

Non-Traditional Cement & Concrete VII

Editors:

Vlastimil Bílek, Filip Khestl, Petr Miarka and Stanislav Seitl

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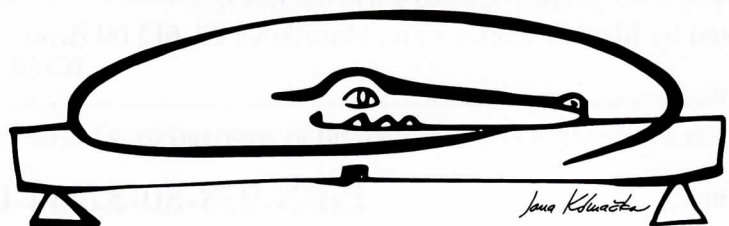
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Non-Traditional Cement & Concrete VII

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CONTENT

H. S. ABDELGADER, M. KURPINSKA, S. ABDELGADER, F. O. MOAF.....	1
THE INFLUENCE OF THE CHOICE OF CONCRETE DESIGN METHODS ON USEFULNESS AND CO ₂ EMISSIONS	
RICARDO DOS SANTOS ALFERES FILHO, QINGLIANG YU, JOS BROUWERS.....	2
EFFECT OF PARTICLE SIZE DISTRIBUTION ON THE PUMPABILITY OF 3DPC	
A. ALFOCEA-ROIG, S. HUETE-HERNÁNDEZ, J. GIRO-PALOMA, J. FORMOSA.....	3
DURABILITY OF MAGNESIUM PHOSPHATE CEMENT USING REFRACTORY WASTE AS A MAGNESIUM OXIDE SOURCE	
FÉLIX BERGER, MANON GOURVENNEC, FLORENT GAUVIN, JOS BROUWERS.....	4
MOLD DEVELOPMENT ASSESMENT USING DIGITAL IMAGE CORRELATION OF MATERIALS	
VLASTIMIL BÍLEK JR., LUKÁŠ KALINA, DAVID MARKUŠÍK, MICHAL KALINA, PAVEL ROVNANÍK.....	5
FACTORS AFFECTING THE EFFICIENCY OF LIGNOSULFONATE PLASTICIZER IN ALKALI-ACTIVATED MATERIALS	
VLASTIMIL BÍLEK JR., FILIP KHESTL, LUKÁŠ PROCHÁZKA, DAVID BUJDOS, BOHDAN SOUSEDIK, PETR MIARKA, LUCIE MALÍKOVÁ	6
SOME POSSIBILITY OF SELF-CURING OF HIGH PERFORMANCE CONCRETE	
VEERLE BOEL, LEO VAN CAUTER.....	7
PARAMETER STUDY OF METAKAOLIN/ BLAST FURNACE SLAG-BASED GEOPOLYMER CONCRETE	
MARINA BORZOVA, KATRIN SCHOLLBACH, FLORENT GAUVIN, JOS BROUWERS.....	8
SUSTAINABLE SILICA AEROGEL FROM GLASS WASTE	
BEATRICE CERRAI, KATRIN SCHOLLBACH, JOS BROUWERS	9
COMPOSITION AND CORROSION OF HISTORICAL AND CURRENT SEWER PIPE	
W. CHEN, X. LIU	10
IMPACT OF PORE SOLUTION ALKALINITY ON CORROSION BEHAVIOR OF BFRP BARS IN MARINE CONCRETE STRUCTURES AND METHOD OF PROLONGING THEIR SERVICE LIFE	

