Improving Durability of Concrete Pipes Used in the Sewage Networks by Micro Silica

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Concretes used in the sewage networks are subjected to hydro sulfuric attack form as a result of H2S oxidations. It forms $CaSO_4.2H_2O$ and Ettringite $C_3A.CaSO_4.31H_2O$ through penetration and reaction with concrete products, which cause cracking and deterioration of concrete.

The results of a detailed investigation on concrete made from type V cement with additions of micro silica as mineral admixture, and its curing by tap water shows dramatic increase in compressive strength (CS) of concrete after 7 days of hydration onwards. By repeating experiment in sodium sulfate solutions, prepared under ASTM C1012 requirements, the results were the same as tap water but the extend of increase of compressive strength is lower.

By replacing micro silica as a substituent in type V cement composition a concrete with high chemical durability and strength are formed, which can be used in the sewage pipe line networks.