AS 1141.19:2018

Australian STANDARD

Methods for sampling and testing aggregates

Method 19: Fine particle size distribution in road materials by sieving and decantation

STANDARDS Australia

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Australian Geomechanics Society
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Preface

This Standard was prepared by the Standards Australia Committee CE-012, Aggregates and Rock for Engineering Purposes, to supersede AS 1141.19—1998.

This edition of the standard has added a safety warning concerning the use of ammonia as a dispersing agent if the working space is not adequately ventilated. Editorial changes have been made to make the method consistent with Standards Australia Standardization Guides.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

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Method 19: Fine particle size distribution in road materials by sieving and decantation

1 Scope

This Standard sets out the method for the determination of the fine particle size distribution in road materials.

The procedure for the determination of coarse particle size distribution and particle size distribution for fillers for asphalt is described in AS 1141.11.1.

WARNING — THE STANDARD PROCEDURE FOR THE DETERMINATION OF THE FINE PARTICLE SIZE DISTRIBUTION IN ROADBASE ACCORDING TO THIS METHOD, INVOLVES THE REPEATED BOILING OF THE TEST PORTION IN A DILUTE SOLUTION OF AMMONIA WHICH IS USED AS A DISPERSING AGENT. THE PROCEDURE SHOULD BE CONDUCTED UNDER A FUME HOOD WHICH WILL REMOVE AMMONIA FUMES AND DISCHARGE THE FUMES TO EXTERIOR ATMOSPHERE. FAILURE TO EXTRACT FUMES, ALLOWING THEM TO ENTER THE WORKING SPACE, WILL CAUSE DISCOMFORT TO STAFF IN THE FORM OF EYE AND NASAL IRRITATION. STAFF WITH BREATHING DIFFICULTIES MAY BE AFFECTED SERIOUSLY. IF EXTRACTION FACILITIES ARE NOT AVAILABLE, THE USE OF AMMONIA SHOULD BE AVOIDED IN FAVOUR OF THE ALTERNATE DISPERSING AGENTS (SEE CLAUSE 7(I) NOTE 2).

2 Principle

The particle size distribution is determined by dry sieving in the case of materials coarser than 2.36 mm and by decantation in the case of materials finer than 2.36 mm. In the latter case the proportions determined are those passing 425 µm and 75 µm sieves and that are less than 13.5 µm diameter. The determination of the 13.5 µm particle size is based on the application of Stokes Law. The particle sizes determined enable the assessment of roadbase products based on ratios derived from Wilhelmi's formula for maximum density grading.

3 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document.

AS 1141.2, *Methods for sampling and testing aggregates, Method 2: Basic testing equipment*

AS 1141.3.1, *Methods for sampling and testing aggregates, Method 3.1: Sampling — Aggregates*

AS 1141.11.1, *Methods for sampling and testing aggregates, Method 11.1: Particle size distribution — Sieving Method*

4 Reagents

The following reagents may be required (see Note 2 to Clause 7(i)):

(a) A 20 % ammonia solution.

(b) Sodium oxalate.

(c) Sodium hexametaphosphate.