looking at the printed form of the manuscript, considered that some parts of Chap. 1, “The properties of refractory and heat insulation materials,” are too academic and might be considered too divorced from real life. The decision was made to add some material with real failures of refractory materials due to thermal shock and to insufficient thermomechanical characteristics. Real problems associated with the measurement of the thermal conductivity of refractory and heat insulation materials and a comparison of the values obtained using stationary and nonstationary (dynamic) methods of measurement were also given space in Chap. 1.

One idea in the first edition was to describe the typical defects of carbon cathode blocks and refractories that could lead to shutdowns of reduction cells. It seemed like a good idea, and in the second edition even more attention is paid to defects in carbon cathode blocks and their origins. The possible origins of defects in silicon carbide side lining blocks are also discussed in Chap. 2.

In Chap. 2, a small subsection, “Minimum porosity or minimum pore size dimension?,” is added in the part describing the processing of carbon cathode blocks; moreover, a brief discussion in the subsection “Corrosion resistance or oxidation resistance?” devoted to silicon nitride–bonded silicon carbide side lining materials was added.

Chapter 3, “Refractories and heat insulation materials for cast houses,” remains almost unchanged – a small subsection, “Considerations on future trends – Physical chemistry or technical improvements?,” was added at the end of the chapter.

There is probably no need to repeat all the warm words of gratitude and acknowledgement expressed in the first edition, but nonetheless, I’d like once again to convey my deepest appreciation to all those who deserve it.

I’m very grateful to Dr. Egil Skybanmoen and Dr. Wang from SINTEF (Norway) for fruitful discussions on the corrosion resistance of silicon carbide side linings. Many thanks for their discussions and comments to Prof. Halvor Kvande from Norwegian University of Science and Technology, Mr. Vinko Potocnik,

Dr. Thorsten Thonnesen (RWTH, Germany), Mr. Sergey Akhmetov (EGA), and Mr. Vasily Borisov (RUSAL).

Scientific discussions with Prof. Barry Welch and with Dr. Asbjørn Solheim (SINTEF, Norway) will be recalled for a long time to come.

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