

# Investigation of Mix Designs for Lightweight Grout per ASTM C476

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## Abstract:

The use of lightweight (LW) aggregates in masonry grout could lead to many of the same benefits observed in LW concrete including reduced weight/seismic loads, and improved fire resistance, moisture resistance, and durability. The current TMS 402/602 code does not permit the use of LW grout in reinforced masonry assemblies due to lack of data to establish appropriate modification factors for design, analogous to the lambda factor in ACI 318 for LW concrete. In recent years, there have been a limited number of experimental studies for which LW masonry grout was prepared but no attempt has been made to determine if a lightweight grout could be produced using the volume proportions specified in Table 1 of ASTM C476 and referenced by TMS 402/602. This research was carried out in an effort to obtain a mix design for lightweight (LW) grout that complies with the conventional grout proportion requirement for LW grouts made with expanded clay and expanded slate aggregates. This study found that it was not possible to achieve a suitable mix using the volume proportions of Table 1 (ASTM C476), but strength and slump requirements could be met using either ACI concrete design procedures or hand batching to desired consistency.

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