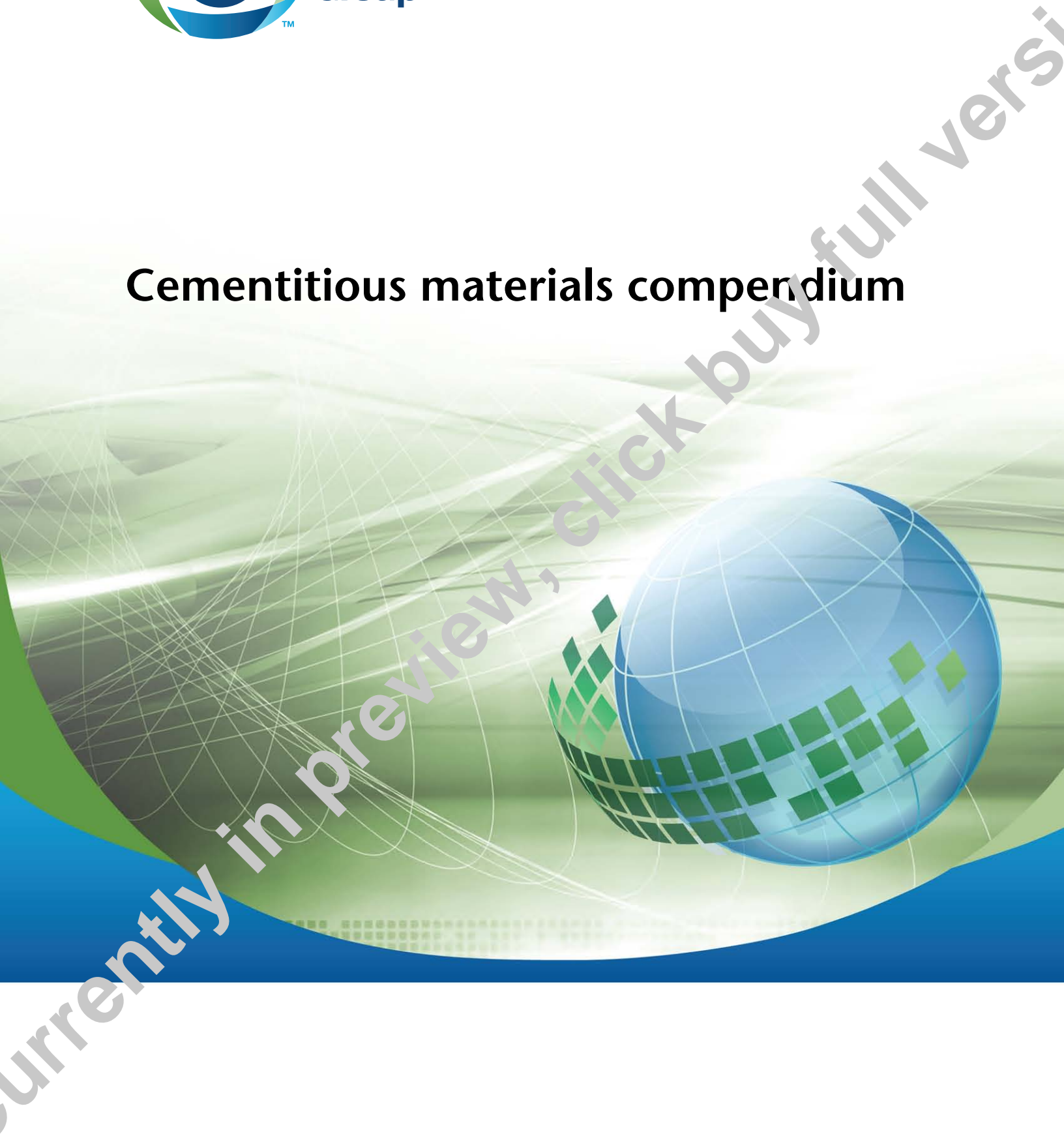




**CSA  
Group**

**A3000-13**

# **Cementitious materials compendium**



# 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 content, 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, 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 print 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 hereof, 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***

*A3000-13*

*October 2013*

**Title:** *Cementitious materials compendium*

**Pagination:** **247 pages** (xiv preliminary and 233 text), each dated **October 2013**

To register for e-mail notification about any updates to this publication

- go to **shop.csa.ca**
- click on **CSA Update Service**

The **List ID** that you will need to register for updates to this publication is **2422708**.

