V International Conference on Progress of Recycling in the Built Environment (V.PRE 2023)

RILEM Proceedings Pro 137

Weimar, Germany 10-12 October 2023

Editors:

Ines Doring Yury Villagran Zaccardi Anette Muller

ISBN: 978-1-7138-9238-0

Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571

Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2023) by RILEM Publications All rights reserved.

Printed with permission by Curran Associates, Inc. (2025)

For permission requests, please contact RILEM Publications at the address below.

RILEM Publications 4 avenue du Recteur Poincare 75016 Paris France

Phone: +33 1 42 24 64 46 Fax: +33 9 70 29 51 20

dg@rilem.net

Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA Phone: 845-758-0400

Fax: 845-758-2633

Email: curran@proceedings.com Web: www.proceedings.com

V International Conference Progress of Recycling in the Built Environment, 10-12 October 2023, Weimar, Germany

Contents

Title	Correspondig author	Page
New and enhanced processing techniques for CDW Progresses and challenges in recycling of Construction and Demolition Waste	Anette Müller	1
Advanced dataset acquisition for improved Construction and Demolition Waste classification using Machine Learning	Tomáš Zbíral	10
Steel recovery from reinforced concrete elements	Leonardo C.	18
Characterisation of pozzolanic activity of masonry rubble by spectrophotometry	Machado Alexander Winkel	26
Determination of material parameters using multispectral sensoring	Ina Reichert	34
RecycleBIM: a framework for the circularity of construction materials through digital modelling	Manuel Parente	42
Pure brick sand from Construction and Demolition Waste (CDW) through magnetic sorting	Annett Lipowsky	52
New sources for secondary gypsum	Karin Weimann	60
Hydration kinetics of cement-lime binders with Construction and Demolition Waste fines for masonry applications	Vadim Grigorjev	70
Innovative solutions for products based on CDW Use of limestone filler to promote separability between cement paste and natural aggregate: a circular economy strategy for concrete	Tatiane I. Hentges	77
Lightweight aggregates made from Construction and Demolition Waste – application in lightweight concrete and mortars	Julia Seher	85
Comparative study of lightweight expanded aggregates made from masonry rubble or clay	Katrin Rübner	93
Optimization of mixture design of 3D printable concrete produced with recycled aggregates from 3D printed concrete waste	Pawel Sikora	101
Eco-mortars for shotcreting in circular construction	Natalia A. Valoni	109
Performance and durability of products with/from recycled materials The combined roles of cement type and recycled concrete aggregate on the formation of the interfacial transition zone	Bruno Fernandes	116
Recycled aggregate concrete dosed with optimized mixtures: properties in fresh and hardened state	José E. Lima	124

V International Conference Progress of Recycling in the Built Environment, 10-12 October 2023, Weimar, Germany

Title	Correspondig author	Page
Ecological Concrete Mix Design using carbonated recycled aggregate and a low clinker cement	Paul Dengler	132
Simultaneous recovery of the fine and coarse fraction of mixed recycled aggregates in designing structural eco-concrete	César Medina Martinez	141
Optimizing self-compacting mortar mixes with recycled wash-sludge fines	Yury A. Villa- gran-Zaccardi	148
Contributions of CDW recycling against the shortage of raw materials Overcoming technical and regulatory barriers for a better circular economy in construction industry	Luc Courard	155
Characterization, activation of washing slurry powder and exploitation in cement blends	Jingwen Liu	163
The importance of physical and mechanical characterization of earth material before its reuse	Maria Idália Gomes	171
Construction and Demolition Waste as fine aggregate in mortar matrices: a review	Ana Antunes	179
Research approaches for recycling calcium sulfate flowing screeds	Andreas Hecker	188
FROM RECYCLING TO CIRCULARITY - HOW A CIRCULAR DESIGN APPROACH CAN MAKE OUR BUIDLINGS BETTER FOR THE ENVIRONMENT AND ITS INHABITANTS	Angie Müller-Puch	195
$\begin{array}{c} \textbf{Contributions of recycling against CO}_2 \ emission \\ \textbf{Development of calcium carbonate concrete for permanent resource recycling} \\ \textbf{and carbon neutrality} \end{array}$	Takafumi Noguchi	203
Thermally reactivated cements and their hydration ability	Neshable Noel	211
Sodium silicate from Waste Glass Cullet as an activator for Cement-Less Concrete	Daniel W. McCloskey	219
CDW as sources of CO2 absorption	Catarina Brazão Farinha	227
Evaluation of the use of Recycled Concrete Powder (RCP) in the workability and compressive strength of Portland cement pastes	Joaquin H. A. Rocha	235
Zero-emission circular concrete	Peter Stemmermann	243
Case studies CLOSER - A project implementing predemolition audits in Portugal	Isabel Martins	248
Construction and Demolition Waste recycling in Brazil: evolution and challenges	Leonardo C. Machado	255