A165 Series-14
(reaffirmed 2019)

CSA Standards on concrete masonry units

Legal Notice for Standards

Canadian Standards Association (operating as "CSA Group") develops standards through a consensus standards development process approved by the Standards Council of Canada. This process brings together volunteers representing varied viewpoints and interests to achieve consensus and develop a standard. Although CSA Group administers the process and establishes rules to promote fairness in achieving consensus, it does not independently test, evaluate, or verify the content of standards.

Disclaimer and exclusion of liability

This document is provided without any representations, warranties, or conditions of any kind, express or implied, including, without limitation, implied warranties or conditions concerning this document's fitness for a particular purpose or use, its merchantability, or its non-infringement of any third party's intellectual property rights. CSA Group does not warrant the accuracy, completeness, or currency of any of the information published in this document. CSA Group makes no representations or warranties regarding this document's compliance with any applicable statute, rule, or regulation.

IN NO EVENT SHALL CSA GROUP, ITS VOLUNTEERS, MEMBERS, SUBSIDIARIES, OR AFFILIATED COMPANIES, OR THEIR EMPLOYEES, DIRECTORS, OR OFFICERS, BE LIABLE FOR ANY DIRECT, INDIRECT, OR INCIDENTAL DAMAGES, INJURY, LOSS, COSTS, OR EXPENSES, HOWSOEVER CAUSED, INCLUDING BUT NOT LIMITED TO SPECIAL OR CONSEQUENTIAL DAMAGES, LOST REVENUE, BUSINESS INTERRUPTION, LOST OR DAMAGED DATA, OR ANY OTHER COMMERCIAL OR ECONOMIC LOSS, WHETHER BASED IN CONTRACT, TORT (INCLUDING NEGLIGENCE), OR ANY OTHER THEORY OF LIABILITY, ARISING OUT OF OR RESULTING FROM ACCESS TO OR POSSESSION OR USE OF THIS DOCUMENT, EVEN IF CSA GROUP HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, INJURY, LOSS, COSTS, OR EXPENSES.

In publishing and making this document available, CSA Group is not undertaking to render professional or other services for or on behalf of any person or entity or to perform any duty owed by any person or entity to another person or entity. The information in this document is directed to those who have the appropriate degree of experience to use and apply its contents, and CSA Group accepts no responsibility whatsoever arising in any way from any and all use of or reliance on the information contained in this document.

CSA Group is a private not-for-profit company that publishes voluntary standards and related documents. CSA Group has no power, nor does it undertake, to enforce compliance with the contents of the standards or other documents it publishes.

Intellectual property rights and ownership

As between CSA Group and the users of this document (whether it be in printed or electronic form), CSA Group is the owner, or the authorized licensee, of all works contained herein that are protected by copyright, all trade-marks (except as otherwise noted to the contrary), and all inventions and trade secrets that may be contained in this document, whether or not such inventions and trade secrets are protected by patents and applications for patents. Without limitation, the unauthorized use, modification, copying, or disclosure of this document may violate laws that protect CSA Group's and/or others' intellectual property and may give rise to a right in CSA Group and/or others to seek legal redress for such use, modification, copying, or disclosure. To the extent permitted by licence or by law, CSA Group reserves all intellectual property rights in this document.

Patent rights

Attention is drawn to the possibility that some of the elements of this standard may be the subject of patent rights. CSA Group shall not be held responsible for identifying any or all such patent rights. Users of this standard are expressly advised that determination of the validity of any such patent rights is entirely their own responsibility.

Authorized use of this document

This document is being provided by CSA Group for informational and non-commercial use only. The user of this document is authorized to do only the following:

If this document is in electronic form:

- load this document onto a computer for the sole purpose of reviewing it;
- search and browse this document; and
- print this document if it is in PDF format.

Limited copies of this document in printed or paper form may be distributed only to persons who are authorized by CSA Group to have such copies, and only if this Legal Notice appears on each such copy.

In addition, users may not and may not permit others to

- alter this document in any way or remove this Legal Notice from the attached standard;
- sell this document without authorization from CSA Group; or
- make an electronic copy of this document.

If you do not agree with any of the terms and conditions contained in this Legal Notice, you may not load or use this document or make any copies of the contents thereof, and if you do make such copies, you are required to destroy them immediately. Use of this document constitutes your acceptance of the terms and conditions of this Legal Notice.

