

Table of Contents

Preface and Scientific Committee

Chapter 1: Binders

The Influence of Sodium Sulphite on Portland Clinker Hydration M. Hajdúchová, F. Šoukal, J. Másilko and J. Havlica	3
Potential Application of Belite Clinker T. Staněk	7
Preparation of Alternative Hydraulic Binder Based on Secondary Raw Materials J. Švec, T. Opravil and J. Másilko	12
The Effect of Boron and its Compounds on Setting of Portland Cement J. Kratochvíl, T. Opravil and P. Diviš	16
Combination of Various Admixtures as Partial Replacement for Portland Cement and the Influence on the Final Concrete Properties K. Křížová and R. Hela	20
Hydration of Calcium Aluminate Phases at Different Temperatures J. Koplík, L. Tomala and R. Novotný	24
Recycled Poly(Vinyl Butyral) Used as a Barrier to Prevent Mortar Carbonation M. Tupý, D. Štefková, K. Sotiriadis, L. Krmíček, L. Carbol and V. Petranek	28
Testing of Surface Photoactivity of Fibre-Cement Composites M. Boháč, T. Staněk and P. Urbánek	35
The Role of Metakaolin Fineness on Rheological Properties of Cement Pastes M. Boháč, T. Opravil, E. Bartoníčková, F. Frajkorová and M. Palou	39
The Influence of Zinc on the Hydration and Compressive Strength of Portland Cement I. Kolářová, P. Šiler and F. Šoukal	43
Calcium Aluminate Cement and Porcelain R. Sokolař and L. Vodová	47
Monitoring the Influence of Dehydrating Solutions for the Production of Alpha Gypsum K. Dvořák, I. Hájková and K. Havlíčková	51
Synthetic Preparation of Ettringite M. Fridrichová, K. Dvořák, K. Kulísek, A. Masárová and K. Havlíčková	55
Influence of Storage Conditions on Quality of Fly Ashes H. Kalousová, E. Bartoníčková and T. Opravil	59
Laboratory Preparation of a Ternary Binder System E. Hlavinková, M. Fridrichová, D. Gazdič and K. Havlíčková	63
Effect of Mechanical Activation on Properties of Alkali Activated Binders M. Sisol, J. Mosej, M. Drabová and I. Brezani	67

Chapter 2: Composite Materials

Influence of Material Properties of Input Raw Materials on Microstructure of Aerated Concrete E. Helanová, R. Janovský and R. Drochytka	73
Workability Assessment of the Mixture for the Production of Cement-Bonded Particleboards with Modified Composition J. Bydžovský, T. Melichar, D. Konečný and Š. Keprdová	77
Study of Parameters of New Polymer-Cement Composites after Exposure to Extreme Temperatures T. Melichar, J. Bydžovský and Š. Keprdová	81
The Effect of the Type of Reinforcement on the Mechanical Parameters of Concrete and on its Explosion Resistance M. Drdlová, R. Holešinský, R. Řídký and J. Křest'an	85

Timber - Concrete Structural Element with Glued Steel Mesh	91
J. Daňková	
Study of Ballistic Textiles Based on Ultra-High Strength Fibres	97
R. Mikulíková, J. Křesťan, A. Dvořák, S. Rolc and J. Krátký	
Filler from Expanded Glass as a Light-Weighing Component of the Cement Composite with Fiber Reinforcement	102
R. Čechmánek, V. Prachař and J. Loskot	
Properties of Concretes with Admixture of Natural Zeolite	106
M. Sedlmajer, A. Hubáček and P. Rovnaníková	
Properties of Cement Based Composite with Fine Ground Recycled Concrete	110
K. Šeps and I. Broukalová	
Modified MDF Composites Intended for the Refractory Application	114
J. Máslík, E. Bartoňíčková and R. Novotný	
Effect of Water-Soluble Carbon Nanotubes on the Mechanical Properties and early Hydration of Alkali-Activated Slag	118
P. Rovnaník and P. Bayer	
Mechanical Properties of MWCNT Modified Syntactic Foams with High Volume Fraction of Glass Microspheres	122
M. Drdlová, M. Frank, J. Buchar and J. Krátký	
Influence of Different Types of Fine Aggregate on Cement Composites Resistance to High Temperatures	126
T. Melichar and J. Bydžovský	