If you require assistance, please e-mail [techsupport@csagroup.org](mailto:techsupport@csagroup.org) or call 416-747-2233.

Visit CSA Group's policy on privacy at [csagroup.org/legal](http://csagroup.org/legal) to find out how we protect your personal information.

Currently in preview, click buy full version

A3000-13  
***Cementitious materials compendium***



**CSA  
Group**

™A trademark of the Canadian Standards Association, operating as "CSA Group"

*Published in October 2013 by CSA Group  
A not-for-profit private sector organization  
5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5N6  
1-800-463-6727 • 416-747-4044*

**Visit our Online Store at [shop.csa.ca](http://shop.csa.ca)**



CSA Group prints its publications on Rolland Enviro100, which contains 100% recycled post-consumer fibre, is EcoLogo and Processed Chlorine Free certified, and was manufactured using biogas energy.

To purchase standards and related publications, visit our Online Store at [shop.csa.ca](http://shop.csa.ca) or call toll-free 1-800-461-6727 or 416-747-4044.

ISSN 1978-1-77139-321-8

© 2013 CSA Group

All rights reserved. No part of this publication may be reproduced in any form whatsoever without the prior permission of the publisher.

# Contents

Technical Committee on Cementitious Materials Compendium ix

Preface xiii

## **A3001-13, Cementitious materials for use in concrete**

**1 Scope** 3

**2 Reference publications** 3

**3 Definitions** 8

**4 Requirements for portland cement, blended hydraulic cement, and portland-limestone cement** 11

4.1 Types 11

4.2 Nomenclature, proportions, and tolerances for components of blended hydraulic cement 11

4.2.1 Nomenclature 11

4.2.2 Proportions 12

4.2.3 Tolerances 12

4.3 Proportions and tolerances of portland-limestone cement 12

4.3.1 Proportions 12

4.3.2 Tolerances 12

4.4 Chemical requirements for portland cement, blended hydraulic cement, and portland-limestone cement 12

4.4.1 General 12

4.4.2 Limestone addition to portland cement 12

4.4.3 Limestone addition to portland-limestone cement 13

4.4.4 Cement and clinker requirements for use in blended hydraulic cements 13

4.4.5 Cement and clinker requirements for use in portland-limestone cements 13

4.4.6 Portland cement based blended hydraulic cement 13

4.4.7 Portland-limestone cement based blended hydraulic cement 13

4.4.8 Total alkali in portland cement, blended hydraulic cement, and portland-limestone cement 13

4.5 Physical requirements for portland cement, blended hydraulic cement, and portland-limestone cement 14

4.6 Processing additions for portland cement, blended hydraulic cement, and portland-limestone cement 14

4.6.1 General 14

4.6.2 Identification and reporting 14

4.7 Compressive strength uniformity requirements for portland cement, blended hydraulic cement, and portland-limestone cement 14

4.7.1 General 14

4.7.2 Time of test 14

4.7.3 Uniformity calculations 14

**5 Requirements for supplementary cementing materials and blended supplementary cementing materials** 15

5.1 Types 15

5.2 Proportions of blended supplementary cementing materials 16

5.2.1 Nomenclature 16

5.2.2 Tolerances 16

5.3 Special requirements 16

- 5.4 Chemical requirements 16
  - 5.4.1 General 16
  - 5.4.2 Chemical requirements for slag 17
  - 5.4.3 Total alkali 17
- 5.5 Physical requirements 17
- 5.6 Processing additions 18
  - 5.6.1 Fly ash and natural pozzolan 18
  - 5.6.2 Slag 18

## **6 Sampling, testing, and inspection 18**

## **7 Units, packaging, marking, storage, and reporting 18**

- 7.1 General 18
- 7.2 Reporting 18

## **Annexes**

- A** (informative) — Optional requirements 27
- B** (informative) — Guidelines for the use of supplementary cementing materials in concrete 31
- C** (informative) — Explanation of changes to types and nomenclature for portland cement, portland-limestone cement, and blended hydraulic cement 32
- D** (informative) — Sustainable development and the cement industry 34

---

## **Tables**

- 1** — Portland cement — Chemical requirements 19
- 2** — Blended hydraulic cement — Chemical requirements 20
- 3** — Portland-limestone cement (PLC) — Chemical requirements 20
- 4** — Portland cement — Physical requirements 21
- 5** — Blended hydraulic cement — Physical requirements 22
- 6** — Portland-limestone cement — Physical requirements 23
- 7** — Supplementary cementing materials and blended supplementary cementing materials — Chemical requirements 24
- 8** — Supplementary cementing materials and blended supplementary cementing materials — Physical requirements 25
- 9** — Blended hydraulic cement and blended supplementary cementing materials proportions 26

