

Testing aggregates —

Part 114: Method for determination of the polished-stone value

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- Association of Consulting Engineers
- Association of Consulting Scientists
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- Mortar Producers' Association Ltd.
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- Society of Chemical Industry

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The following BSI references relate to the work on this standard:
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Foreword

This Part of BS 812 has been prepared under the direction of the Cement, Gypsum, Aggregates and Quarry Products Standards Policy Committee. It is a revision of clause **10** of BS 812-3:1975, for the determination of the polished-stone value of an aggregate. It is also a revision of the alternative method for determining the polished-stone value described in clause **11** of Amendment No. 2 to BS 812-3:1975, which was published in March 1983. The method in this new Part 114 supersedes those described in clause **10** and clause **11**, both of which are now withdrawn. The remainder of BS 812-3 is also being revised and it is intended to issue further separate Parts or Sections of the standard.

This test method for determining the polished-stone value is basically that described in clause **11** of BS 812-3:1975. The main changes are as follows.

- a) The procedure for mounting the aggregate in a sand cement mortar is no longer described; only the resin mounting method is to be used.
- b) The previous method determined an average value from four specimens conditioned on one test run. The revised method requires the conditioning of four specimens in two pairs on two separate test runs.

It is intended that other British Standards on aggregates should call up BS 812 test methods as the basis for compliance. Nevertheless it is not intended that all aggregates will be subjected regularly to all the listed tests. Specifications in other standards should call up only relevant test methods. Some of the tests specified in other Parts of this standard are of limited application and advice on the use of simpler quantitative tests is given, for example, when they can be used for a preliminary sorting of aggregates to see whether more precise and expensive testing is justified.

Reference should be made to BS 812-101:1984 for general guidance on testing aggregates, precision of test methods and variance arising from sampling errors. A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This Part of BS 812 describes the method for determining the polished-stone value (PSV) of an aggregate.

NOTE The titles of the publications referred to in this standard are listed on Inside back cover.

2 Definitions

For the purposes of this Part of BS 812, the definitions given in BS 812-101 and BS 812-102 apply.

3 Principle

The polished-stone value gives a measure of the resistance of roadstone to the polishing action of vehicle tyres under conditions similar to those occurring on the surface of a road. Where the surface of a road consists largely of roadstone the state of polish of the sample will be one of the main factors affecting the resistance of the surface to skidding. The actual relationship between PSV and skidding resistance will vary with the traffic conditions, type of surfacing and other factors. All factors together with the reproducibility of the test should be taken into account when drawing up specifications for road-works which include test limits for PSV. The test is in two parts.

- a) *First part.* Samples of stone are subjected to a polishing action in an accelerated polishing machine.
- b) *Second part.* The state of polish reached by each sample is measured by means of a friction test and is expressed as a laboratory-determined PSV.

4 Sampling¹⁾

The sample used in the laboratory for the test shall be taken in accordance with clause 5 of BS 812-102:1984. The sample shall be taken from the normal run of production from the plant.

NOTE Chippings that have been freshly crushed in the laboratory or recovered from bituminous materials may give misleading results.

5 Apparatus

5.1 Accelerated polishing machine (Figure 1), which shall be rigidly mounted on a firm, level base of stone or concrete. It shall include the following.

- a) A wheel, referred to as the “road wheel”, having a flat periphery. It shall be of such a size and shape as to permit 14 of the specimens described in clause 7 to be clamped on the periphery so as to form a continuous surface of stone particles 45 mm wide and 406 mm in diameter.
- b) Means of rotating the road wheel about its own axis at a speed of 320 ± 5 r/min.
- c) Two solid rubber-tyred wheels of 200 mm diameter and with a width of 38 mm. These wheels shall be of two colours. A dark-coloured wheel shall be used for the corn emery and a light-coloured wheel for the emery flour. The rubber tyres shall be made according to the Avon Tyre Ltd. compound code 4454 and shall initially have a hardness of 69 ± 3 IRHD (see BS 2719).

NOTE The rubber tyres are obtainable from the suppliers of the accelerated polishing machine.

- d) Means of bringing the surface of the appropriate solid rubber-tyred wheel to bear on the road wheel with a total free force of 725 ± 10 N. It shall be free to rotate about its own axis, which shall be parallel with the axis of the road wheel, and the plane of rotation of the tyre shall be in line with that of the road wheel. The machine shall be accurately aligned and both wheels shall be free to rotate without play in the bearings. The following limits shall be applied:

- 1) the planes of rotation of the two wheels shall be not more than 20 min of arc out of parallel (1 mm in 200 mm);

NOTE This may be checked by means of a notched straight-edge using the rim of the road wheel as a datum.

- 2) the planes through the centres of the two wheels shall be not more than 0.8 mm apart.

- e) Feed mechanism, dark-coloured for use with the dark-coloured wheel [see c)], to feed the corn emery (see 6.1) and water at the specified rates (see 9.4). It shall feed in such a way that the emery and water are continuously and uniformly spread over the surface of the tyre and the specimens where they are in contact. The emery and water shall be fed directly onto the road wheel near the point of contact with the rubber-tyred wheel.

¹⁾ Where necessary, information on the current sources of supply of any of the apparatus or materials required for this test can be obtained from BSI Enquiry Section, BSI, Linford Wood, Milton Keynes MK14 6LE.