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## **Erroneous testing of masonry grout**

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A good deal of time is spent each year having to respond to statements like, "The samples did not meet the specified strength." Prior to the response in writing, the cause of the lower than anticipated strengths needs to be identified. This in itself can be very time consuming and costly. Much like mortar, grout can be specified by proportion (Table 1 in ASTM C 476) or by compressive strength. Meeting the specified strength is typically not a problem with properly proportioned grout mixtures and proper testing protocol.

Compressive strength is the criteria typically used for determining the acceptability of the grout mixture. There are many reasons why the strength of a grout comes back as "failed to meet the specified strength." Some of the more common reasons for lower than anticipated strengths include:

- High air content
- High water-to-cementitious ratio
- Frozen grout sample
- Wrong sampling and testing protocol

Unlike ordinary concrete, most grouts are designed with high water contents for workability and to compensate for the mix water that will be absorbed by the concrete masonry units. This is why ASTM C 1019 Standard Test Method for Sampling and Testing Grout must be used as the standard test procedure. ASTM C 1019 specifies that molds be constructed of "masonry units having the same absorption and moisture content characteristics as those being used in the construction." Nonabsorbent cylinder or cube molds should not be used for casting grout specimens for compressive strength. The use of nonabsorbent molds can result in reported strengths that significantly lower than the actual in-place grout. This is due mainly to the higher water-to-cementitious ratio in the specimens than the in-place grout.

Using the right test procedure and conducting the tests properly are a crucial part of any project. If you are unsure about which test procedures are applicable, contact a SPEC MIX®, Inc. representative.