Standards Update Service

A165 Series-14
July 2014

Title: *CSA Standards on concrete masonry units*

To register for e-mail notification about any updates to this publication
- go to **store.csagroup.org**
- click on **Product Updates**

The **List ID** that you will need to register for updates to this publication is **24228**.

If you require assistance, please e-mail **techsupport@csagroup.org** or call 416-747-2233.

Visit CSA Group's policy on privacy at **www.csagroup.org/legal** to find out how we protect your personal information.

A165 Series-14
CSA Standards on concrete masonry units

Published in July 2014 by CSA Group
A not-for-profit private sector organization
178 Rexdale Boulevard, Toronto, Ontario, Canada M9W 1R3

*To purchase standards and related publications, visit our Online Store at **store.csagroup.org***
or call toll-free 1-800-463-6727 or 416-747-4044.

ISBN 978-1-77139-456-7

Contents

Tables

Figures

A165.2-14, *Concrete brick masonry units*

Tables

A165.3-14, *Prefaced concrete masonry units*

Technical Committee on Concrete Masonry Units (A165 Series)

P. Hargest	Boehmers, Kitchener, Ontario *Category: Producer Interest*	*Chair*
D. Stubbs	Canada Masonry Design Centre, Mississauga, Ontario *Category: User Interest*	*Vice-Chair*
L. Cécire	Canadian Construction Materials Centre, Ottawa, Ontario *Category: User Interest*	
R. Drysdale	Drysdale Engineering & Associates Limited, Ancaster, Ontario *Category: Regulatory Authority/General Interest*	
W. El-Dakhakhni	McMaster University, Hamilton, Ontario *Category: Regulatory Authority/General Interest*	
S. Fasullo	Davroc Testing Laboratories Inc., Brampton, Ontario *Category: User Interest*	
D. Gordon	Atlas Block Company Limited, Midland, Ontario *Category: Producer Interest*	
M. Guzman	Canada Masonry Design Centre, Calgary, Alberta	*Associate*
Y. Korany	University of Alberta, Edmonton, Alberta *Category: Regulatory Authority/General Interest*	
T. MacDow	The Shaw Group Limited, Lantz, Nova Scotia *Category: Producer Interest*	
W. McEwen	Masonry Institute of British Columbia, Vancouver, British Columbia *Category: Producer Interest*	
R. Molina	Ontario Ministry of Labour, Peterborough, Ontario *Category: Regulatory Authority/General Interest*	

F. Romano	Kappeler Masonry Corporation, Waterloo, Ontario *Category: User Interest*	
A. Steen	Ontario Ministry of Municipal Affairs and Housing, Toronto, Ontario *Category: Regulatory Authority/General Interest*	
G. Sturgeon	Canadian Concrete Masonry Producers Association, Millarville, Alberta *Category: Producer Interest*	
R. Winkler	I-XL Masonry Supplies Ltd., Saskatoon, Saskatchewan *Category: User Interest*	
J. Fisher	CSA Group, Mississauga, Ontario	*Project Manager*
J. Venalainen	CSA Group, Mississauga, Ontario	*Project Manager*

Preface

This is the fifth edition of the CSA A165 Series, *CSA Standards on concrete masonry units*. It supersedes the previous editions, published in 2004, 1994, 1985, and 1977.

This Series consists of three Standards:

(a) CSA A165.1, *Concrete block masonry units*;
(b) CSA A165.2, *Concrete brick masonry units*; and
(c) CSA A165.3, *Prefaced concrete masonry units*.

CSA A165.1 covers concrete block masonry units suitable for loadbearing and nonloadbearing applications. It classifies concrete block masonry units by four physical properties denoted by facets. These properties are solid content, specified compressive strength, concrete type, and maximum moisture content. The physical properties are based on performance rather than specific material combinations or manufacturing processes. To fully complete a block unit specification under this Standard, the specifier designates unit performance for each physical property using an identification code. The specified compressive strengths of units given in Table 1 of this Standard, based on the average net area of the unit, parallel those identified for the design of masonry in CSA S304, *Design of Masonry Structures*.

CSA A165.2 covers both hollow and solid concrete brick units. Solid units are suitable for loadbearing and nonloadbearing applications, whereas hollow units are limited to nonloadbearing applications. The Standard identifies two grades of units: Grade I, for use in masonry exposed to the weather, and Grade II, for use as backup or interior facing masonry and not for exposure to the weather. Both hollow and solid concrete brick units are classified by their physical properties and the extent of coring and frogging. Physical properties include specified compressive strength, water absorption, and moisture content.

