Australian Standard®

AS 1141.35:2019

Methods for sampling and testing aggregates
Method 35: Detection of sugar contamination in concrete aggregates

PREFACE

This Standard was prepared by the Standards Australia Committee CE-012, Aggregates and Rock Engineering Purposes, to supersede AS 1141.35—2007, Methods for sampling and testing aggregates, Method 35: Sugar.

The objective of this Standard is to set out a qualitative method for the detection of sugar in aggregates intended for use in the production of concrete.

The major changes in this edition are as follows

(a) addition of safety warnings;

(b) addition of a reagents clause; and

(c) expansion of the apparatus clause, including specification of the limits of performance for a suitable balance.

WARNING: SOME OF THE CHEMICALS OR PROCEDURES SPECIFIED IN THIS STANDARD COULD LEAD TO A HAZARDOUS SITUATION IF CORRECT SAFETY MEASURES ARE NOT FOLLOWED. PERSONS USING THIS AUSTRALIAN STANDARD NEED TO BE FAMILIAR WITH NORMAL LABORATORY PRACTICE. THIS STANDARD DOES NOT ADDRESS THE SAFETY PROBLEMS, IF ANY, ASSOCIATED WITH ITS USE. IT IS THE RESPONSIBILITY OF THE LEGAL ENTITY USING THIS STANDARD TO ESTABLISH APPROPRIATE SAFETY AND HEALTH PRACTICES, TO ENSURE COMPLIANCE WITH ANY NATIONAL, STATE OR LOCAL REGULATORY REQUIREMENTS, AND TO INSTRUCT IN AND ENFORCE COMPLIANCE OF THE SAFETY AND HEALTH PRACTICES.

1 SCOPE

This Standard sets out a qualitative method for the detection of sugar in aggregates intended for use in the production of concrete.

A positive reaction is given by one part of sugar in one thousand parts of aggregates. No visible reaction is given by one part of sugar in 10 000 parts of aggregates.

2 PRINCIPLE

The basis of the test is that, although Fehling's solution does not react directly with cane sugar (sucrose), it does react with grape sugar (glucose). Therefore cane sugar, if present, is first converted into invert sugar (glucose plus fructose) by boiling with hydrochloric acid. The glucose so formed reacts with Fehling's solution, giving a positive test. Although cane sugar is perhaps the most likely sugar source if concrete aggregate is accidentally contaminated, the test also detects contamination from honey, wine, fruit juices or other sources of glucose.