

# BCA TEST REQUIREMENTS FOR IMPORTED COARSE AND FINE AGGREGATES

(Updated as on 3<sup>rd</sup> February 2020)

The Building and Construction Authority Act Part VIA Supply of Essential Construction Materials (“the Act”) & BCA (Importers’ Licensing) (Amendment) Regulations 2016 (“the Regulations”) have imposed a testing regime on imported aggregates to determine the quality of aggregates imported from overseas sources. A licensed Importer (“licensee”) is subject to the testing regime and is required to obtain an Import Permit<sup>1</sup> each time he imports aggregates from his source.

## **1 BCA Stage 1 Pre-Import Test** **(Pursuant to Section 31H of the Act & Reg. 13 of the Regulations)**

If you wish to import aggregates from a source (i.e. Quarry / Mining Site) - into Singapore, you have to meet the requirements of the BCA Stage 1 Pre-Import Test (in short the “S1 Test”) to demonstrate the quality of the supply of your source. **Only** upon BCA’s notification that you have met the requirements of S1 Test, together with a valid Import Permit, will you then be allowed to import your first consignment of aggregates into Singapore for the confirmation test.

### **1.1 S1 Test Requirements**

1.1.1 Under the S1 Test, you are required to submit by hand, the duly completed S1 Submission Form<sup>2</sup> together with the following documents that are required for clarification:

- (a) Details of source (name of quarry / mining site, site address, province, country) to be indicated in the various documents,
- (b) Test reports (indicating name of quarry / mining site and type of aggregate product for testing) indicating the results based on tests conducted on different parts of the same sample in accordance with the tests required by the BCA as listed in Table 1 of Annex A. A letter from the owner or operator of the source that the test reports are conducted on samples from the source is also required,
- (c) Source operator’s authorisation letter (authorising the licensee or via agent to obtain a supply of and to import the aggregates from that source),
- (d) A detailed map showing the exact location of the source within the country of origin,
- (e) 3 plastic containers, each with about 150g of aggregate sample,

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<sup>1</sup> BCA utilizes TradeNet® Cargo Clearance Permit (CCP) as Import Permit. You may refer to TradeXchange website at <https://www.tradexchange.gov.sg/tradexchange/default.portal> for the application of CCP.

<sup>2</sup> S1 Submission form is available for download at <http://www.bca.gov.sg/LicenseesLicensing/others/S1SubmissionForm.doc>.

(f) A geologist report on the site if required by the BCA.

1.1.2 Any test report submitted to the BCA must meet the following conditions in order to be valid at the point of submission for S1 Test acceptance:

(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 and 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**.

## 1.2 Laboratories

1.2.1 The types of test method required by the BCA as listed in Table 1 of Annex A could be conducted in any overseas independent testing laboratory. Licensees 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 the S1 Test**. The respective overseas accreditation bodies **must** be under the Mutual Recognition Arrangements (MRAs) with Singapore Accreditation Council (SAC)<sup>3</sup>. Documentary evidence of laboratory accreditation must be submitted for verification.

1.2.2 Alternatively, the tests could be conducted in Singapore by Authorised Analysts designated by the BCA<sup>4</sup>. The quantity of aggregates submitted for testing should be at least 50kg.

1.2.3 Once you have received the BCA's notification letter (in short called the S1 Letter) stating that your submission for application has met the S1 Test requirements, you will then have attained the S1 Status. You will be allowed to import the first consignment of aggregate from the declared source stipulated in the S1 Letter. If you have received BCA's notification that you have failed to meet S1 Test requirements, you will be prohibited from importing aggregates from that same source in the future.

1.2.4 Please note that the BCA S1 Status will be valid for not more than **15 months** from the date of the Petrographic Examination and the Mortar Bar Method test reports whichever is the earlier.

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<sup>3</sup> You can refer to <http://www.sac-accreditation.gov.sg/international.asp> for the list of overseas accreditation labs under MRA with SAC.

<sup>4</sup> A list of BCA Authorised Analysts could be found in BCA's website at <http://www.bca.gov.sg/LicenseesLicensing/ListofAuthorisedAnalysts.html>.

## **2 BCA Stage 2 Confirmation Test** **(Pursuant to Section 31J and Section 31K of the Act)**

### **2.1 S2 Test Requirements**

2.1.1 The first consignment of aggregate to be imported for Confirmation Test (in short the S2 Test) must correspond to the aggregate product type indicated in the S1 Letter. Before the import of your first consignment, you are required to obtain the following documents from the BCA:

- (a) storage permit<sup>5</sup> for storing the first consignment of imported aggregates,
- (b) BCA Import Permit,

For imports via sea through Aggregate Terminals at Tuas, Pulau Punggol Timor and BCA's approved direct landing sites, a valid BCA's landing permit<sup>6</sup> is also required.