Chapter 3: Building Materials Based on Secondary Raw Materials

Utilisation of Polyurethane (PUR) Granulate in Development of New Insulating Materials	133
J. Zach, V. Novák and J. Hroudová	
Influence of Industrial By-Products on Shrinkage of Alkali-Activated Slag	137
V. Bílek Jr., L. Kalina, E. Bartoňíčková and T. Opravil	
The Application of Air-Entraining Admixtures for the Development of Heat Insulating Moulded Refractory Concretes	141
J. Bednárek, F. Soukal, R. Novotný and K. Lang	
Cyclic Weathering of Wood - Polymer Composite Modified by a Fly Ash Admixture	145
A. Benešová, J. Vanerek, R. Drochytka and K. Havlíčková	
Modelling of Influence of Heat Curing on Mechanical Properties of Fly-Ash Concrete Mixtures	150
T. Váchal, R. Šulc and P. Svoboda	
Treatment of Timber by Nanofiber Fabric with Biocide Compound	154
Z. Rácová, P. Hrochová and P. Ryparová	
Limestone Sludge in the Brick Body	158
R. Sokolař, L. Vodová and M. Šveda	
Behavior of Class C Fly Ash during Firing at High Temperatures	162
L. Vodová and R. Sokolař	
Study on the Process of Creating Fly Ash Body	166
V. Černý and Š. Keprdová	
Utilization of Bottom Ash for Sintered Artificial Aggregate	170
V. Černý	
Application of Metakaoline in Autoclaved Aerated Concrete Technology	174
O. Koutný, T. Opravil and J. Pořízka	
Utilization of Materials from the Production of Mineral Wool into Construction Materials	178
P. Leber, R. Čechmánek, P. Bibora, I. Chromková and M. Vyvážil	
Thermal Insulating Alkali-Activated Systems	182
F. Khestl, J. Boháčová and S. Staněk	
Dielectric Spectral Differences for Concrete with Shredded Automobile Tires as an Admixture	186
M. Lunak, I. Kusak, D. Štefková, M. Tupý and K. Sotiriadis	
Concrete with High Content of Fly-Ash for Common Use in the Czech Republic	190
H. Sachova, P. Hunka, J. Kolisko, S. Řeháček and D. Čítek	

Chapter 4: Technology and Testing Methods

Quantification of Micro-Cracks by Acoustic Emission Method during Setting and Hardening of Concrete	
L. Topolář	199
Impact Resistance of Steel Fibre Reinforced Thin-Walled Shell Structures	
S. Reháček, P. Huňka, D. Čítek and I. Šimůnek	203
Characterization of Thermal Stress of Building Materials Containing Rubber Granulate by Alternating Electric Field	
I. Kusák, M. Lunak, Z. Chobola, M. Tupý and K. Sotiriadis	207
Masonry Cements with Fines from Aggregate Production	
J. Brožovský	211
Effect of Titanium-Dioxide-Enriched Nanotextiles on Cementitious Composite Exposed to Severe Environmental Conditions	
P. Bíly, A. Kohoutková, P. Ryparová and Z. Rácová	215
Measuring of the Penetration Rate of Injection Gels during Remediation of Various Building Materials	
R. Drochytka, J. Melichar and P. Dohnálek	219
Development of Thermal Insulating Plasters with Regulated Capillary Activity	
J. Zach, J. Hroudová, M. Reif and A. Korjenic	223
Study of Heat Transfer Process in Structure of Thermal Insulating Materials Based on Natural Fibers	
J. Zach, J. Hroudová, M. Sedlmajer and A. Korjenic	227
Utilization of XPS Analysis for the Characterization of Mechanochemical Activation in Polymer-Cement Composite Materials	
L. Kalina, D. Matoušek and F. Šoukal	231
Pore Structure Analysis of Portland Cement and Blended Portland Cements Cured under Hydrothermal Conditions	
T. Ifka, M. Palou, M. Kuliffayova, M. Boháč, F. Frajkorová and L. Bagel	235
Monitoring of Reinforced Concrete Structure Corrosion by Using Impact-Echo Method	
K. Šamárková, D. Štefková and Z. Chobola	239
The Occurrence of Cyanobacteria and Green Algae on Facades of Historical Sacral Buildings	
R. Wasserbauer, Z. Rácová, I. Loušová and M. Lecák	243
Assessment of Bond Behavior of UHPC and Prestressing Strands	
D. Čítek, J.L. Vítěk, J. Kolísko, P. Huňka and S. Reháček	247
Application of Scanning Electron Microscopy for the Purposes of Mineralized Wood Survey	
T. Murínová, M. Mamoňová, P. Mec, J. Daňková and P. Rezek	251
Application Acoustic Emission Method and Impedance Spectroscopy for Monitoring Concrete During Hardening	
L. Pazdera, L. Topolář, M. Kořenská, J. Smutný, I. Kusák and M. Lunak	257
Surface Treatment of Concrete Roof Tiles	
T. Solný, P. Kosár and L. Kalina	261
New Method for (Nano)Micro-Characterization of Materials - Correlative Microscopy	
J. Wasserbauer and M. Zmrzlý	265
High Performance Concrete Experimental Structure	
J. Fládr and A. Kohoutková	269
Technology of Production of SFRC at Concrete Plants	
V. Ráček and J. Vodička	273
The Influence of Aggregates on the Properties of Concrete	
P. Šiler, O. Bezděk, I. Kolářová, E. Bartoničková, T. Opravil and F. Šoukal	277
An Experimental Study on Acoustic Emission Signals during the Three-Point Bending Fracture Test	
M. Matysík, L. Topolář, P. Daněk, H. Šimonová, T. Vymazal and I. Plšková	281
Estimation of Impact-Echo Method for the Assessment of Long-Term Frost Resistance of Ceramic Tiles	
M. Matysík, I. Plšková and Z. Chobola	285

