AS 1141.66:2022

Australian STANDARD®

STANDARDS Australia

Methods for sampling and testing aggregates

Method 66: Methylene blue adsorption value of fine aggregate and mineral fillers

AS 1141.66:2022

This Australian Standard ® was prepared by CE-012, Aggregates and Rock for Engineering Purposes. It was approved on behalf of the Council of Standards Australia on 9 April 2022.

This Standard was published on 14 April 2022.

The following are represented on Committee CE-012:

ARRB (Australian Road Research Board)
Ash Development Association of Australia
Australasian (iron and steel) Slag Association
Australasian Procurement and Construction Council (APCC)
Australian Flexible Pavement Association
Austroads
Cement Concrete & Aggregates Australia — Aggregates
Cement Concrete & Aggregates Australia — Cement
Cement Concrete & Aggregates Australia — Concrete
Engineers Australia/Australian Geomechanics Society
National Association of Testing Authorities Australia
University of Technology Sydney

This Standard was issued in draft form for comment as DR AS 1141.66:2021.

Keeping Standards up-to-date

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting:
www.standards.org.au

ISBN 978 1 76113 710 5

Methods for sampling and testing aggregates

Method 66: Methylene blue adsorption value of fine aggregate and mineral fillers

Originated as AS 1141.66—2012.
Second edition AS 1141.66:2022.

Preface

This Standard was prepared by the Standards Australia Committee CE-012, Aggregates and Rock for Engineering Purposes, to supersede AS 1141.66—2012.

The objective of this document is to determine the methylene blue adsorption value of production samples of natural sands, manufactured sands, crusher dusts and mineral fillers used in asphalt.

This method does not measure clay or other alteration products occurring within the fabric of aggregate pieces, or samples of rock or drill core. Samples used in this method are not produced from laboratory crushing.

The major changes in this edition are as follows:

(a) Addition of this Preface.

(b) Additional terms and definitions, see Clause 4.

(c) Expansion of the procedure to allow the use of lower concentrations of methylene blue dye for samples known to contain minor quantities of reactive components, see Clause 7.

This document was developed in reference to the International Slurry Surfacing Association (ISSA) Technical Bulletin No. 145, *Test method for the Determination of Methylene Blue Adsorption Value (MBV) of Mineral Aggregate Fillers and Fines*, proposed February 1989, 1st Revision 2005, and test results using this AS method would yield equivalent results.

Contents

NOTES

Australian Standard®

Methods for sampling and testing aggregates

Method 66: Methylene blue adsorption value of fine aggregate and mineral fillers

1 Scope

This document specifies a method for determining the methylene blue adsorption value (MBV) for natural sands, manufactured sands, crusher dusts and mineral fillers used in asphalt.

This method applies to aggregate of less than 5 mm nominal size and may be used for both natural and manufactured sands. The application of this test for slag, other artificial aggregate or for recycled aggregate has not been evaluated. The method tests the passing 75 μm fraction of a laboratory dried, unwashed fine aggregate sample.

For mineral fillers for asphalt, the test may be applied to fillers from baghouse fines or from ground limestone products or to mixtures of these two materials. The test is not suitable for cement or fly ash fillers. By definition, mineral fillers are 90 % or more passing the 75 μm sieve, therefore, the test applies to the total sample of mineral filler and not to a test portion.

2 Application and interferences

2.1 Application

Methylene blue dye is adsorbed onto the charged surfaces of clay particles. A dye test using methylene blue has found widespread use in soil science as a measure of the cationic exchange capacity of a soil. In this application, the test is used as an indicator of reactive clays (smectites) in the fine aggregate to be used in concrete and in mineral fillers to be used in asphalt.

This test is not to be confused with those tests that use the fines from a sample of clean crushed aggregate with methylene blue dye to test for reactive clays contained within the rock fabric.

Fines resulting from crushing any part of the sample shall not be used for the test portion of this test.

2.2 Interferences

Methylene blue dye can be adsorbed, usually to a lesser degree, onto other reactive surfaces. It will be adsorbed by less reactive clays (illites and kaolinites), fine micas (sericites), organic matter and by iron hydroxides. As the majority of these interferences are also harmful to the performance of fine aggregates and fillers, their effect on the test is not considered problematic.

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 1141.1, *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*