## **A3002-13, Masonry and mortar cement**

- 1 Scope 43**
- 2 Reference publications 43**
- 3 Definitions 43**
- 4 Masonry and mortar cement types 43**
- 5 Test requirements 44**
  - 5.1 General 44
  - 5.2 Mortar proportions 44
  - 5.3 Chloride in masonry and mortar cement 44
- 6 Sampling, testing, and inspection 44**
  - 6.1 General 44
  - 6.2 Sampling 44

**7 Packaging, marking, storage, and reporting 44****Annexes****A** (informative) — Optional requirements 46**Tables****1** — Masonry and mortar cement requirements 45**2** — Mortar proportions 45**A3003-13, Chemical test methods for cementitious materials for use in concrete and masonry****1 Scope 49**

1.1 General 49

**2 Reference publications 49****3 Definitions 49****4 Qualification criteria 49****5 Qualification requirements and procedures 50****6 Qualification procedure for rapid test methods 50**

6.1 Qualification of instrument and procedure 50

6.2 Instrument replacement 50

6.3 Determinations 50

6.4 Maximum permissible variations for acceptance and a qualified method 50

**7 Equipment 51****8 Reagents 51**

8.1 General 51

8.2 Concentrated reagents 51

8.3 Dilute reagents 51

8.4 Standard potassium dichromate ( $K_2Cr_2O_7$ ) solution 51

8.5 Non-standard solutions 52

8.5.1 General 52

8.5.2 Ammonium nitrate ( $NH_4NO_3$ ) wash solution (100 g/L) 528.5.3 Stannous chloride dihydrate ( $SnCl_2 \cdot 2H_2O$ ) solution (50 g/L) 52

8.6 Standard liquids 52

8.7 Water 52

8.8 Indicators 52

8.8.1 Methyl red (1 g/L) 52

8.8.2 Barium diphenylamine sulphonate ( $Ba(C_6H_5NHC_6H_4SO_3)_2$ , 3 g/L) 52**9 General procedures 52**

9.1 Weighing 52

9.2 Tared or weighed crucibles 52

9.3 Constancy of mass of ignited residues 53

9.4 Procedure to avoid bumping of liquids being heated 53

9.5 Calculation 53

**10 Insoluble residue 53**

<b>11 Moisture content and loss on ignition</b>	<b>54</b>
11.1 General	54
11.2 Moisture content	54
11.3 Loss on ignition — Supplementary cementing materials	54
11.4 Loss on ignition — Hydraulic cements	55
11.5 Loss on ignition at 550 °C	55
11.6 Reporting of results	55
<b>12 Determination of the major oxides and tricalcium aluminate contents</b>	<b>55</b>
12.1 General	55
12.2 Procedure	55
12.3 Silicon dioxide (SiO <sub>2</sub> )	55
12.4 Combined oxides of the ammonium hydroxide (NH <sub>4</sub> OH) group	56
12.5 Calcium oxide (CaO)	57
12.6 Magnesium oxide (MgO)	58
12.7 Ferric oxide (Fe <sub>2</sub> O <sub>3</sub> )	59
12.8 Aluminum oxide (Al <sub>2</sub> O <sub>3</sub> )	59
12.9 Tricalcium aluminate (C <sub>3</sub> A)	59
<b>13 Determination of minor components</b>	<b>60</b>
13.1 General	60
13.2 Phosphorous pentoxide (P <sub>2</sub> O <sub>5</sub> )	60
13.3 Titanium dioxide (TiO <sub>2</sub> )	60
13.4 Zinc oxide (ZnO)	60
13.5 Manganese oxide (Mn <sub>2</sub> O <sub>3</sub> )	60
13.6 Chloride (Cl)	60
13.7 Sodium and potassium oxides (Na <sub>2</sub> O, K <sub>2</sub> O)	60
13.8 Free calcium oxide (FCaO)	60
13.9 Water-soluble alkali (Alk <sub>sol</sub> )	60
<b>14 Sulphur</b>	<b>60</b>
14.1 General	60
14.2 Sulphur trioxide (SO <sub>3</sub> )	61
14.3 Sulphide sulphur (S)	61

---

**Tables**

<b>1</b> — Maximum permissible variation in results	<b>62</b>
-----------------------------------------------------	-----------

