

Table of Contents

Preface and Committees

Chapter 1: Binders

Mechanism of Immobilization of Toxic Elements in Special Binders T. Staněk and P. Sulovský	3
Dispersants for Dual Binding System Kaolin - Calcium Aluminate Cement R. Sokolař	10
Diffusion Parameters of Basic Diffusion Adhesive Mortars with Silicate or Acrylic Plaster Š. Nenadálova, L. Balík, M. Rydval and T. Bittner	16
Hydration of Synthetized Clinker Phases C₃S and C₃A with Metakaolin in Isothermal Conditions M. Boháč, R. Novotný, J. Másilko, T. Opravil, F. Šoukal, R.S. Yadav and M. Palou	23
Substitution of Limestone in Raw Mixture for Burning Portland Cement by FBC Ash R. Magrla, K. Kulísek, K. Dvořák and D. Gazdič	31
Influence of Chemical Admixtures on Properties of Alkali-Activated Slag-Based Mortars V. Bílek Jr., L. Kalina, J. Koplík, R. Novotný, M. Hajdúchová and T. Opravil	37

Chapter 2: Composite Materials

Production of Self Compacting Concrete SCC with Portland and Blended Cement CEM I, CEM II with Fly Ash and Limestone Admixtures K. Křížová, P. Novosad and T. Jarolím	45
Evaluation of Mechanical Properties of Glass/Epoxy Syntactic Foams Containing Carbon Nanotubes and Nanosilica M. Drdlová, M. Frank, J. Buchar and R. Řídký	51
Mechanical Fracture Properties of Cement Mortars with Diatomite in Relation to their Microstructure P. Rovnaníková, H. Šimonová, P. Schmid, J. Zahálková, P. Bayer, I. Havlíková and Z. Keršner	57
Hygrothermal Behaviour of Newly Developed Thermal Insulation Plasters with Natural Fibres J. Hroudová, M. Sedlmajer and J. Zach	63
Cementitious Composites in Severe Environmental Conditions - Dynamic Loading S. Rehacek, I. Šimunek, D. Čítek and J. Kolisko	69
Study of Surface Treatment of Freshly Fabricated Concrete Roof Tiles T. Solny, J. Másilko, J. Švec, I. Kolarova, J. Kratochvil, L. Parizek and J. Bednarek	76
Experimental Tests of White UHPC Plates Reinforced by PVA Fibres and Textile Glass Reinforcement T. Bittner, P. Tej, M. Vokáč, P. Bouška and Š. Nenadálova	83
Fibre Reinforced Polymer Rebar J. Prokeš	89
Study of Hygrothermal Behavior of Insulation Materials Based on Natural Fibers J. Zach and J. Hroudová	97
Ballistic Performance of Al₂O₃ and SSiC Ceramic with Areal Density of 26 kg/m² against 7.62 mm Calibre Projectiles P. Bayer, J. Krátký, D. Drdlík and M. Popovič	103
Possibilities of Using Natural Fibres for Production of Particular Insulation for Use in Civil Engineering M. Reif, J. Hroudová and J. Zach	111
Research of Behaviour of Inorganic Matrix Composites Exposed to Extreme Temperatures Á. Dufka and T. Melichar	117
Development of Fibre-Cement Composites with Self-Cleaning and de-NO_x Ability M. Boháč, R. Čechmánek and T. Staněk	123

Hempcrete - Cement Composite with Natural Fibres K. Mikulica and R. Hela	130
--	-----

