STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

for

METHODS OF SAMPLING AND TESTING MORTAR FOR MASONRY CONSTRUCTION

AS 2701.10
METHODS FOR CHEMICAL ANALYSIS OF MORTARS

1 SCOPE. This standard sets out recommended procedures for methods of analysis and interpretation that may be used on fresh or hardened mortar to determine the nature and proportion of its original ingredients.

NOTES:

1. The range of situations leading to such investigations and the amount of available information vary so much that it is not possible to cover all cases, however, the methods given here are believed
2. Types of problem covered. The methods given here are applicable particularly to the following types of investigation:
   (a) Assessment of the efficiency of mixing and the accuracy of batching.
   (b) Analysis of mortar for compliance with specification.
   (c) Investigation of failure.

   The methods cannot be used without modification for mortars based on masonry cements because it is usually uncertain which of a wide range of possible ingredients have been used.
3. Limitations of chemical analysis of mortar. Proportions of mortar materials traditionally are specified by volume, and in the case of site-mixed mortars have also been measured by volume. In the analytical methods described below measurement is by mass, and the results are calculated as percentages by mass. To transform the analytical figures back to the original volume measure requires a knowledge of the bulk densities of the ingredients, and the errors inherent in this step are much greater than those inherent in the analytical procedures.

   The bulk density of portland cement remains reasonably constant but the bulk densities of hydrated lime and lime putty depend upon the source of the material. The bulk density of sand depends not only on the source but also on the moisture content.

   In certain parts of Australia, sand is known to contain significant amounts of acid-soluble calcium salts. When these sands are used in mortar, unless a sample of them is supplied for testing, only gross deviations from specification will be detected by chemical analysis. It will nearly always be possible to make comparisons of mortar from different parts of the same building with more certainty than on samples from different sources.

2 REFERENCED DOCUMENTS. The following standards are referred to in this standard:

AS 1141 Methods of Sampling and Testing Aggregates
Section 11—Particle Size Distribution by Dry Sieving

AS 1152 Test Sieves

AS 1465 Dense Natural Aggregates for Concrete

AS 2162 Code of Practice for the Use of Volumetric Glassware

AS 2701 Methods of Sampling and Testing Mortar for Masonry Construction
Part 2—Methods of Sampling.

3 EXAMINATION OF MORTARS-GENERAL. The following points relating to the examination of mortars should be kept clearly in mind:

(a) No problem should be investigated without full consideration being given to all information obtainable concerning the materials used, site conditions, adjacent materials, specification requirements, etc. In general the more information available the more definite can be the conclusions of an investigation.

(b) Ideally, samples of all materials used in the preparation of a mortar should be used for the calculation of its composition. In their absence the results of previous examinations of the materials can sometimes be of great use.

In some instances, e.g. with defects arising some time after the placing of the mortar, such information may not be available. The analyst must then be very cautious in his interpretation of the analysis. In many of these instances, however useful information may be derived by analysis, despite the absence of background information, e.g. large variability in a given area of work can be proven.