---

**A3004-13, Test methods and standard practices for cementitious materials for use in concrete and masonry**

<b>1 Scope</b>	<b>65</b>
<b>2 Reference publications</b>	<b>65</b>
<b>3 Definitions</b>	<b>65</b>

---

**A3005-13, Test equipment and materials for cementitious materials for use in concrete and masonry**

<b>1 Scope</b>	<b>175</b>
<b>2 Reference publications</b>	<b>175</b>

**3 Definitions** 175**4 Equipment and materials** 175

- 4.1 General 175
- 4.2 Environmental conditions of laboratory 176
  - 4.2.1 Temperature 176
  - 4.2.2 Humidity 176
- 4.3 Weighing equipment 176
  - 4.3.1 Analytical balance 176
  - 4.3.2 Scale 176
  - 4.3.3 Weights 176
  - 4.3.4 Glassware 176
  - 4.3.5 Graduated cylinders 177
  - 4.3.6 Autoclave 177
  - 4.3.7 Cube moulds 179
  - 4.3.8 Mixer and accessories 180
  - 4.3.9 Flow table 181
  - 4.3.10 Tamper 183
  - 4.3.11 Trowel 183
  - 4.3.12 Compression testing machine 183
  - 4.3.13 Conditioning equipment 184
  - 4.3.14 Le Chatelier flask 185
  - 4.3.15 Sampling tube 185
  - 4.3.16 Sieves 185
  - 4.3.17 Non-absorptive plates 185
  - 4.3.18 Vicat and Gillmore test equipment 185
  - 4.3.19 Volume measure 186
  - 4.3.20 Water retention test apparatus 186
  - 4.3.21 Wet-sieving equipment 187
  - 4.3.22 Heat of hydration calorimeter and accessories 187
  - 4.3.23 Flexural bond strength apparatus and accessories 188

**5 Materials** 189

- 5.1 Sand 189
  - 5.1.1 General 189
  - 5.1.2 Sand gradation 189
  - 5.1.3 Sand verification procedure 190
- 5.2 Water 190
  - 5.2.1 Chemical analysis 190
  - 5.2.2 Physical tests 190
- 5.3 Gypsum for sulphate resistance test 190

**Annexes**

- A** (informative) — Bibliography 219

---

**Tables**

- 1** — Class 3 permissible variations for laboratory weights used in chemical analysis and cement fineness tests 191
- 2** — Permissible variations for laboratory weights used in paste and mortar tests 192
- 3** — Dimensional requirements for moulds 192
- 4** — Cube mould tolerances 193
- 5** — Sand requirements 193
- 6** — Sieve size reference table for CSA A3005 194

**Figures**

- 1** — Clearance adjustment bracket 195
- 2** — Stainless steel paddle 195
- 3** — Mixing bowl 196
- 4** — Flow table and accessory apparatus 197
- 5** — Le Chatelier flask for density test 199
- 6** — Sampling tube for packaged cement 200
- 7** — Vicat apparatus 201
- 8** — Gillmore needles 202
- 9** — Volume measure 202
- 10** — Apparatus assembly for the water retention test 203
- 11** — Spray nozzle with seventeen 0.50 mm holes 204
- 12** — Calorimeter 205
- 13** — Stirrer 206
- 14** — Flexural bond — Jig used for prism fabrication 207
- 15** — Flexural bond — Drop hammer used for prism fabrication 208
- 16** — Flexural bond — Mortar template used for prism fabrication 209
- 17** — Flexural bond wrench apparatus 210
- 18** — Reference for Figures 19 through 25 211
- 19** — Bond wrench main frame 212
- 20** — Upper clamp bracket 213
- 21** — Sliding tube, lower clamp bracket, and support 214
- 22** — Prism base support and upper clamp bracket 215
- 23** — Side, floating plate, and slide 216
- 24** — Side, top plate, side 217
- 25** — Plate, holder, and loading block 218

