Also, at least during the early ages, the creep under tensile stress is greater than that under compressive stress. At later ages, the rate of creep is less under tensile than under compressive stress. In concrete repairs, the tensile properties of cement based materials—not compressive properties—greatly influence the cracking mechanism, the bond and shear behavior, and the failure criteria under the stress. If this statement is true, why are we still witnessing the status quo in this regard? Simply, because compressive tests are much easier to perform than direct tensile strength, tensile modulus, and creep tests.

Let’s be honest with ourselves. We know about 60% of the answers to questions we should know to really do the repairs properly. Nobody can wait until we get the other 40% of the answers, so we have to do the best today. We must make performance tests reliable. The tests will give us the right answers if we ask the right questions. According to Leonardo Da Vinci, “Experiments do not ever err, it is only your judgment that errs in promising results which are not caused by your experiments.”

It is hoped that the few thoughts highlighted in this article will help to form the basis for a better understanding of concepts in concrete repair by enlightened designers, specifiers, material manufacturers, and contractors so that many of the misconceptions that prevail presently can be avoided and the pointers here act as a guide for more meaningful and successful repair projects.

To finish on a positive note: We do not think that we have beaten this subject to death by any means. We hope we have beaten some more life into it.

**FINAL POINTS**

1. The industry urgently needs to test (evaluate) cementitious repair materials in such reproducible ways so that practitioners are confident when specifying and using them. If this goal is reached, we will be better able to make intelligent adjustments when deviations in performance are experienced.

2. If the repaired structure is to be durable, along with other controlling factors, appropriate measures must be taken to control volume changes and the resulting induced cracking of the cementitious composites used for repair. Testing of related fundamental properties that control the durability of concrete have to be perfected to allow for reliable prediction of performance in the environment of service.

**References**


Selected for reader interest by the editors.