1. Record Nr. UNINA9910164136803321

Titolo	Bio-aggregates Based Building Materials : State-of-the-Art Report of the RILEM Technical Committee 236-BBM / / edited by Sofiane Amziane, Florence Collet
Pubbl/distr/stampa	Dordrecht : , : Springer Netherlands : , : Imprint : Springer, , 2017
ISBN	94-024-1031-7
Edizione	[1st ed. 2017.]
Descrizione fisica	1 online resource (XXXIII, 263 pages) : illustrations
Collana	RILEM State-of-the-Art Reports, , 2213-204X ; ; 23
Disciplina	620.13
Soggetti	Building materials Biomaterials Mechanics Mechanics, Applied Sustainable architecture Building Materials Theoretical and Applied Mechanics Sustainable Architecture/Green Buildings
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Chapter 1. Chemical composition of bioaggregates and their interactions with mineral binders -- 1.0 Introduction -- 1.1 Composition of hemp stem -- 1.2 Processing of hemp stem and microstructure of hemp shiv -- 1.3 Cell wall components -- 1.4 Chemical composition of bioaggregates -- 1.5 Surface characterization of bioaggregates – adhesion between lignocellulosic aggregates and a mineral binder -- 1.6 Chemical interactions between bioaggregates and mineral binders -- 1.7 Conclusion -- References -- Chapter 2. Porosity, pore size distribution, micro-structure -- 2.0 Introduction -- 2.1 Techniques used to measure porosity -- 2.2 Conclusion -- References -- Chapter 3. Water absorption of plant aggregate -- 3.0 Introduction -- 3.1 Wetting of porous, heterogeneous surfaces -- 3.2 Transfer phenomena in a porous medium -- 3.3 Analogy with adhesion of mortars to a porous support -- 3.4 Overview of the processes of binder/wood adhesion -- 3.5 Conclusion -- References -- Chapter 4.

Particle Size Distribution -- 4.0 Introduction -- 4.1 General characteristics of shiv particles -- 4.2 Sieving methods -- 4.3 Image-processing methods -- 4.4 Image-analysis -- 4.5 Characterization of the PSD -- 4.6 Conclusions -- References -- Chapter 5. Bulk density and compressibility -- 5.0 Introduction -- 5.1 Density and porosity, case of hemp shiv -- 5.2 Bulk compressibility -- 5.3 Conclusions and perspectives -- References -- Chapter 6. Hygric and thermal properties of bio-aggregate based building materials -- 6.0 Introduction -- 6.1 Hygric properties -- 6.2 Thermal properties -- 6.3 Concluding remarks on hygrothermal behavior of bio-aggregate based building materials -- References -- Chapter 7. Bio-aggregate based building materials exposed to fire7.1 Introduction -- 7.2 Fire reaction -- 7.3 Fire resistance -- 7.4 Real scale fire tests -- 7.5 Other quaint matter fire test -- References -- Chapter 8. Durability of bio-based concretes -- 8.0 Introduction -- 8.1 Accelerated aging protocols for bio-based construction materials -- 8.2 Aging of bio-based concretes -- 8.3 Aging of natural fibres-cement composites -- 8.4 Concluding remarks -- References -- Chapter 9. Effect of testing variables (method of production) -- 9.0 Introduction -- 9.1 Materials and methods -- 9.2 Results -- 9.3 Conclusion -- Acknowledgments -- References -- APPENDIX : Technical Committee Report - Rilem TC 236 BBM - Bio based Building Materials - Round Robin test for hemp shiv Characterisation -- Round Robin Test For Hemp shiv Characterisation -- Part 1 : Evaluation Of Initial Water Content And Water Absorption -- 1 Introduction -- 2 Material -- 52% -- 18% -- 2.1 Microscopical description -- 3 Initial Water Content -- 3.1 Methods -- 3.2 Results -- 3.3 Concluding remarks on initial water content -- 4 Water Absorption -- 4.1 Description of the experimental methods -- 4.2 Results -- 4.3 Concluding remarks -- Summary of Findings -- Round Robin Test For Hemp shiv Characterisation -- Part 2: Bulk Density And Particle Size Distribution -- 5 Introduction -- 6 Material -- 52% -- 18% -- 7 Bulk Density -- 7.1 Methods -- 7.2 Results -- 7.3 Concluding remarks on bulk density -- 8 Particle Size Distribution -- 8.1 Sieving method -- 8.2 Image processing -- 8.3 Comparison between sieving and image analysis results -- 8.4 Concluding remarks on Particle Size Distribution -- Summary Of Findings -- Acknowledgements -- Round Robin Test For Hemp shiv Characterisation -- Part 3 : Thermal Conductivity -- 9 Introduction -- 10 Material -- 52% -- 18% -- 11 Thermal Conductivity -- 11.1 Experimental methods -- 11.2 Results -- 11.3 Concluding remarks -- Summary Of Findings -- Acknowledgements. .

Sommario/riassunto

The work of the RILEM Technical Committee (TC -236 BBM) was dedicated to the study of construction materials made from plant particles. It considered the question whether building materials containing as main raw material recyclable and easily available plant particles are renewable. This book includes a state-of-the-art report and an appendix. The state-of-the-art report relates to the description of vegetal aggregates. Then, hygrothermal properties, fire resistance, durability and finally the impact of the variability of the method of production of bio-based concrete are assessed. The appendix is a TC report which presents the experience of a working group. The goal was to define testing methods for the measurement of water absorption, bulk density, particle size distribution, and thermal conductivity of bio aggregates. The work is based on a first round robin test of the TC-BBM where the protocols in use by the different laboratories (labs) are compared. .