# Technical Committee on Cementitious Materials Compendium

<b>P.R. Trunk</b>	Dufferin Concrete/Aggregate, Concord, Ontario <i>Category: User Interest</i>	<i>Chair</i>
<b>K. Cail</b>	CarbonCure Technologies, Halifax, Nova Scotia <i>Category: General Interest</i>	<i>Vice-Chair</i>
<b>R.D. Hooton</b>	University of Toronto, Toronto, Ontario <i>Category: General Interest</i>	<i>Vice-Chair</i>
<b>N.J. Popoff</b>	St. Marys Cement Inc. (U.S.), Detroit, Michigan, USA Representing Producer Interest	<i>Vice-Chair</i>
<b>M.M. Chabot</b>	Ciment Quebec inc., Beauport, Québec <i>Category: Producer Interest</i>	
<b>R.E. Collins</b>	Votorantim Cement North America/ St. Marys Cement Inc., Toronto, Ontario	<i>Associate</i>
<b>B.J. Cornelius</b>	AMEC Earth & Environmental Limited, Hamilton, Ontario <i>Category: General Interest</i>	
<b>K. Cronkhite</b>	NB Power Transmission Corporation, Fredericton, New Brunswick <i>Category: Producer Interest</i>	
<b>R.L. Day</b>	University of Calgary, Calgary, Alberta <i>Category: General Interest</i>	
<b>W. Dobslaw</b>	Lehigh Inland Cement Limited, Calgary, Alberta	<i>Associate</i>
<b>M.D. Eaton</b>	ESSROC Canada Inc., Picton, Ontario <i>Category: Producer Interest</i>	
<b>S. Fleming</b>	Prairie Material, Bridgeview, Illinois, USA <i>Category: User Interest</i>	

<b>D. Gajich</b>	Votorantim Cement North America/St. Marys Cement Inc., Toronto, Ontario	<i>Associate</i>
<b>L. Graf</b>	Chryso Inc., Lithia, Florida, USA	<i>Associate</i>
<b>M.A. Guindon</b>	Lafarge North America, Pointe-Claire, Québec	<i>Associate</i>
<b>D. Hollingsworth</b>	Lafarge North America, Concord, Ontario <i>Category: User Interest</i>	
<b>D. Hopkins</b>	Great Lakes Fly Ash, Concord, Ontario <i>Category: Producer Interest</i>	
<b>A. Innis</b>	Holcim (US) Inc., Dundee, Michigan, USA	<i>Associate</i>
<b>E.M. Jang</b>	Lehigh Cement, Delta, British Columbia	<i>Associate</i>
<b>J. Jiang</b>	Ontario Ministry of Transportation, Downsview, Ontario	<i>Associate</i>
<b>J.P. Johnson</b>	Holcim (Canada) Inc., Concord, Ontario <i>Category: Producer Interest</i>	
<b>G. Kernohan</b>	Dufferin Concrete/Aggregate, Concord, Ontario	<i>Associate</i>
<b>J. Konecny</b>	Ontario Ministry of Transportation, Downsview, Ontario <i>Category: User Interest</i>	
<b>C. Lauzon</b>	Lafarge North America, Pointe-Claire, Québec <i>Category: Producer Interest</i>	
<b>J.C. Leduc</b>	Holcim (Canada) Inc., Longueuil, Québec	<i>Associate</i>
<b>A. Luis</b>	ESSROC, Italcementi Group, Mississauga, Ontario	<i>Associate</i>
<b>J. Makar</b>	Institute for Research in Construction, Ottawa, Ontario <i>Category: General Interest</i>	
<b>P. Masson</b>	PMasson Consulting, Calgary, Alberta	<i>Associate</i>

<b>R.J. McGrath</b>	Cement Association of Canada (CAC), Ottawa, Ontario	<i>Associate</i>
<b>G.R. Pearce</b>	St. Marys Cement Co., St. Marys, Ontario	<i>Associate</i>
<b>T.B. Pope</b>	UBSafe, Richmond, British Columbia <i>Category: Producer Interest</i>	
<b>A. Prézéau</b>	Hydro- Québec, Montréal, Québec <i>Category: User Interest</i>	
<b>L. Raki</b>	National Research Council Canada, Ottawa, Ontario	<i>Associate</i>
<b>B.W. Russell</b>	UBSafe, Richmond, British Columbia <i>Category: User Interest</i>	
<b>J. Schultz</b>	St. Marys Cement Inc., Bowmanville, Ontario	<i>Associate</i>
<b>U. Schutz</b>	Holcim (Canada) Inc, Concord, Ontario	<i>Associate</i>
<b>R. Shogren</b>	Lafarge North America, Seattle, Washington, USA	<i>Associate</i>
<b>F. Slim</b>	Lehigh, Fleetwood, Pennsylvania, USA <i>Category: Producer Interest</i>	
<b>E. Smith</b>	Grace Canada Inc., Ajax, Ontario <i>Category: General Interest</i>	
<b>R.W. Stevenson</b>	CTL Group, Skokie, Illinois, USA <i>Category: General Interest</i>	
<b>F. Strang</b>	New Brunswick Department of Transportation, Fredericton, New Brunswick <i>Category: User Interest</i>	
<b>A. Tagnit-Hamou</b>	Université de Sherbrooke, Sherbrooke, Québec <i>Category: General Interest</i>	
<b>M. Thomas</b>	University of New Brunswick Dept. of Civil Engineering, Fredericton, New Brunswick <i>Category: General Interest</i>	
<b>T. Wehlend</b>	ESSROC, Italcementi Group, Middlebranch, Ohio, USA	<i>Associate</i>

