

BCA TEST REQUIREMENTS FOR IMPORTED COARSE AND FINE AGGREGATES

(To take effect from 15 February 2011)

BCA has adopted a three-stage testing regime on imported aggregates to determine the quality of aggregates imported from overseas sources. As the party to be held responsible for the import of aggregates from a source, an importer is subject to the testing regime and obtains a BCA landing permit¹ each time he imports aggregates from his source.

1 BCA Stage 1 Pre-Import Test (S1 Test)

If you wish to import aggregates from a source (i.e. Quarry / Mining Site) new to you into Singapore, you have to meet the requirements of BCA Stage 1 Pre-Import Test (in short S1 Test) to demonstrate the quality of the supply of your source. **Only** upon BCA's notification that you have met the S1 Test requirements, you then are allowed to import your first consignment of aggregates to Singapore, with BCA landing permit application.

1.1 S1 Test Requirements

1.1.1 Under the S1 Test, the essential documents required from the importers includes:

- (a) Quarry / Mining Site details (name, address, country) to be indicated in the various documents,
- (b) Test reports (indicating quarry / mining site and aggregate product type) indicating the results based on tests conducted on different parts of the same sample in accordance to the tests required by BCA as listed in Table 1 of Annex A,
- (c) Quarry / Mining Site operator's authorisation letter (for authorising the importer to obtain a supply of and to import the aggregates from that quarry / mining site),
- (d) Detailed map showing the exact location of the quarry / mining site within the country of origin,
- (e) Geologist report of the quarry / mining site if available.

1.2 Submission of Documents and Sample

You are required to submit by hand the documents in Clause 1.1 and a sample of the aggregate separated in **three plastic containers (each container of sample weighs about 150g)** clearly labelled with the name of importer, name of quarry / mining site, type of material / product and date of submission to BCA (attention to Officer-in-charge/Strategic Materials Department). The sample must correspond to the type of aggregate as indicated in the test reports. Please indicate your name, email and contact number in the cover letter.

1.2.1 A sample of the content of the cover letter is as followed:

¹ Please refer to BCA website at <http://www.corenet.gov.sg/elps/> for application of electronic landing permit system at aggregate terminals.

"[Company name] wish to import [Types of aggregate, e.g. land/river sand or 20mm granite or granite dust etc.] from [Name of quarry/mining site] to Singapore and submit herewith the documents for S1 Test for our new source of supply. We hereby undertake that the report from [laboratory], ref: [reference number] and report from [laboratory], ref: [reference number] are generated from tests conducted on a sample of [Types of aggregate] taken from the [quarry / mining site name, quarry / mining site location/address, country etc]. We have submitted a sample of aggregate in three plastic containers each weighing about 150g (with proper label) for your retention. We have also attached the location map of the [quarry / mining site] etc, for your perusal."

1.2.2 Any test report submitted to BCA must be valid at the point of submission for S1 Test acceptance based on the following conditions:

- (a) The Petrographic Examination and Mortar Bar Method test reports must be **not more than 1 year old** and must be conducted on the same aggregate sample in the same laboratory,
- (b) The Sulphate content test result must be **not more than 3 months old**,
- (c) The Chloride content test result must be **not more than 1 week old**.

1.3 Laboratories

1.3.1 The types of test method required by BCA as listed in Table 1 of Annex A could be conducted in any overseas independent testing laboratory. Importers who intend to have their samples tested in overseas laboratories are required to check that the overseas laboratories **are accredited by the respective overseas accreditation bodies to conduct the above-mentioned tests under S1 Test**. The respective overseas accreditation bodies **must** be under the Mutual Recognition Arrangements (MRAs) with Singapore Accreditation Council (SAC)². Documentary evidence of laboratory accreditation must be submitted for verification.

1.3.2 Alternatively, the tests could be conducted in a Singapore laboratory acceptable to BCA³. The quantity of aggregates submitted for testing should be at least 50kg.

1.3.3 Once you have received the BCA notification letter stated that your S1 submission has met the requirements of S1 Test (called the S1 Letter), you will be allowed to import the first shipment of aggregate from the declared source stipulated in the S1 Letter. If you have received BCA's notification that you have not met the requirements of S1 Test, you will be prohibited from importing aggregates from that same source in future.

² You can refer to <http://www.sac-accreditation.gov.sg/international.asp> for the list of overseas accreditation labs under MRA with SAC.

³ A list of BCA accepted Laboratory including the Accepted Analysts and their corresponding in-house testing capabilities could be found are in BCA's website at <http://www.bca.gov.sg/AggregatesImport/AcceptableAnalyst.html>.

