AS 1141.11.2:2019

Australian STANDARD®

# Methods for sampling and testing aggregates

## Method 11.2: Particle size distribution for vision sizing systems



STANDARDS Australia

AS 1141.11.2:2019

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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 1141.11.2—2008, *Methods for sampling and testing aggregates, Method 11.2: Particle size distribution for vision sizing systems*.

The objective of this Standard is to set out the method for determining particle size distribution in coarse and fine aggregates by vision sizing systems (VSS). The VSS is limited by the discrimination of the optical system and, at present, is suitable for materials coarser than 1.18 mm.

This Standard provides an alternative method to the determination of particle size distribution to the traditional method of sampling production and then sizing using a set of standard sieves (AS 1141.11.1). With suitable equipment installed, the method allows for sampling, sizing and reporting in a production plant in near to real time.

The major changes in this edition are as follows:

(a) Inclusion of this Preface.

(b) Inclusion of an Introductory clause providing background on the technology.

(c) Additional terms and definitions.

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.

# Contents

# Introduction

AS 1141.11.1 uses a sieving method to measure particle size distribution of a sample by mass of sample passing or retained on the square hole sieves conforming to the aperture sizes of ISO 3310-1 and ISO 3310-2 and the additional requirements of AS 1141.2.

This Standard uses VSS to measure the length dimensions of images of particles in two dimensions, and derives a third dimension. Unlike the sieving method, VSS does not measure mass. Therefore, variations in particle density within or between samples will cause a difference in calculating the particle size distribution between the two methods. Some of this difference can be reduced by source calibration especially where the VSS is used in an in-plant application on a consistent source.

# Australian Standard®

## Methods for sampling and testing aggregates

## Method 11.2: Particle size distribution for vision sizing systems

### 1 Scope

This Standard sets out the method for the determination of particle size distribution in coarse and fine aggregates by vision sizing systems (VSS). The VSS is limited by the discrimination of the optical system and, at present, is suitable for materials coarser than 1.18 mm.

A calibration procedure is used to relate results from this method to those generated by particle distribution by sieving.

The VSS has application in the production of rapid, automated particle size distribution data in production plants.

NOTE A summary of VSS technology is given in Appendix A.

### 2 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.

NOTE Documents for informative purposes are listed in the Bibliography.

AS 1141.1, *Methods for sampling and testing aggregates, Part 1: Definitions*

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 by sieving*

AS 4433.1, *Guide to the sampling of particulate materials, Part 1: Sampling procedures*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in AS 1141.1 and those below apply.

**3.1**
**average mean size**
**AMS**
measure of the particle size of the product tested by the VSS calculated (see Clause 8) and reported to the operator

**3.2**
**calibration**
procedure converting VSS measurements to equivalent ISO 3310 sieve sizes

**3.3**
**graded aggregate**
aggregate of which more than 15 % (by mass) of the total material is retained on at least each of three consecutive equivalent sieve sizes in a set

Note 1 to entry: The typical sieve set used in Australia for which equivalents can be provided in vision sizing systems includes sieves with the following aperture sizes: 75.0 mm, 53.0 mm, 37.5 mm, 26.5 mm, 19.0 mm, 13.2 mm, 9.50 mm, 6.70 mm, 4.75 mm and 2.36 mm. This selection of sizes is approximately a quarter series.