<b>L. Young</b>	Lehigh Hanson, Edmonton, Alberta	<i>Associate</i>
<b>P.S. Zacarias</b>	Canada Building Materials Company a Division of St. Marys Cement Inc., Toronto, Ontario	<i>Associate</i>
<b>S. McDiarmid</b>	CSA Group, Mississauga, Ontario	<i>Project Manager</i>

# Preface

This is the fourth edition of the CSA A3000, *Cementitious materials compendium*. It supersedes the previous editions published in 2008, 2003, and 1998.

Significant changes from the previous edition include the following:

- (a) ASTM reference publications have been updated to reflect current ASTM format.
- (b) The definition of “blended hydraulic cement” has been changed to “a single manufactured product”.
- (c) The [Clause 5.2.2](#) example has been modified for clarity.
- (d) Note 3 of [Table 9](#) in A3000 has been modified to include guidance on the 18 month test period where it is recommended that SCM replacements higher than the identified minimums should also be tested.
- (e) Addition of a new [Annex D](#) to provide additional informative information on sustainable development and the cement industry.
- (f) The air content in [Table 1](#) of A3002 has been changed for type N from 22 to 21 and for type S from 20 to 19 to harmonize with ASTM C91.
- (g) Further clarification has been added to [Clause 12.9.1](#) of A3003 to note that the C3A is calculated in Portland cement.
- (h) Additional information has been added to [Clause 3](#) of A3004-C8 to specify that mortar bars need to be stored in a sulphate solution for up to one year for Procedure A and up to two years for Procedure B.
- (i) Where possible, changes have also been made for the purpose of harmonization with ASTM specifications.
- (j) A3004-B8 has been added as an alternative test method for determination of heat of hydration by isothermal conduction calorimetry.
- (k) A number of minor editorial changes have also been completed to offer additional clarity to the user.
- (l) Reference publications have been updated to reflect current editions.

CSA Group gratefully acknowledges the following funding stakeholders and the industry association for their contribution to the development of A3000: Lafarge Canada Inc., Ciment Québec Inc., Holcim (Canada) Inc., ESSROC, Italcementi Group, St. Marys Cement Group, Lehigh Hanson, Colacem Canada Inc., Federal White, and Cement Association of Canada.

These Standards were prepared by the Technical Committee on Hydraulic Cement and Supplementary Cementing Materials, under the jurisdiction of the Strategic Steering Committee on Concrete and Related Products, and have 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](mailto: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](http://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](mailto: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.*

*A3001-13*  
***Cementitious materials for use in concrete***



*™A trade-mark of the Canadian Standards Association, operating as "CSA Group"*

*Published in October 2013 by CSA Group  
A not-for-profit private sector organization  
5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5N6  
1-800-463-6727 • 416-747-4044*

***Visit our Online Store at [shop.csa.ca](http://shop.csa.ca)***



# A3001-13

## ***Cementitious materials for use in concrete***

### **1 Scope**

#### **1.1**

This Standard addresses the following aspects of cementitious materials:

- (a) their definitions;
- (b) their chemical, physical, and uniformity requirements;
- (c) the tests required;
- (d) the procedures for inspection and sampling; and
- (e) the units of measurement, packaging, marking, and storage.

#### **1.2**

The cementitious materials for use in concrete are classified as follows in this Standard:

- (a) portland cement;
- (b) blended hydraulic cement;
- (c) portland-limestone cement;
- (d) supplementary cementing materials; and
- (e) blended supplementary cementing materials.

#### **1.3**

In CSA Standards, “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; “may” is used to express an option or that which is permissible within the limits of the standard; and “can” is used to express possibility or capability.

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 (non-mandatory) to define their application.

#### **1.4**

Values are given in SI (metric) units. The values given in parentheses are for information only.

### **2 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**

A23.1-09/A23.2-09

*Concrete materials and methods of concrete construction/Test methods and standard practices for concrete*