

SS EN 12620:2008(2024)+A1:2009
EN 12620:2002, IDT
(ICS 91.100.15; 91.100.30)

SINGAPORE STANDARD

Specification for aggregates for concrete

This national standard is the identical implementation of EN 12620:2002 and is adopted with permission of CEN, Rue de la Science 23 B - 1040 Brussels

Incorporating Amendment No. 1

Confirmed 2024

SS EN 12620:2008(2024)+A1:2009

EN 12620:2002, IDT
(ICS 91.100.15; 91.100.30)

SINGAPORE STANDARD

Specification for aggregates for concrete

Published by Enterprise Singapore

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilised in any form or by any means, electronic or mechanical, including photocopying and microfilming, without permission in writing from Enterprise Singapore. Request for permission can be sent to: standards@enterprisesg.gov.sg.

© CEN 2002
© Enterprise Singapore 2008

ISBN 981-4154-61-X

Contents

	Page
National Foreword _____	4
1 Scope _____	5
2 Normative references _____	5
3 Terms and definitions _____	7
4 Geometrical requirements _____	8
5 Physical requirements _____	15
6 Chemical requirements _____	20
7 Evaluation of conformity _____	22
8 Designation _____	23
9 Marking and labelling _____	23

Annexes

A	(informative) Illustration of grading requirements for most commonly used sizes for graded coarse aggregates _____	24
B	(informative) Guidance on the description of coarseness/fineness of fine aggregates _____	26
C	(normative) Reduced grading tolerances on producer's declared typical grading for fine aggregates _____	27
D	(normative) Assessment of fines _____	28
E	(informative) Guidance on the use of aggregates in concrete _____	29
F	(informative) Notes for guidance on the freezing and thawing resistance of aggregates _____	30
G	(informative) Guidance on the effects of some chemical constituents of aggregates on the durability of concrete in which they are incorporated _____	32
H	(normative) Factory production control _____	35
ZA	(informative) Clauses of EN 12620 addressing essential requirements or other provisions of EU Directives _____	42
ZZA	(normative) Testing scheme for aggregates imported from sources / quarries without a system of product quality control _____	53

Tables

1	Sieve sizes for specifying aggregate sizes _____	9
2	General grading requirements _____	10
3	Overall limits and tolerances for coarse aggregate grading at mid-size sieves _____	11
4	Tolerances on producer's declared typical grading for general use fine aggregates _____	11
5	Tolerances on producer's declared typical grading for natural graded 0/8 mm aggregate _____	12
6	Grading requirements for all-in aggregates _____	12
7	Grading requirements for filler aggregate _____	13

	Page
8 Categories for maximum values of flakiness index _____	13
9 Categories for maximum values of shape index _____	14
10 Category for maximum values of shell content of coarse aggregates _____	14
11 Categories for maximum values of fines content _____	14
12 Categories for maximum values of Los Angeles coefficients _____	15
13 Categories for maximum values of resistance to impact _____	16
14 Categories for maximum values of resistance to wear _____	16
15 Categories for minimum values of resistance to polishing _____	16
16 Categories for maximum values of resistance to surface abrasion _____	17
17 Categories for maximum values of resistance to abrasion from studded tyres _____	17
18 Categories for maximum values of freeze-thaw resistance _____	18
19 Categories for maximum magnesium sulfate soundness _____	18
A1 20 Categories for constituents of coarse recycled aggregates _____	19
21 Categories for maximum values of acid-soluble sulfate content _____	20
22 Categories for maximum values of water-soluble sulfate content or recycled aggregates _____	21
23 Categories for influence of water-soluble materials from recycled aggregates on the initial setting time of cement paste _____	22 A1
A.1 Overall limits and tolerances for coarse aggregate grading at mid-size sieves for basic set plus set 1 coarse aggregate product sizes (in millimetres) _____	24
A.2 Overall limits and tolerances for coarse aggregate grading at mid-size sieves for basic set plus set 2 coarse aggregate product sizes (in millimetres) _____	25
B.1 Coarseness or fineness based on the percentage passing the 0.500 mm sieve _____	26
B.2 Coarseness or fineness based on the fineness modulus _____	26
C.1 Reduced tolerances on producer's declared typical grading for fine aggregates _____	27
F.1 Freeze-thaw severity category related to climate and end use _____	31
H.1 Minimum test frequencies for general properties _____	39
H.2 Minimum test frequencies for properties specific to end use _____	40
A1 H.3 Minimum test frequencies for properties appropriate to aggregates from particular sources _____	41 A1
ZA.1 Scope and relevant requirement clauses _____	42
ZA.2 System(s) of attestation of conformity for aggregates and fillers _____	45
ZA.3 Assignment of evaluation of conformity tasks _____	46
ZZA.1 Minimum test frequencies for general properties _____	53
ZZA.2 Minimum test frequencies for properties specific to end use _____	55
ZZA.3 Minimum test frequencies for properties appropriate to aggregates from particular sources / quarries _____	56
Figures	
ZA Example of CE marking information _____	49
Bibliography _____	57

National Foreword

This Singapore Standard was prepared by the Technical Committee on Building Structure and Sub-structure under the purview of the Building and Construction Standards Committee.