CSA A165.3 specifies the properties of masonry units prefaced during manufacturing. The Standard provides requirements for resistance to aging, thermal shock, and freeze-thaw cycling, as well as referencing the requirements of ASTM C744, *Standard Specification for Prefaced Concrete and Calcium Silicate Masonry Units*. The base unit for the applied facing is governed by CSA A165.1 or CSA A165.2, as applicable.

The principal changes to this edition of the CSA A165 Series include

- adding Portland-limestone cements and blended hydraulic cements as acceptable cementitious materials for the manufacture of concrete masonry units;
- referencing ASTM C979 as the required standard for colouring pigments for concrete masonry units;
- using "normalized web area", rather than "equivalent web thickness", as the means of measuring and expressing the area of web between the faceshells of a concrete masonry unit;
- adding clarifying notes on the maximum variation between concrete masonry units of a specified dimension within a job lot;
- providing clarifying notes about the procedures required to determine the density of concrete block masonry units manufactured from Type C or D concrete;
- reducing the permissible variation in the height of standard concrete block masonry units;
- adding clarifying notes on the appearance of concrete block masonry units and the use of sample panels; and
- referring to the nominal or actual dimension normal to the face of a concrete masonry unit as its "thickness" rather than its "width", to harmonize with the other CSA Group masonry standards and the *National Building Code of Canada*.

This Series of Standards was prepared by the Technical Committee on Concrete Masonry Units (A165 Series), under the jurisdiction of the Strategic Steering Committee on Construction and Civil Infrastructure, and has been formally approved by the Technical Committee.

Notes:

(1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*

(2) *Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.*

(3) *This Standard was developed by consensus, which is defined by* CSA Policy governing standardization — Code of good practice for standardization *as "substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity". It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this Standard.*

(4) *To submit a request for interpretation of this Standard, please send the following information to* ***inquiries@csagroup.org*** *and include "Request for interpretation" in the subject line:*
(a) define the problem, making reference to the specific clause, and, where appropriate, include an illustrative sketch;
(b) provide an explanation of circumstances surrounding the actual field condition; and
(c) where possible, phrase the request in such a way that a specific "yes" or "no" answer will address the issue.
Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization *and are available on the* Current Standards Activities *page at* ***standardsactivities.csa.ca****.*

(5) *This Standard is subject to review five years from the date of publication. Suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to* ***inquiries@csagroup.org*** *and include "Proposal for change" in the subject line:*
(a) Standard designation (number);
(b) relevant clause, table, and/or figure number;
(c) wording of the proposed change; and
(d) rationale for the change.

A165.1-14
Concrete block masonry units

Published in July 2014 by CSA Group
A not-for-profit private sector organization
178 Rexdale Boulevard, Toronto, Ontario, Canada M9W 1R3

To purchase standards and related publications, visit our Online Store at ***store.csagroup.org***
or call toll-free 1-800-463-6727 or 416-747-4044.

ISBN 978-1-77139-456-7

A165.1-14
Concrete block masonry units

1 Scope

1.1
This Standard applies to concrete block masonry units made from cementitious materials, water, and aggregates, with or without the inclusion of other materials. This Standard may be applied to other units of similar manufacture and size within the limitations of the Standard.
Note: *For concrete brick masonry units, see CSA A165.2. For prefaced concrete masonry units, see CSA A165.3.*

1.2
In this Standard, "shall" is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard; "should" is used to express a recommendation or that which is advised but not required; and "may" is used to express an option or that which is permissible within the limits of the standard.

Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material.

Notes to tables and figures are considered part of the table or figure and may be written as requirements.

Annexes are designated normative (mandatory) or informative (nonmandatory) to define their application.

2 Reference publications and definitions

2.1 Reference publications
This Standard refers to the following publications, and where such reference is made, it shall be to the edition listed below, including all amendments published thereto.

CSA Group
A23.1-14/A23.2-14
Concrete materials and methods of concrete construction/Test methods and standard practices for concrete

A165.2-14
Concrete brick masonry units

A165.3-14
Prefaced concrete masonry units

A371-14
Masonry construction for buildings

A3000-13
Cementitious materials compendium

A3001-13
Cementitious materials for use in concrete