

FIRE Compendium Series Vol. 1

Refractory Castable Engineering

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Dedicated to a readership of academia, students, refractory manufacturers and refractory user industries from the sectors of iron and steel, non-ferrous metals, aluminium, cement, lime, glass and ceramics, high-performance composites and coatings, foundry, petrochemical, power generating and waste incineration.

The book addresses the fundamentals of refractory castable engineering with three distinct themes being presented in a sequence that not only considers the formulation concepts and properties but also the features and the optimization of different systems. Three chapters are dedicated to the fundamentals of formulation design linked to dispersion, particle size distribution and packing, and different binder additives. Subsequent chapters then address the installation and drying steps, as well as the effects associated with the main castable processing stages. The last four chapters move on to highlight the properties and optimization of traditional and novel monolithic formulations containing Magnesia, Spinel or Carbon and a treatise on the family of special castables. This perspective demonstrates the authors' objectives to illustrate the various and complex steps and fundamentals involved in the design, processing and applications of these products. Furthermore, by applying the presented fundamentals for the development and production of such materials, high-performance castables can be developed, aiming to extend the equipment working life and cope with aggressive operational conditions. The authors were led by one of the world's experts in the field of monolithic refractories, Prof. Victor C. Pandolfelli, from Federal University of Sao Carlos in Brazil, who compiled with his co-authors Dr. Ana Paula da Luz and Dr. Mariana A.L. Braulio this ten chapter book dedicated to the engineering of modern refractory systems. The book is unique as its content has been reviewed by fellow experts worldwide in the field of castables with Prof. Michel Rigaud acting as executive editor. It thus represents unrivalled peer reviewed content in terms of castable engineering compared to previous publications and provides the reader with a unifying holistic view of such complex subject.

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