This standard is a revision of SS 31:1998 'Specification for Aggregates from natural sources for concrete' and is identical to EN 12620:2002 'Aggregates for concrete' with the addition of guidelines (see Annex ZZA) on alternative testing scheme for factory production control of aggregates that are imported into Singapore from sources without a system of product quality control in accordance with EN 12620. A1 It incorporates Amendment No. 1, May 2009. The start and finish of text introduced or altered by CEN Amendment 1 dated 2008-02-16 is indicated in the text by tags A1 A1. The amendment introduces clauses for recycled aggregates. The clauses call up new test methods, prEN 933-11, EN 1744-5 and EN 1367-4. A1

In Singapore, most, if not all of the aggregates, are imported. For sources of supply coming from outside Singapore, it may be difficult to find sources where producers adopt production control in accordance with EN 12620. To ensure the quality of imported aggregates, an alternative testing scheme to be undertaken by importers of aggregates in place of factory production control is given in this standard. This has been prepared with inputs from the regulatory authority and local industry stakeholders. The guidelines in Annex ZZA (normative) are based on the principles and test methods used in EN 12620:2002, to ensure the imported aggregates conform to the relevant requirements of the standard.

Relevant EN test methods are listed in Clause 2. The temperature used in the test method specifications is only for conformity testing requirements and may not represent the temperature when the material is used in concrete.

It is recommended to read SS EN 12620 and the EN test methods together with PD 6682-1:2003 'Guidance on the use of BS EN 12620' and PD 6682-9:2003 'Guidance on the use of European test methods standards' both published by BSI.

The standard is adopted with permission of CEN, Rue de la Science 23 B - 1040 Brussels.

Acknowledgement is made for the use of information from the above reference.

Attention is drawn to the possibility that some of the elements of this Singapore Standard may be the subject of patent rights. Enterprise Singapore shall not be held responsible for identifying any or all of such patent rights.

NOTE

1. *Singapore Standards (SSs) and Technical References (TRs) are reviewed periodically to keep abreast of technical changes, technological developments and industry practices. The changes are documented through the issue of either amendments or revisions. Where SSs are deemed to be stable, i.e. no foreseeable changes in them, they will be classified as "mature standards". Mature standards will not be subject to further review unless there are requests to review such standards.*
2. *An SS or TR is voluntary in nature except when it is made mandatory by a regulatory authority. It can also be cited in contracts making its application a business necessity. Users are advised to assess and determine whether the SS or TR is suitable for their intended use or purpose. If required, they should refer to the relevant professionals or experts for advice on the use of the document. Enterprise Singapore and the Singapore Standards Council shall not be liable for any damages whether directly or indirectly suffered by anyone or any organisation as a result of the use of any SS or TR. Although care has been taken to draft this standard, users are also advised to ensure that they apply the information after due diligence.*
3. *Compliance with a SS or TR does not exempt users from any legal obligations.*

Specification for aggregates for concrete

1 Scope

This Singapore Standard specifies the properties of aggregates and filler aggregates obtained by processing natural, manufactured or recycled materials and mixtures of these aggregates for use in concrete. It covers aggregates having an oven dried particle density greater than 2.00 Mg/m³ (2000 kg/m³) for all concrete, including concrete in conformity with EN 206-1 and concrete used in roads and other pavements and for use in precast concrete products. ^{A1} It also covers recycled aggregate with densities between 1.50 Mg/m³ (1500 kg/m³) and 2.00 Mg/m³ (2000 kg/m³) with appropriate caveats and recycled fine aggregate (4 mm) with appropriate caveats. ^{A1}

It also specifies that a quality control system is in place for use in factory production control and it provides for the evaluation of conformity of the products to this Singapore Standard.

This standard does not cover filler aggregates to be used as a constituent in cement or as other than inert filler aggregates for concrete.

NOTE 1 – Aggregates used in construction should comply with all the requirements of this Singapore Standard. As well as familiar and traditional natural and manufactured aggregates Mandate M/125 "Aggregates" included recycled aggregates and some materials from new or unfamiliar sources. Recycled aggregates are included in the standards and new test methods for them are at an advanced stage of preparation. For unfamiliar materials from secondary sources, however, the work on standardisation has only started recently and more time is needed to define clearly the origins and characteristics of these materials. In the meantime such unfamiliar materials when placed on the market as aggregates must comply fully with this standard and national regulations for dangerous substances (see Annex ZA of the standard) depending upon their intended use. Additional characteristics and requirements may be specified on a case by case basis depending upon experience of use of the product, and defined in specific contractual documents.

NOTE 2 – Properties for lightweight aggregates are specified ^{A1} BS EN 13055-1:2002 ^{A1} .

2 Normative references

This Singapore Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this Singapore Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies (including amendments).

^{A1} EN 196-2, *Methods of testing cement – Part 2 : Chemical analysis of cement.* ^{A1}

EN 932-3, *Tests for general properties of aggregates – Part 3 : Procedure and terminology for simplified petrographic description.*

EN 932-5, *Tests for general properties of aggregates – Part 5 : Common equipment and calibration.*

EN 933-1, *Tests for geometrical properties of aggregates – Part 1 : Determination of particle size distribution – Sieving method.*

EN 933-3, *Tests for geometrical properties of aggregates – Part 3 : Determination of particle shape – Flakiness index.*

EN 933-4, *Tests for geometrical properties of aggregates – Part 4 : Determination of particle shape – Shape index.*