Plaster Pigments in Traditional Folk Architecture - A Case Study from Moravia (Czech Republic)	289
D. Všianský	
Ecological Suitability Evaluation of Composites with a Defined Waste Content	294
K. Urbánková, I. Kukletová and H. Štegnerová	
Surface Layer Parameter of Concrete in Relation to Deicing Salt Scaling Resistance	298
J. Urban, M. Kostelecká and T. Klecka	
Study of Heat Transport in Structure of Concrete	302
L. Bodnárová, J. Hroudová, J. Zach and I. Nováková	
Determination of Reflectance of Some Decorative Stones	306
M. Pospíšil	
Properties of Lightweight Thermal Insulation Plasters	310
M. Sedlmajer, J. Zach and J. Hroudová	
Porosity Evaluation of Alternative Materials Based on Portland Cement	314
L. Pařízek, E. Bartoňíčková, V. Bílek Jr. and J. Kratochvíl	
Reduction of Efflorescence in the Alkali Activated Systems	318
R. Suchý, J. Pořízka, J. Wasserbauer and L. Kalina	
The Strength of Masonry with Low Compressive Strength of Mortar	322
K. Lorenz and M. Pospíšil	
Use of Composite Elements for Monitoring of Concrete under Loading	326
J. Junek, R. Čechmánek, B. Nešpor and P. Steffan	
Mechanical Fracture Parameters of Fine-Grain Concretes with Zeolite: Effect of Composition and Origin of Cements	330
H. Šimonová, P. Schmid, Z. Keršner and P. Rovnaníková	
Non-Destructive Acoustic Testing of High-Temperature Degraded Composite Cementations Materials Containing Rubber Aggregates and Ethylen Vinyl Acetate Polymer Binder	334
D. Štefková, M. Tupý, K. Sotiriadis, K. Šamárková and Z. Chobola	
Properties of Materials from Activated Fly Ash from Fluidized Burning	338
J. Poláček and R. Šulc	
Stabilization of Indoor Humidity by Rammed Earth	342
J. Richter, K. Staněk, F. Havlik and J. Růžička	
Experimental Testing of Layered UHPFRC Beams	346
M. Rydval, J. Kolísko, P. Huňka and T. Mandlík	
Influence of Moisture and Temperature of Calcium Silicate Bricks on Results of Measurements with Rebound Hammer	352
J. Brožovský	
Effect of Admixture Dosage and Specimens Age on Mechanical Fracture Parameters of Lime Mortars Enhanced by Burnt Clays	356
H. Šimonová, I. Havlíková, E. Navrátilová, P. Schmid, P. Rovnaníková and Z. Keršner	
Problems of Watertight Concrete for the Concrete Tunnel Lining	360
A. Hubáček	