

**USE OF FIBROUS RESIDUALS FROM PULP AND PAPER MILLS IN  
CONCRETE: DEVELOPMENT OF MIXTURE PROPORTIONS**

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Reference: CBU-2003-28

**ABSTRACT**

A total of seven sources of fibrous residuals generated from pulp and paper mills were characterized. For each source of the residuals, concrete mixture proportions were developed for producing residuals concrete equivalent to reference concrete made without residuals in slump and compressive strength. It was shown that paper mill fibrous residuals do not adversely affect compressive strength development of concrete. With proper dosage of high-range water-reducing admixture (HRWRA), it was possible to manage the slump and compressive strength of concrete containing the residuals as desired. In general, dosage of HRWRA increased in proportion to amount of wood fibers in concrete. Practically, by achieving equivalent density, concrete incorporating up to 0.65 % of as-received residuals by mass of concrete was produced whose slump and strength were equivalent to those of concrete made without the residuals.