

PROPERTIES OF COARSE MINERAL AGGREGATES AGAINST PROPERTIES OF CONCRETE

Wojciech PIASTA ^{a*}, Waldemar BUDZYŃSKI ^b, Jacek GÓRA ^b

^aDSc, PhD, Associate Professor; Faculty of Civil Engineering and Architecture, Kielce University of Technology; Tysiąclecia PP 7, 25-314 Kielce, Poland

*E-mail address: wpiasta@tu.kielce.pl

^bPhD; Faculty of Civil Engineering and Architecture, Lublin University of Technology; Nadbystrzycka 40, 20-618 Lublin, Poland

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Abstract

The paper concerns the effect of coarse aggregate type on the strength and strain properties of concrete under instantaneous loading. The studies deal with properties of the crushed aggregates and their effect on the basic mechanical properties and instant deformability of concretes in comparison to gravel concrete. The paper presents test results of mineral composition, crushing strength, absorption by weight, content of irregular grains and mineral dust as well as bulk and specific density of the 5 coarse aggregates: basalt, granite, dolomite, quartzite and natural aggregate (gravel) derived from the Polish rock beds. Strength and strain properties of concretes under compressive instantaneous loading were analyzed. The analysis showed that strength properties and modules of elasticity of tested concretes are proportional to crushing strength of aggregates. Based on the test results of strains it was concluded that the effect of coarse aggregate type on the modulus of elasticity and the limit strain is more significant than that of concrete strength.

Keywords: Compressive and tensile strength of concretes; Properties of aggregates; Strain properties of concretes; Stress – strain relationships.