EDVINAS POCIUS, DŽIGITA NAGROCKIENĖ	55
EFFECT OF GLASS SLUDGE ON MECHANICAL PROPERTIES OF CONCRETE	
BOJAN POLETANOVIC, IVAN JANOTKA, MARIAN JANEK, ILDIKO MERTA	56
INFLUENCE OF SODIUM HYDROXIDE-TREATED HEMP FIBRES ON THE MECHANICAL PROPERTIES OF FLY ASH-BASED FIBRE REINFORCED MORTARS	
LIGA RADINA, ANDINA SPRINCE, LEONIDS PAKRASTINS, RIHARDS GAILITIS, GITA SAKALE	57
POTENTIAL USE OF SEWAGE SLUDGE ASH FOR THE PRODUCTION OF GEOPOLYMERS: A REVIEW	
J.D. RÍOS, C. LEIVA, H. CIFUENTES	58
EFFECT OF THE ADDITION OF NANOSILICA ON THE MECHANICAL PROPERTIES OF VERY HIGH STRENGTH CONCRETE	
PAVEL ROVNAŇÍK, IVO KUSÁK, PATRIK BAYER	59
EFFECT OF MOISTURE ON THE ELECTRICAL PROPERTIES OF METAKAOLIN-BASED GEOPOLYMER	
MYROSLAV SANYTSKY, TETIANA KROPYVNYTSKA, ANDRIY KAMINSKY	60
ALKALI ACTIVATED RAPID HARDENING CLINKER-EFFICIENT CONCRETES	
B.K. SARSENBAEV, K. AKMALAIULY, S.T. AUESBEK, N.B. SARSENBAEV	61
PRODUCTION OF FINE CEMENTS BASED ON WASTE FROM MINING AND METALLURGICAL ENTERPRISE	
M. SEDLAČÍK, L. KALINA, V. BÍLEK, V. CÁBA, J. SMILEK, J. ŠVEC, E. BARTONÍČKOVÁ, P. ROVNAŇÍK, J. FLÁDR	62
STRUCTURAL INVESTIGATION OF LITHIUM SILICATE CONCRETE DENSIFIERS GELATION PROCESS	
E. SCHÖNSEE, G. HÜSKEN, A. JEYIFOUS, A. MEZHOV, C. STRANGFELD	63
CALCULATING RHEOLOGICAL PROPERTIES OF FRESH MORTAR FOR ADDITIVE MANUFACTURING BASED ON EXPERIMENTAL MULTI-SENSOR DATA	
ALENA SIČÁKOVÁ, MAREK KOVÁČ	64
CONTRIBUTION TO THE OPTIMIZATION OF QUANTITATIVE AND QUALITATIVE PARAMETERS OF THE COMPOSITION OF SLAG AGGREGATE PERMEABLE CONCRETE	
MICHAŁ SMOLNICKI, SZYMON DUDA, PAWEŁ ZIELONKA, BRUNO PEDROSA, CAMPOS CRISTIANE LOPES, GRZEGORZ LESIUK, STANISLAV SEITL, ZBYNEK KERSNER, JOSE A.F.O CORREIA, ABILIO M.P.DE JESUS	65
A NUMERICAL APPROACH TO BOND BEHAVIOR OF GFRP BARS WITH CONCRETE	
HELONG SONG, FLORENT GAUVIN, JOS BROUWERS	67
SURFACE TREATMENT OF HEMP FIBERS FOR REINFORCEMENT OF CEMENTITIOUS COMPOSITES	

EFFECT OF GLASS SLUDGE ON MECHANICAL PROPERTIES OF CONCRETE

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Abstract

Concrete manufacturing industry is harmful to the environment and because of this reason researchers constantly are searching how to make this industry more friendly to our nature. One of the ways to achieve this goal is to use less cement, by replacing it by pozzolanic materials or wastes. In this study, glass sludge, which is obtained which is obtained during glass processing and is collected with the help of special equipment from the water that is used during processing, was investigated. In this study, specimens were formed using glass sludge, cement, sand, crushed dolomite, superplasticizer and tap water. Seven different compositions of concrete were made by partially replacing cement by glass sludge. Cement was partially replaced with glass sludge 3 %, 6 %, 9 %, 12 %, 15 %. For fresh concrete mix specimens slump and air content was determined. By experiments it was determined that glass sludge increases air content in fresh concrete mix and reduces slump. For hardened concrete density, compressive and flexural strength and water absorption was determined. Research results shows that glass sludge improve mechanical properties of concrete. Best results were obtained by replacing 9 % of cement, because replacing bigger amount concrete mix properties deteriorate.