

Australian Standard®

AS 1141.29:2014

Methods for sampling and testing aggregates
Method 29: Accelerated soundness index by reflux

This Standard incorporates Amendment No. 1 (August 2019). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

METHOD

1 SCOPE

This Standard sets out the method used to estimate the durability of a basaltic source rock or product by providing a measure of the amount of physical degradation induced in the sample by immersion in boiling ethylene glycol. The results of this test are used for the classification of basaltic aggregates used in road base or road surfacing.

NOTE: This method is appropriate to those basaltic rocks that contain clays of the smectite/chlorite series as an alteration or weathering product.

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 MUST 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.

2 REFERENCES

The following are the documents referred to in this Standard:

AS

- 1141 Methods of sampling and testing aggregates
- 1141.3.1 Method 3.1: Sampling—Aggregates
- 1141.3.2 Method 3.2: Sampling—Rock spalls and boulders
- 1141.2 Method 2: Basic testing equipment

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[Text deleted]

- 2243 Safety in laboratories
- 2243.8 Part 8: Fume cupboards

3 SAFETY PRECAUTIONS

Procedures using ethylene glycol at temperatures above ambient shall be carried out in a fume cupboard. Ethylene glycol is a skin irritant. Ingestion of the liquid or inhalation of the vapour from hot liquid constitutes a health hazard.

NOTE: Rubber gloves should be worn when handling test samples that have been immersed in ethylene glycol. Appropriate documentation should be consulted as to safety precautions.

4 APPARATUS

A1 | The following apparatus, conforming to the relevant provisions of AS 1141.2 and the requirements given below, is required:

- (a) *Balance*—of adequate capacity with a limit of performance not exceeding ± 0.5 g.
- (b) *Brushes*—suitable for cleaning sieves and brushing fines adhering to filter paper.
- (c) *Crusher*—or other suitable equipment for reducing spalls or core to the required size.
- (d) *Dishes and trays*—aluminium.
- (e) *Electric hotplate*—thermostatically controlled (max. temperature 450°C).
- (f) *Ethylene glycol*—Technical grade.

(g) *Fume cupboard*.

NOTE: Advice on suitable fume cupboards can be found in AS 2243.8.

- (h) *Oven*—thermostatically controlled to operate at a temperature of up to 50°C, preferably with mechanical ventilation.
- (i) *Refluxing apparatus*—consisting of a flask (boiling flat-bottomed, wide-necked, approx. 500 mL), reflux condenser, rubber tubing and adaptor (wide neck flask to reflux condenser) (see Figure 1).
- (j) *Rubber gloves*.
- (k) *Sample divider* (riffle splitter or other suitable devices that will produce representative sub-samples).

A1 | (l) *Sieves*—in perforated plate, aperture sizes 13.2 mm, 6.70 mm, and pan. In addition, the aperture size not a part of the R40/3 series, 11.2 mm in perforated plate.

- (m) *Slotted sieve* constructed of 2 mm thick plate with aperture width of 9.66 ± 0.2 mm, a minimum aperture length of 40 mm, and with a bridge width between apertures of 10 mm.
- (n) *Stand and clamps*—to support refluxing apparatus.
- (o) *Woven wire mesh washing basket*—suitable containers for washing the test sample in running water with a maximum 4.75 mm mesh size.

5 OPTIONAL APPARATUS

The following apparatus, although not required, may assist in the efficient performance of the method:

- (a) *Sieve Shaker*.

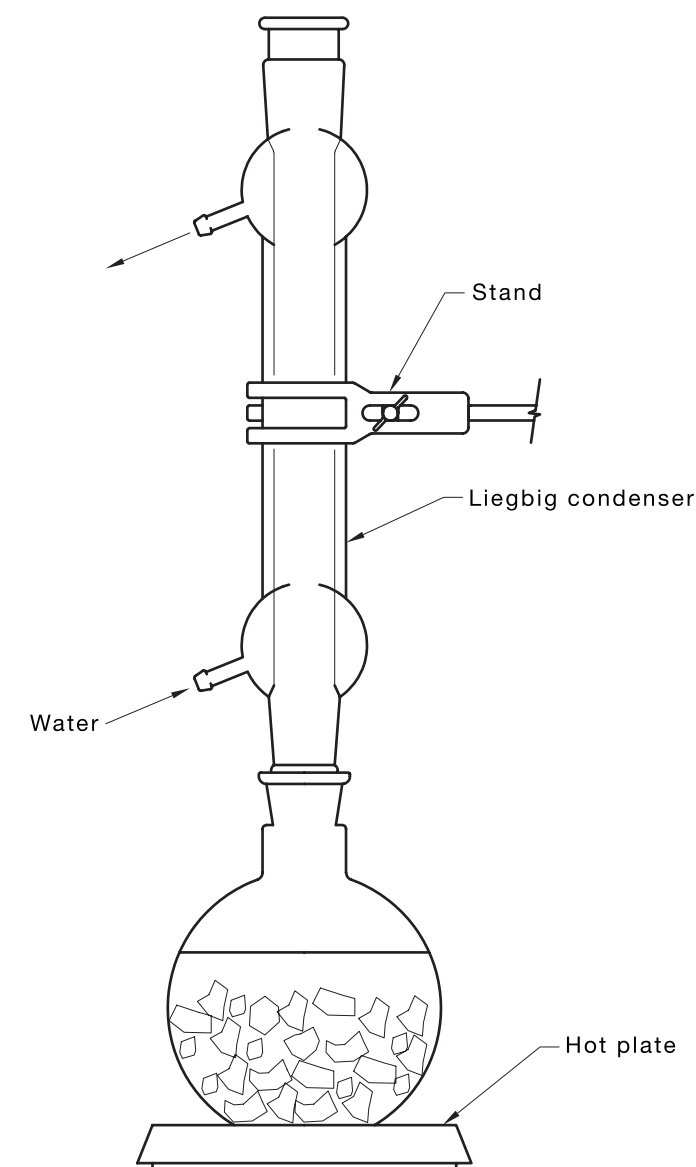


FIGURE 1 REFLUXING APPARATUS

6 PREPARATION OF TEST PORTION

The test portion shall be prepared as follows:

- (a) Obtain a sample of aggregate in accordance with AS 1141.3.1 or rock spalls in accordance with AS 1141.3.2. Sampling of drill core shall be as required.
- (b) The following applies to rock spalls, boulders and drill core:
 - (i) If necessary, thoroughly wash the sample, using a brush to remove any adhering clay.
 - (ii) Crush the material retained on the 19.0 mm sieve so that nearly all material passes the 19.0 mm sieve, but an appreciable quantity is retained on a 13.2 mm sieve.
 - (iii) By splitting, obtain a representative sample of the crushed material of such size that it contains more than 2 kg of the passing 13.2 mm, retained 11.2 mm fraction.

NOTE: If necessary, the retained 13.2 mm material can be recrushed to provide sufficient mass of the material(s) selected for test.