Chapter 3: Building Materials Based on Secondary Raw Materials

Freeze-Thaw Resistance with Sodium Chloride Solution of Fly-Ash Concrete Mixtures T. Váchal, R. Šulc and P. Svoboda	137
Effect of Polymer Admixtures on Mechanical Properties of Alkali-Activated Slag Mortars O. Mikhailova and P. Rovnaník	145
Influence of Grinding Processes on Gypsum Microstructure I. Hájková, K. Dvořák, D. Dolak and M. Fridrichová	151
Effect of Different Cooling Conditions on the Properties of Composite Materials with Cement Based Matrix T. Melichar and J. Bydžovský	156
Influence of Binder and Filler Modification of Composite Materials for Extreme Conditions on Development in Time Parameters T. Melichar, J. Bydžovský and Á. Dufka	164
Influence of the Fly Ash Character on Quality of Artificial Aggregate V. Černý	170
Sintered Artificial Aggregate with New Correction Raw Materials V. Černý	177
Possibilities of Development of Thermal Insulating Materials Based on Waste Textile Fibers M. Sedlmajer, J. Zach and J. Hroudová	183

Chapter 4: Technology and Testing Methods

The Use of Simulation Models for Complex Description of Permittivity of Building Materials I. Kusák, M. Lunak and L. Carbol	191
Changes of Electrical Parameters of Cement Chipboards Cetris-Basic after Freezing Cycle I. Kusák and M. Lunak	197
Nondestructive Testing of Moist Cetris-Basic Wood-Cement Chipboards by Using Impedance Spectroscopy M. Luňák and I. Kusák	203
Stress Distribution in Joints in Panel Structures P. Svoboda and K.H. Winter	209
Influence of Superplasticizer Quantity on Formation of Micro-Cracks during Setting and Hardening of Concretes by Acoustic Emission Method L. Topolář, K. Timcakova and P. Misák	219
Determination of the Influence of Carbonation of Concrete and Corrosion of Steel on Reinforced Concrete Condition K. Timcakova, D. Štefková and Z. Chobola	225
Correlation between Parameters of Acoustic Emission and Fracture Characteristics Obtained from Three-Point Bending Test L. Topolář and L. Pazdera	231
Influence of Aeration of Concrete on Acoustic Emission and Fracture Mechanical Parameters Obtained from Three-Point Bending Tests L. Topolář, H. Šimonová, P. Misák, P. Daněk, Z. Keršner and L. Pazdera	237
A Methodology for Evaluation of Shockwave Absorption by Blast Energy-Absorption Materials O. Koutný, J. Krátký, M. Popovič and M. Drdlová	243
Multichannel Laboratory Device for Measurement of Smart Concrete Material Properties L. Machan and P. Steffan	249
Possibilities of Aerated Concrete Remediation through the Usage of Injection Screens J. Melichar, R. Drochytka and P. Dohnálek	255

Application Possibilities of Hydrophobised Ceramic Walling in Areas with Higher Risk of Floods	
J. Zach, V. Novák, M. Sedlmajer and J. Hroudová	261
The Application of NUS Method for Concrete-Covered Steel Corrosion Monitoring	
M. Matysík and K. Timcakova	267
Influence of Water Content on Fundamental Frequency of Mortar Sample	
L. Carbol, J. Martinek and I. Kusák	273
Correct Choice of Maximum Length Sequence in Nondestructive Testing	
L. Carbol, J. Martinek and D. Štefková	280
Permeability Measurement of High Performance Concrete at Elevated Temperature Employing a New Test Set-Up	
M. Fiedlerová, J. Kirnbauer and H. Bruckner	288
Comparison of Modal Analysis Using FEM and Eigenfrequency Measurements	
J. Martinek and L. Carbol	294
Impact-Echo Method for Non-Destructive Testing of High-Temperature-Degraded Cement-Based Composite	
D. Štefková, K. Timcakova and Z. Chobola	301
Experimental Verification of Properties of Roller-Compacted Concrete for Pavements	
P. Bílý, J. Fládr and M. Haase	307
One-Year Sulfate Attack on Various Types of Fine Grained Concrete	
M. Vyšvařil and M. Rovnaníková	313
Comparison of Bond Behaviour between Reinforcement and UHPC and Ordinary Concrete in Extreme Conditions	
D. Čítek, T. Mandlík, J. Kolísko and S. Řeháček	319