2.1.2 Please note that the application for storage permit must be submitted to the BCA at least six (6) working days before the arrival of a consignment. Any amendments to the application must reach the BCA at least four (4) working days before the arrival of consignment.

2.1.3 You are to ensure that you have a valid Import Permit at least two (2) working days before the arrival of consignment.

An example to illustrate the timelines for 2.1.2 and 2.1.3 is shown in Annex B.

2.1.4 The BCA will issue an isolation order in respect of your first consignment which is required to be isolated. Prior to the arrival of your first consignment into Singapore for isolation, you should arrange with BCA officer (at least 24 hours before the consignment's arrival) to collect the sample from your first consignment for the S2 Test. BCA could at its discretion, conduct sample collection either before or after the consignment is unloaded for isolation.

2.1.5 The types of test method required in S2 Test are identical to the S1 Test. The S2 Test must be conducted by an Authorised Analyst designated by the BCA and the cost of the tests will be borne by the BCA. At the same time, you are not allowed to import aggregates from the same source while the testing is ongoing.

Once you have received the BCA notification letter that the test results have met the requirements of the S2 Test (in short called the S2 Letter), you are allowed to further import aggregates from your source stipulated in the S2 Letter with BCA Import Permit and to supply or use your first consignment which was isolated earlier. For further imports via sea through Aggregate Terminals at Tuas, Pulau Punggol Timor

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<sup>5</sup> Please refer to BCA website at <http://www.bca.gov.sg/LicenseesLicensing/others/StoragePermitApplicationForm.doc> for application of storage permit.

<sup>6</sup> Please refer to BCA website at <http://www.corenet.gov.sg/elps/> for application of electronic landing permit system at aggregate terminals.

and the BCA's approved direct landing sites, a valid BCA landing permit is also required.

- 2.1.6 Please note that the S2 Status will only be valid for **1 year** from the date of the test reports (i.e. Petrographic Examination and Mortar Bar Method whichever is earlier) conducted under the S2 Test. The validity will be extended if you import a consignment not more than 6 months before the expiry date of the S2 Status. Subsequent import(s) within the validity period will further extend the expiry date till 6 months from the date of that import. An example to illustrate the validity of the S2 Status is shown in Annex C.
- 2.1.7 You are not allowed to import further from the source upon expiry of the S2 Status. However, you may apply for further imports from the same source, subject to your application and compliance with Clause 2.1.6 and 2.1.7.
- 2.1.8 To renew an expired S2 Status, you have to submit to the BCA the following:
- (a) the test reports of the aggregates from the source in accordance to Clause 1.1.1(b) and 1.1.2,
  - (b) Source operator's authorisation letter (for authorising the licensee or via agent to obtain a supply of and to import the aggregates from that source),
  - (c) all documents / materials as required by the BCA under Clause 1 of the testing requirements.
- 2.1.9 The validity of the S2 Status will be for 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 6 months before the expiry date of S2 Status. Subsequent import(s) within the validity period will further extend the expiry date 6 months from the date of that import.

### **3 BCA Stage 3 for Random Test** **(Pursuant to Section 31J(6) and Section 31K of the Act)**

#### **3.1 S3 Test Requirements**

- 3.1.1 Random tests (in short the S3 Test) may be conducted on your subsequent consignments imported from your source for surveillance purposes. BCA officer will collect samples from any of your subsequent consignment for the S3 Test.
- 3.1.2 BCA may conduct one or more types of tests (refer to the list of tests in Table 1 of Annex A) for the S3 Test. However, the BCA may also conduct field tests, such as Chloride Content, on your imported aggregates at the unloading point. The cost of the S3 Test will be borne by the BCA.

- 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 ongoing.

#### **4 Sample collection for S2 Test and S3 Test** **(Pursuant to Reg. 19 of the Regulations)**

- 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 the BCA or other sites as directed by the BCA. Each part of sample will be labelled and sealed by BCA officers. The Authorised Analyst will use the first part of the sample for the S2 Test or S3 Test whichever is relevant. The second part of the sample will be retained by the BCA and disposed of after 2 months from the sample collection date, if no re-test is requested by you.

