

CRD-C 213-92

**Test Method for the Presence of Sugar in Cement, Mortar, Concrete,
or Aggregates****1. Scope**

1.1 This test method* is used to detect the presence of sugar; it is a qualitative not a quantitative test.

2. Significance and Use

2.1 This test is intended to be used as a screening method to detect sugar. It is very delicate, easily detecting 0.001 percent of sugar, and is not interfered with by the ordinary mineral salts. The presence of lime sometimes gives the solution a green tint, but this cannot be mistaken for the sugar test. The test will detect both sucrose and invert sugar in small quantities, while the Fehling test will detect only invert sugar.

3. Special Solutions Required

3.1 *Alpha-naphthol*. Dissolve 10 g of alpha-naphthol in 100 mL of absolute alcohol. The alpha-naphthol solution becomes less sensitive on standing, and should be made up in small quantity each time a test is made.

3.2 *Sulfuric Acid*. Concentrated sulfuric acid, free from nitric acid, is required.

4. Procedure

4.1 Place about 20 to 30 g of the pulverized sample in a small beaker, add a little more than enough warm water to cover the sample, and allow to stand, with occasional stirring, for 5 min. Filter through a 110-mm paper into a test tube. Wash the filter paper used in the determination very thoroughly with hot water before the solution of the sample is poured through. This is necessary because some papers are impregnated with starch-like organic matter, which may give a faint test for sugar.

4.2 Cool to room temperature and add 3 to 4 drops of alpha-naphthol solution. Mix by shaking. Holding the tube in an inclined position, slowly pour in concentrated sulfuric acid, until the acid forms a layer in the bottom of the tube about 10-mm thick. If sugar is present, a bright purple to violet ring will form at the plane of separation of the two solutions.

* This test was provided by Mr. T. A. Hicks of the Universal Atlas Cement Co.