- 1.3.4 Please note that BCA S1 Letter will be valid for only **15 months** from the date of the Petrographic Examination and Mortar Bar Method test reports whichever is the earliest.

2 BCA Stage 2 Confirmation Test (S2 Test)

2.1 S2 Test Requirements

- 2.1.1 The aggregates to be imported for Stage 2 Confirmation Test (in short S2 Test) must correspond to the aggregate product type indicated in the S1 Test submission. Before the arrival of your first consignment, you are required to obtain BCA's landing permit and BCA's acceptance on your isolation proposal indicating:
- (a) a storage site (i.e. your storage yard or BCA isolation sub-plots⁴ (in short ISP) for storing the first consignment of imported aggregates; and
 - (b) details of the measures to ensure that the aggregates under isolation will (i) remain intact (ii) separate from any neighbouring stock in a distinct way and (iii) not be used, drawn down and tampered with during the isolation period.
- 2.1.2 Prior to the arrival of your first consignment into Singapore for isolation at your storage yard or BCA's ISP, you shall arrange with BCA officer (at least 24 hours before the consignment's arrival) to collect sample from your first consignment for S2 Test. The sample collection by BCA must be conducted BEFORE the consignment is unloaded for isolation.
- 2.1.3 The types of test method required for S2 Test are identical to that for S1 Test. The S2 Test will be conducted in Singapore Laboratories acceptable to BCA (hereinafter refer to accepted lab) at your cost. At the same time, you are not allowed to import aggregates from the same source while S2 Test is ongoing.
- 2.1.4 Once you have received the BCA notification letter stated that the S2 Test results have met the requirements of S2 Test (called the S2 Letter), you are allowed to further import more aggregates from your source stipulated in the S2 Letter with BCA landing permit and to supply or use your first consignment which was earlier isolated.
- 2.1.5 Please note that S2 Letter will be valid for 1 year from the date of test reports (i.e. Petrographic Examination and Mortar Bar Method whichever is earlier) conducted under S2 Test. The validity will be extended if you import a consignment not more than 3 months before the S2 expiry date. Subsequent import(s) within the validity period will further extend the expiry date till 3 months from the date of that import. An example to illustrate the S2 validity is shown in Annex B.
- 2.1.6 You are not allowed to further imports from the source upon expiry of S2 Letter. However, you may apply for further imports from the same source,

⁵ You can refer to <http://www.bca.gov.sg/IsolationSubplot/subplot.html> for application of Isolation Sub-plot.

where approval is subjected to your application and compliance with Clause 5.3.

3 BCA Stage 3 Random Test (S3 Test)

3.1 S3 Test Requirements

- 3.1.1 Random tests (in short S3 Test) may be conducted on your subsequent consignments imported from your source for surveillance purposes. BCA officer will collect sample from any of your subsequent consignment for S3 Test.
- 3.1.2 BCA may conduct one or more types of test (refer to the list of tests in Table 1 of Annex A) for S3 Test. However, BCA may conduct field tests, such as Chloride and Sulphate content, on your imported aggregates at the unloading point. The cost of S3 Test will be borne by BCA if the test results meet the requirements of S3 Test. Otherwise, you will reimburse BCA for the cost of S3 Test.
- 3.1.3 At the same time, you are allowed to continue supplying the imported aggregates and further importing aggregates from your source while the S3 Test is on going.
- 3.1.4 BCA will only send you a notice if S3 Test results do not meet the requirements of S3 Test.

4 Sample collection for S2 Test and S3 Test

- 4.1 BCA will issue a letter to you, or your company's representative, or your agent in charge of the consignment, when the sample for the S2 Test or S3 Test is collected.
- 4.2 The sample of aggregate collected will be divided into 2 parts at the aggregate terminals managed by BCA or other sites as directed by BCA. Each part of sample will be labelled and sealed by BCA officers. The accepted analyst in the accepted lab will use first part of the sample for S2 Test or S3 Test whichever is relevant. The second part of the S2 sample will be retained by BCA and disposed of after 2 months from the sample collection date, if no re-test is requested by you. However, the retention period for the second part of S3 sample will be 1 month.

5 Re-test for S2 and S3 Tests

5.1 BCA's Preliminary Assessment on first part sample

- 5.1.1 In the event that the first part sample does not meet the test requirements of S2 Test (or S3 Test), you will receive BCA notice on the preliminary assessment for S2 Test (or S3 Test) respectively and you are to immediately cease importing the aggregate from the same source where the sample is extracted.
- 5.1.2 In the event you decide not to pursue for a retest (i.e. S2/S3 retest) or you do not request for a retest within the period stipulated in Clause 5.1.3 below. BCA's preliminary assessment shall at the end of the stipulated period be deemed to be BCA's final assessment. You are required to

comply with Clause 5.2.2 and 5.2.3 for handling of rejected aggregates under S2 Test and S3 Test respectively.

