

Australian Standard®

AS 1141.1:2015

Methods for sampling and testing aggregates Part 1: Definitions

1 SCOPE

This Standard defines terms used in the AS 1141 series of methods for the sampling and testing of aggregates used in concrete, asphalt, sprayed bituminous surfacings, pavements, railway ballast and for other engineering purposes.

NOTE: The definitions in this Standard are also reproduced in AS 2758.0 where relevant.

2 NORMATIVE REFERENCES

There are no normative reference documents in this Standard.

NOTE: Documents referenced for informative purposes are listed in the Bibliography.

3 DEFINITIONS

3.1 General

For the purpose of the AS 1141 series, the definitions below and the definitions of each method apply. The general definitions given here are applicable to all methods where the term is not redefined. In a very limited number of cases, the general term defined here may have a special application because of the nature of the material being tested or because of a unique method of testing. In these limited cases, the definition given in the method applies in preference to the definition given in this Part.

3.2 Coarse aggregate

Aggregate in which the majority of particles are retained on a 4.75 mm AS sieve.

3.3 Coarse fraction

The total portion of an aggregate which is retained on a 4.75 mm AS sieve.

3.4 Constant mass

Aggregate is considered to be dried to constant mass when the difference between successive determinations of mass, after additional drying for not less than 30 min, does not exceed 0.1% of the original mass of the sample.

NOTES:

- 1 Normally drying is performed in an oven at 105°C to 110°C, but when a method requires drying at different temperatures, the specified temperatures apply.
- 2 Material may be dried to constant mass using alternative methods such as microwave ovens, infra-red lights or hot plates, provided tests have shown that these techniques do not disrupt or weaken particles to the extent that the property being measured is changed by the drying method.

3.5 Fine aggregate

Aggregate in which the majority of particles pass a 4.75 mm AS sieve.

3.6 Fine fraction

The total portion of an aggregate which passes a 4.75 mm AS sieve.

3.7 Graded aggregate

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

NOTES:

- 1 The typical sieve set used in Australia 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, 2.36 mm, 0.600 mm and 0.075 mm. This selection of sieves is approximately a quarter series.
- 2 Crushed rock that consists of a mixture of fine and coarse aggregates, the coarse fraction being graded, is considered a graded aggregate for the purpose of the AS 1141 series.

3.8 Nominal size

Designation of an aggregate that gives an indication of the largest size particle present.

NOTE: The concept of nominal size of an aggregate is for convenience of reference and ordering. The nominal size is expressed as one size in the set 75 mm, 60 mm, 40 mm, 28 mm, 20 mm, 14 mm, 10 mm, 7 mm, or 5 mm. The size used is that above the smallest sieve aperture size in the sieve set 75.0 mm, 53.0 mm, 37.5 mm, 26.5 mm, 19.0 mm, 13.2 mm, 9.50 mm, 6.70 mm, and 4.75 mm, through which at least 85% of the aggregate passes, as shown below:

Nominal size, mm	5	7	10	14	20	28	40	60	75
Sieve size, in mm, through which at least 85% pass	4.75	6.70	9.5	13.2	19.0	26.5	37.5	53	75

3.9 One-sized aggregate (single-sized aggregate)

An aggregate of which at least 60% of the mass of the whole material passes a sieve, which is immediately less than the normal size of the aggregate, and is retained on the sieve immediately following the selected sieve in the selected set.

NOTE: The typical sieve set used in Australia include 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, 2.36 mm, 0.600 mm and 0.075 mm. This selection of sieves is approximately a quarter series.

3.10 Sample

The material to be forwarded for examination or testing, or both. In most cases, the sample is representative of the parent material and is derived from combining sample increments and then dividing into a suitable amount for examination or testing.

NOTE: Occasionally a sample may represent a contaminant in the parent material or it may be derived from a single increment.

3.11 Sample-increment

For aggregates and sands, the amount of the material taken directly from the conveyor, bin, truck or section of a stockpile or from a placed layer in earthworks or a pavement layer.

Where mechanical samplers are used, the amount of material collected in a single pass of the sampler head.

3.12 Size fraction

That portion of a sample retained between two successive sieves specified for the particular test.

3.13 Sub-sample

Material derived from the sample, either in the field or at the testing laboratory, by a process of division designed so that the properties of the sub-sample remain the same as the sample.

3.14 Test portion

Material derived from a sample, sub-sample or test fraction by further division and/or by screening and used for a particular test.

NOTE: The term ‘sample’, and its derivatives (‘sub-sample’, ‘spot sample’, ‘test sample’ and, in some instances, ‘laboratory sample’) should be used in the AS 1141 series to indicate that there is a continuing representative relationship between the sample and the parent material. However, the term ‘laboratory sample’ is sometimes used to indicate material received at a laboratory where the relationship to the parent material is not stated or is uncertain. In such instances, laboratory reports may refer to results as ‘tested as received’ or use a similar wording which indicates that the relationship of the results to the parent material depends on the interpretations of the authority commissioning the testing.

The term ‘fraction’ and its derivatives refer to material that has been altered from the parent material by screening. The fraction should continue to be representative of the same size fraction in the parent material if the sampling procedures of AS 1141.3.1 or AS 1141.3.2 have been followed. There is, however, no certainty that the results from any particular size fraction will apply to any other size fraction of the same parent material.

The term ‘test portion’ (or, if used, ‘test material’ or simply ‘material’) are generic terms used in the methods to refer to the material at hand. Test portions may be obtained from samples or fractions with the appropriate relationship to the parent material described above.

Further detail is given in AS 1141.3.1, Appendix A.