

| | |
|-------------------------|--|
| 1. Record Nr. | UNINA9910138864803321 |
| Titolo | Self-compacting concrete [[electronic resource] /] / edited by Ahmed Loukili |
| Pubbl/distr/stampa | London, : ISTE Hoboken, N.J., : Wiley, 2011 |
| ISBN | 1-118-60216-1 1-118-60196-3 1-118-60214-5 1-299-18768-4 |
| Descrizione fisica | 1 online resource (278 p.) |
| Collana | ISTE |
| Altri autori (Persone) | LoukiliAhmed |
| Disciplina | 620.1/36 620.136 |
| Soggetti | Self-consolidating concrete Electronic books. |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Note generali | Description based upon print version of record. |
| Nota di bibliografia | Includes bibliographical references and index. |
| Nota di contenuto | Cover; Self-Compacting Concrete; Title Page; Copyright Page; Table of Contents; Introduction; Chapter 1. Design, Rheology and Casting of Self-Compacting Concretes; 1.1. Towards a fluid concrete; 1.1.1. Area of application; 1.2. SCC formulation basics; 1.2.1. Overview; 1.2.2. Specificity of SCC formulation; 1.2.3. Design methods for SCC; 1.3. SCC rheology; 1.3.1. Fundamental concepts; 1.3.2. Rheological characteristics: methods and ranges of measured values; 1.3.3. Rheology at different scales; 1.3.4. Evolution in rheology during casting - thixotropy; 1.4. Industrial practices 1.4.1. Determining rheology during mixing and transport 1.4.2. Pumping; 1.5. Forces exerted by SCCs on formworks; 1.5.1. Important parameters; 1.5.2. Changes in pressure against a formwork; 1.5.3. Adapting the casting conditions; 1.5.4. Modeling pressure; 1.6. Bibliography; Chapter 2. Early Age Behavior; 2.1. Introduction; 2.2. Hydration and its consequences; 2.2.1. Hydration; 2.2.2. Setting; 2.2.3. Chemical shrinkage and endogenous shrinkage; 2.2.4. Heat release, thermal contraction and the risk of cracking; 2.3. Early age desiccation |

and its consequences: different approaches to the problem

2.4. Plastic shrinkage and drop in capillary pressure
2.4.1. Analysis of studied phenomena; 2.5. Comparison of plastic shrinkage for SCCs and conventional concretes; 2.5.1. Controlled drying; 2.5.2. Forced drying; 2.6. Influence of composition on free plastic shrinkage; 2.6.1. Influence of the paste composition; 2.6.2. Influence of the paste proportion; 2.7. Cracking due to early drying; 2.7.1. Experimental apparatus; 2.7.2. Comparison of SCCs and conventional concretes; 2.8. Summary; 2.9. Bibliography; Chapter 3. Mechanical Properties and Delayed Deformations; 3.1. Introduction

3.2. Instantaneous mechanical properties
3.2.1. Time-evolution of compressive strength; 3.2.2. Tensile strength; 3.2.3. Elastic modulus; 3.3. Differences in mechanical behavior; 3.3.1. Free shrinkage; 3.3.2. Restrained shrinkage; 3.3.3. Evolution and prediction of delayed deformations under loading, creep deformations; 3.4. Behavior of steel-concrete bonding; 3.4.1. Anchorage capacity; 3.4.2. Transfer capacity of reinforcement tensile stress to concrete and cracking; 3.5. Bibliography; Chapter 4. Durability of Self-Compacting Concrete; 4.1. Introduction

4.2. Properties and parameters that influence durability
4.2.1. Mechanical strength; 4.2.2. Porosity and properties of the porous network; 4.2.3. Absorption; 4.3. Transport phenomena; 4.3.1. Permeability; 4.3.2. Diffusion; 4.4. Degradation mechanisms; 4.4.1. Reinforcement bar corrosion risk; 4.4.2. Aggressive water; 4.5. Conclusion; 4.6. Bibliography; Chapter 5. High Temperature Behavior of Self-Compacting Concretes; 5.1. Introduction; 5.2. Changes in SCC microstructure and physico-chemical properties with temperature; 5.2.1. Physico-chemical properties

5.3. Mechanical behavior of SCCs at high temperature

Sommario/riassunto

Self-Compacting Concrete (SCC) is a relatively new building material. Nowadays, its use is progressively changing the method of concrete placement on building sites. However, the successful use of SCC requires a good understanding of the behavior of this material, which is vastly different from traditional concrete. For this purpose, a lot of research has been conducted on this area all over the world since 10 years. Intended for both practitioners and scientists, this book provides research results from the rheological behavior of fresh concrete to durability.