

1. Record Nr.	UNINA9910796608203321
Titolo	Cementitious materials : composition, properties, application / / edited by Herbert Pöllmann
Pubbl/distr/stampa	Berlin, [Germany] ; ; Boston, [Massachusetts] : , : De Gruyter, , 2017 ©2017
ISBN	3-11-047391-7
Descrizione fisica	1 online resource (518 pages) : illustrations (some color), tables, graphs
Classificazione	UQ 8200
Disciplina	624.1833
Soggetti	Cement Cement - Mechanical properties Concrete
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Frontmatter -- Preface -- Contents -- Part I: Cement composition and hydration -- 1. Diffraction and crystallography applied to anhydrous cements / De la Torre, Ángeles G. / Santacruz, Isabel / León-Reina, Laura / Cuesta, Ana / Aranda, Miguel A.G. -- 2. Diffraction and crystallography applied to hydrating cements / Aranda, Miguel A.G. / Cuesta, Ana / De la Torre, A.G. / Santacruz, Isabel / León-Reina, Laura -- 3. Synthesis of highly reactive pure cement phases / Raab, Bastian / Pöllmann, Herbert -- 4. Thermodynamic modelling of cement hydration: Portland cements - blended cements - calcium sulfoaluminate cements / Lothenbach, Barbara / Winnefeld, Frank -- Part II: Special cement and binder mineral phases -- 5. Role of hydrotalcite-type layered double hydroxides in delayed pozzolanic reactions and their bearing on mortar dating / Artioli, G. / Secco, M. / Addis, A. / Bellotto, M. -- 6. Setting control of CAC by substituted acetic acids and crystal structures of their calcium salts / Kaden, R. / Poellmann, H. -- 7. Crystallography and crystal chemistry of AFm phases related to cement chemistry / Stöber, S. / Pöllmann, H. -- Part III: Cementitious and binder materials -- 8. Chemistry, design and application of hybrid alkali activated binders / Gao, X. / Yuan, B. / Yu,

Q.L. / Brouwers, H.J.H. -- 9. Binding materials based on calcium sulphates / Pritzel, Christian / Kowald, Torsten / Sakalli, Yilmaz / Trettin, Reinhard -- 10. Magnesia building material (Sorel cement) - from basics to application / Freyer, Daniela -- 11. New CO₂-reduced cementitious systems / Stemmermann, Peter -- 12. Composition and properties of ternary binders / Bier, Thomas A. -- Part IV: Measurement and properties -- 13. Characterization of microstructural properties of Portland cements by analytical scanning electron microscopy / Rößler, Christiane / Möser, Bernd / Ludwig, Horst-Michael -- 14. Correlating XRD data with technological properties / Westphal, Torsten / Bier, Thomas A. -- 15. No cement production without refractories / Södje, Johannes -- Index

Sommario/riassunto

Aside from water the materials which are used by mankind in highest quantities are cementitious materials and concrete. This book shows how the quality of the technical product depends on mineral phases and their reactions during the hydration and strengthening process. Additives and admixtures influence the course of hydration and the properties. Options of reducing the CO₂-production in cementitious materials are presented and numerous examples of unhydrated and hydrated phases and their formation conditions are discussed. This editorial work consists of four parts including cement composition and hydration, Special cement and binder mineral phases, Cementitious and binder materials, and Measurement and properties. Every part contains different contributions and covers a broad range within the area.

Contents

Part I: Cement composition and hydration

- Diffraction and crystallography applied to anhydrous cements
- Diffraction and crystallography applied to hydrating cements
- Synthesis of highly reactive pure cement phases
- Thermodynamic modelling of cement hydration: Portland cements - blended cements - calcium sulfoaluminate cements

Part II: Special cement and binder mineral phases

- Role of hydrotalcite-type layered double hydroxides in delayed pozzolanic reactions and their bearing on mortar dating
- Setting control of CAC by substituted acetic acids and crystal structures of their calcium salts
- Crystallography and crystal chemistry of AFm phases related to cement chemistry

Part III: Cementitious and binder materials

- Chemistry, design and application of hybrid alkali activated binders
- Binding materials based on calcium sulphates
- Magnesia building material (Sorel cement) - from basics to application
- New CO₂-reduced cementitious systems
- Composition and properties of ternary binders

Part IV: Measurement and properties

- Characterization of microstructural properties of Portland cements by analytical scanning electron microscopy
- Correlating XRD data with technological properties
- No cement production without refractories