5.1.3 You may request in writing to BCA to submit the second part of the sample for a re-test, complying with the following conditions. If your written request is in order, BCA will then send the second part sample for re-test. The scope of re-test is identical to that for the first part sample.

- (a) Written request for re-test must be submitted to BCA, within 2 weeks for aggregates under isolation and within 48 hours for aggregates not under isolation, after receiving BCA's notice of its preliminary assessment; and
- (b) You have to pay the test fees for the second part sample. Such payment (in the form of a cheque and make payable to Building and Construction Authority) must be submitted together with the written request.

5.1.4 Regardless of whether you request for a re-test, you are required to

- (a) notify all persons to whom you have supplied aggregates not later than 5 days from the end of the supply period (Supply period is the period between the date of arrival of the consignment, which first part of sample has been tested, and the 7th day after the accepted lab's report is received by BCA, both days inclusive) on the following;
 - (i) BCA's preliminary assessment on the first part sample,
 - (ii) Type of aggregate, date of entry of the consignment, quarry/mining site,
 - (iii) your written request to BCA for the re-test (if applicable).
- (b) notify BCA of the business addresses and identities of all persons not later than 5 days after you serve the persons a notice under Clause 5.1.4(a) above. In this respect, you may provide BCA copies of your notifications issued and sending them to BCA (attention to Officer-in-charge/Strategic Materials Department).

5.1.5 The above Clause 5.1.4 will not be applicable to consignments under isolation.

5.2 BCA's Final Assessment on S2 Test and S3 Test

5.2.1 In the event you have received BCA's notice on the final assessment, after the retest if applicable, that you have not met the requirements of S2 Test (or S3 Test), you are not allowed to further import the aggregates from the same source. You are required to comply with requirements under Clause 5.2.2 and 5.2.3 depending on whether the consignment is under isolation or not.

5.2.2 Handling of rejected aggregates under isolation

- (a) The isolated aggregates must be disposed for use in construction works without the need to mix with cement such as production of concrete / cement mortar etc or removed from Singapore within a period stipulated by BCA.
- (b) You are required to lodge a disposal plan with BCA at least 14 days before the start of such disposal and not later than 7 days after receiving the BCA's notice on a source failing to meet BCA's testing requirements.

5.2.3 Handling of rejected aggregates not under isolation - refer to Clause 5.1.4.

5.3 Application to further import aggregates from same source

5.3.1 You may apply for further import from the same source that the S2 Letter has become invalid. To do so, you have to submit to BCA

- (a) the test reports of the aggregates from the source in accordance to Clause 1.2.2,
- (b) Quarry / Mining Site operator's authorisation letter (for authorising the importer to obtain a supply of and to import the aggregates from that quarry / mining site),
- (c) all documents as required by BCA under Clause 1 of the testing requirements.

5.3.2 The renewed validity of S2 Letter will be 1 year from the date of test reports from the source (i.e. Petrographic Examination and Mortar Bar Method whichever is earlier). The validity will be extended if you import a consignment not more than 3 months before the S2 expiry date. Subsequent import(s) within the validity period will further extend the expiry date till 3 months from the date of that import.

5.3.3 You may apply for further import from the same source that the failed imported aggregates was extracted or won. You have to make:

- (a) in writing to BCA not later than 9 months after receiving BCA's notice that your imported aggregate does not meet the requirements of S3 Test; and
- (b) your proposal must contain the following particulars:
 - (i) the number of consignments and estimated quantity of imported aggregates proposed to be further imported;
 - (ii) a description of the steps you will take or arrange to be taken to ensure that the imported aggregates proposed to be further imported are of acceptable quality for use in any building works, street works or railway works in Singapore.

5.3.4 Upon acceptance under Clause 5.3.2, your next consignment(s) of imported aggregates from the same source will be subjected to S2 Test.

Meanwhile, BCA will conduct S3 Test on all your other sources at your cost.

Further Enquiries

Please contact any of the following BCA officers if you need further assistance:

- Ken Lee DID:63255188 Email: ken_lee@bca.gov.sg
- Alvin Foong DID:63255179 Email: foong_chong_cheng@bca.gov.sg

BCA reserves all rights to amend the contents provided herewith without prior notice.
Importers should always check for the latest test guidelines with BCA officers or in BCA homepage,
http://www.bca.gov.sg/AggregatesImport/aggregates_import.html.