#### **5 Re-test for S2 Test and S3 Test** **(Pursuant to Reg. 21 and Reg. 22 of the Regulations)**

##### **5.1 BCA's Preliminary Determination on first part sample**

- 5.1.1 In the event that the first part sample does not meet the BCA test requirements of imported aggregates, you will receive BCA notice on the preliminary determination for the S2 Test (or the S3 Test) respectively.
- 5.1.2 In the event you decide not to pursue for a retest or you do not request for a retest within the period stipulated in Clause 5.1.3 below. The BCA's preliminary determination shall at the end of the stipulated period be deemed to be BCA's final determination. You are required to comply with Clause 6.1.1 and 6.1.2 for handling of failed aggregates under the S2 Test and S3 Test respectively.
- 5.1.3 You may request in writing to the BCA to submit the second part of the sample for a re-test, complying with the conditions (a) & (b) below. If your written request is in order, the 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 the BCA, within 2 weeks for aggregates under isolation and within 48 hours for aggregates not under isolation, after receiving the BCA's notice of its preliminary determination; and
- (b) You have to pay the test fees for the second part sample. Such payment (in the form of a cheque made payable to the Building and Construction Authority) must be submitted together with the written request.

## 5.2 BCA's Final Determination on S2 and S3 Test Results

5.2.1 In the event you have received the BCA's notice on the final determination, after the retest if applicable, that you have not met the BCA test requirements of imported aggregates, you are not allowed to further import the aggregates from the same source. You are required to comply with requirements under Clause 6.1.1 and 6.1.2 depending on whether the consignment is under isolation or not.

## 6 **Handling of failed aggregates** **(Pursuant to Reg. 24, Reg. 25 and Reg. 26 of the Regulations)**

### 6.1.1 Failed aggregates under isolation

- (a) The isolated aggregates must either destroyed, disposed of, or removed from Singapore within a period stipulated by the BCA.
- (b) You are required to lodge a disposal plan with the BCA at least 14 days before the start of such disposal or removal and not later than 7 days after receiving the BCA's notice on a source failing to meet the BCA's testing requirements.

### 6.1.2 Failed aggregates not under isolation

- (a) You are required to notify all persons to whom you have supplied aggregates (whether or not it is from the aggregates supplied from the same consignment as the sample of failed aggregates) not later than 5 days after 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 7<sup>th</sup> day after the authorised analyst's certificate is received by the BCA, both days inclusive) of the following;
  - (i) The BCA's final determination in respect to the sample taken from that consignment,
  - (ii) Type of aggregate, quantity, and date of entry of the consignment.
- (b) and to notify the BCA of the business addresses and identities of all persons within a period of 5 days after you served the persons a notice under Clause 6.1.2 (a) above. You are to provide the BCA with copies of the notifications issued to the BCA (Attention: Officer-in-charge / Strategic Resources Department).



## 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 (Pursuant to Reg. 23)

Description	Test Method	Relevant Standards	Specification
Water Soluble Chloride Content	EN1744-1 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 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 blast furnace slag.
Petrographic Examination	ASTM C295	ASTM C33	Aggregates should not contain any constituents that are 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. The BCA reserves the right to impose further tests on the aggregates as and when required, as decided by the 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.

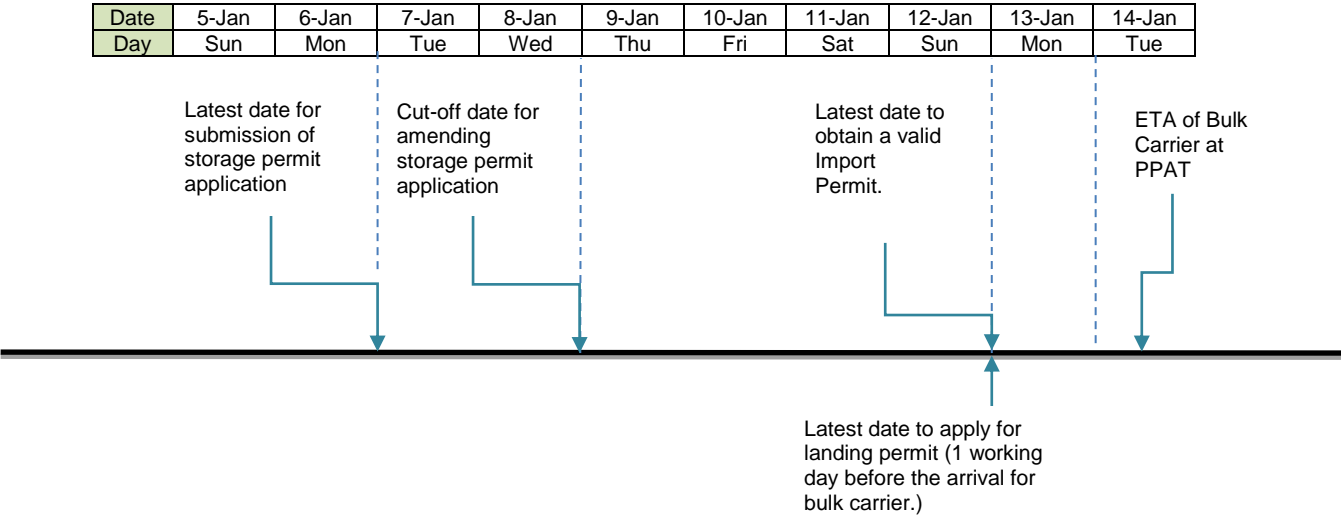
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Licensees should always check for the latest test requirements with BCA officers or in BCA homepage,  
[http://www.bca.gov.sg/AggregatesImport/aggregates\\_import.html](http://www.bca.gov.sg/AggregatesImport/aggregates_import.html).



