Recycling of demolished concretes as coarse aggregate

Carlos Hoffmann Sampaio¹ *, Bogdan Grigore Cazacliu², Weslei Monteiro Ambrós³, Márcio André Kronbauer³, Rejane M. C. Tubino², Denise C. C. Dal Molin³, Josep Oliva Moncunill¹, Gérson L. Miltzarek³, Regina P. Waskow⁴,⁷, Viviane L. G. dos Santos⁴, Jose Luis Cortina⁶

¹ Departament d’Enginyeria Minera, Industrial i TIC, Universitat Politècnica de Catalunya Barcelona Tech, Av. Bases de Manresa 61–63, Manresa, 08242 Barcelona, Spain; carlos.hoffmann@upc.edu; josep.oliva@upc.edu
² Université Gustave Eiffel, MAST, GPEM, F–44344 Bouguenais, France; bogdan.cazacliu@univ-eiffel.fr
³ Mineral Processing Laboratory, Federal University of Rio Grande do Sul, 9500 Bento Gonçalves Avenue, Porto Alegre 91501-970, Brazil; weslei.ambros@ufrgs.br; kronbauer@gmail.com; gerson.miltzarek@ufrgs.br
⁴ Laboratory of Environmental Studies in Metallurgy, Federal University of Rio Grande do Sul, 9500 Bento Gonçalves Avenue, 91501-970 Porto Alegre, Brazil; rejane.tubino@ufrgs.br; vlsg@ufrgs.br
⁵ Building Innovation Research Group (NORIE), Federal University of Rio Grande do Sul, 99 Osvaldo Aranha Avenue, 90035-190 Porto Alegre, Brazil; dmolin@ufrgs.br
⁶ Chemical Engineering Department, Escola de Enginyeria Barcelona Est, Barcelona TECH UPC, 08019 Barcelona, Spain; jose.luis.cortina@upc.edu

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Abstract: This paper presents a physical characterization for recycling in new concretes of three comminuted concretes: C16/20 (“ordinary concrete”), C50/60 (“high strength concrete”), and C70/85 (“very high strength concrete”). The top size of the crushed concretes was 19.1 mm and the size range of 4.75 to 19.1 mm. The characterization was carried out with coarse aggregate liberation to be prepared and concentrated in a gravity concentration process. Density distribution of the coarse aggregate, cement paste, and sand was carried out in different size ranges (4.75/19.1 mm; 4.75/8.0 mm; 8.0/12.5 mm; and 12.5/19.1 mm) for the three concretes studied. Factor form of the samples, as well as porosity determination of particles in different density ranges, is presented. The obtained results indicate that coarse aggregates liberation is more intensive for the low resistance concrete (C16/20), but a reasonable Coarse Aggregate recovery is possible for all concretes.

Keywords: Concrete; Recycling; Density Distribution; Liberation; Gravity Concentration