Annex A: Testing of Imported Aggregates

The test requirements and specifications for 3-Stage Testing on coarse and fine aggregates are listed below:

Table 1: Test Methods and Test Standards for Imported Coarse and Fine Aggregates

Description	Test Method	Relevant Standards	Specification
Water Soluble Chloride Content	EN1744 -1:1998 Clause 7	SS EN 12620	Chloride ion content \leq 0.01 % by mass of chloride ion of combined aggregate.
Acid Soluble Sulphates Content	EN1744 -1:1998 Clause 12	SS EN 12620	Sulphate content of the aggregates and filler aggregates for concrete \leq 0.8 % by mass for aggregates other than air-cooled blastfurnace slag.
Petrographic Examination	ASTM C295	ASTM C33	Aggregates should not contain any constituents that is deleterious to concrete.
Alkali-silica reactivity (Mortar Bar Method)	ASTM C1260	ASTM C33	Only aggregates with expansion value not greater than 0.20% shall be used.

Please note that this is not an exhaustive list. BCA reserves the right to impose further tests on the aggregates as and when required, as decided by BCA.

On top of the BCA test requirements, the aggregates to be sold for concreting use must also comply with the requirements stipulated under SS EN 12620: Specification for Aggregates for concrete.

More information on SS EN 12620 can be found at:

<http://www.singaporestandardseshop.sg/product/ProductView.aspx?id=6b2ee039-aad2-4427-ad6c-b87b8b143ade> or

<http://www.singaporestandardseshop.sg/product/productView.aspx?id=acf6ac4a-6c7c-43c2-a23d-efc38d5c5448>

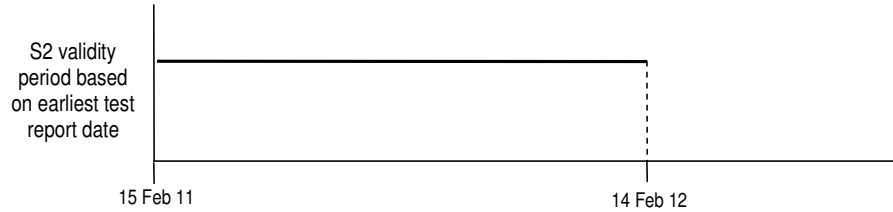
Finally, you are strongly advised to check with their buyers for any other specific tests (i.e. as required by the buyers) pertaining to the use of aggregates in concrete.

Importers should always check for the latest test requirements with BCA officers or in BCA homepage,
http://www.bca.gov.sg/AggregatesImport/aggregates_import.html.

Annex B

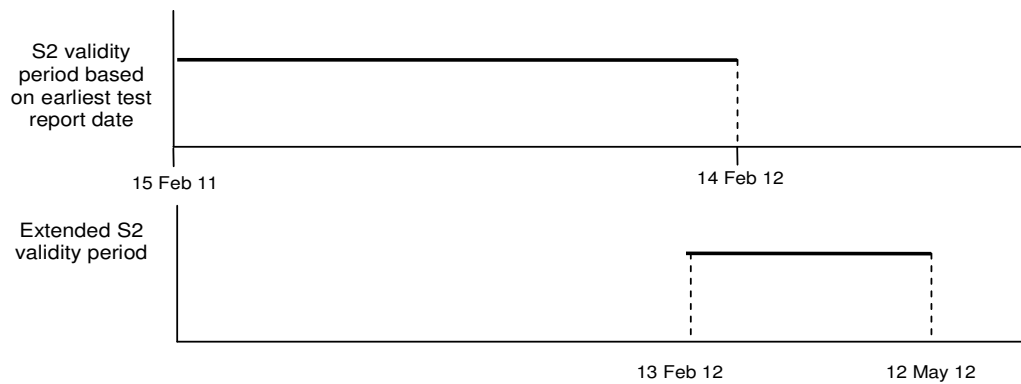
Example

- 1) Date of S2 Petrographic Examination test report: 16 Feb 2011
Date of S2 Mortar Bar Method test report: 15 Feb 2011



The S2 letter is valid till 14 Feb 2012 based on the date of Mortar Bar Method test report, i.e. the earlier date of the two test reports .

- 2) Following from above, if there is a consignment imported on 13 Feb 2012, .ie. not more than 3 months before 14 Feb 12, the S2 letter validity will be extended till 12 May 2012.



- 3) Continuing from above, if there is subsequent consignment imported on 20 Feb 2012, the S2 letter validity will be further extended till 19 May 2012. Subsequent import(s) within the current validity period will further extend the validity period till 3 months from the date of that import.