**Annex B**

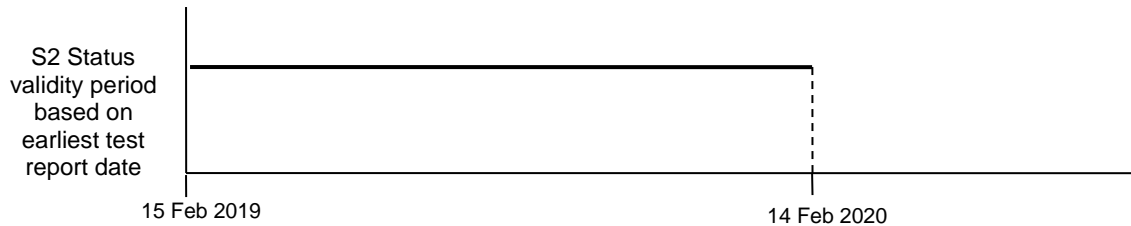
**Illustration 1**



## Annex C

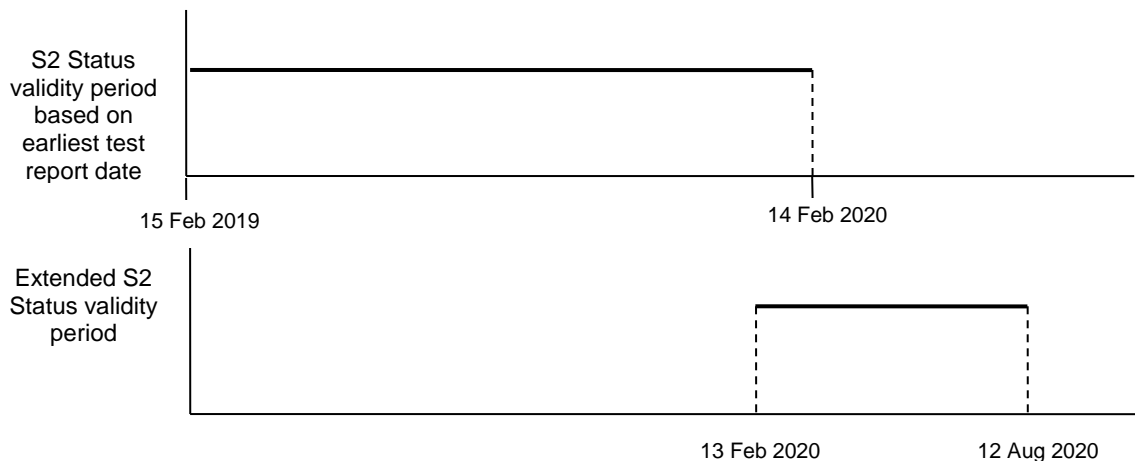
### Example

- 1) Date of passed S2 Petrographic Examination test report: 15 Feb 2019  
Date of passed S2 Mortar Bar Method test report: 14 Feb 2020



The S2 Status is valid until 14 Feb 2020 based on the date of the passed Mortar Bar Method test report, i.e. the earlier date of the two passed test reports.

- 2) Following from above, if there is a consignment imported on 13 Feb 2020, i.e. not more than 6 months before 14 Feb 2020, the S2 Status validity will be extended till 12 Aug 2020.



- 3) Continuing from above, if there is subsequent consignment imported on 20 Feb 2020, the S2 Status validity will be further extended until 19 Aug 2020. Subsequent import(s) within the current validity period will further extend the validity period till 6 months from the date of that import.

