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Group**

**ASME A112.19.2-2013/
CSA B45.1-13**

Ceramic plumbing fixtures

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The following revisions have been formally approved and are marked by the symbol delta (Δ) in the margin on the attached replacement pages:

Revised	Clause 7.1.2 and Table 5
New	None
Deleted	None

- Update your copy by inserting these revised pages.
- Keep the pages you remove for reference.

- (b) The temperature of the water shall be 18 to 27 °C (65 to 80°F).
 - (c) Water closets shall be tested at the test pressures specified in Table 5 or at the manufacturer's recommended minimum pressure. A test pressure greater than 550 kPa (80 psi) shall not be used.
 - (d) The specimen shall be placed on a flat and level or plumb surface, with the outlet and trap clear.
 - (e) The specimen shall discharge to atmosphere.
- Tests shall be conducted in the sequence specified in Table 5.

Δ 7.1.2 Gravity flush tank water closets

At each test pressure specified in Table 5 for gravity flush tank water closet tests, the water level in the tank and the fill time shall be adjusted in accordance with the manufacturer's instructions and specifications. Water closets that require higher minimum supply pressures shall be adjusted in accordance with the manufacturer's instructions. In the absence of manufacturer instructions and specifications, the fill valve shall remain set as received from the manufacturer.

Adjustments to the components inside the tank shall not be made once the water level and fill time adjustments have been made for the water consumption test pressure of 140 kPa (20 psi).

All remaining tests shall be performed at a pressure of 140 kPa (20 psi) (or the higher minimum operating pressure specified by the manufacturer).

The test methods and performance requirements specified in Clauses 7.13 and 7.14 shall apply to high-efficiency gravity tank toilets only.

7.1.3 Flushometer tank, electro-hydraulic, or other pressurized flushing device water closets

At each test pressure specified in Table 5 for flushometer tank, electro-hydraulic, or other pressurized flushing device water closets, the tank components shall be adjusted in accordance with the manufacturer's instructions and specifications. In the absence of such instructions and specifications, the tank components shall remain as received from the manufacturer.

7.1.4 Flushometer valve water closets

At each pressure specified in Table 5 for flushometer valve water closets, the supply stop shall be adjusted in accordance with the manufacturer's instructions and specifications. In the absence of such instructions and specifications, the stop shall be adjusted as specified in Clause 7.1.5.2(b).

7.1.5 Procedures for standardizing the water supply system

Note: The purpose of these mandatory standardization procedures is to establish the system capacity at the minimum test pressure and to simulate typical field installation conditions under easily repeatable test laboratory conditions.

7.1.5.1

Note: See Figure 11.

The procedure for standardizing the water supply system for testing gravity flush tank close-coupled water closets, and flushometer tank one-piece and close-coupled water closets, shall be as follows:

- (a) Adjust pressure regulator 4 to provide a static pressure of 140 ± 7 kPa (20 ± 1 psi).
- (b) With stop valve 10 open, adjust valve 6 to establish a flow of 11.4 ± 1 L/min (3.0 ± 0.25 gpm) at 55 ± 4 kPa (8 ± 0.5 psi) flowing pressure measured at gauge 7.
- (c) Keep valve 6 fully open, except when it is used to shut off the flow completely.
- (d) Remove stop valve 10 and install the specimen.

7.1.5.2

Note: See Figure 12.

The procedure for standardizing the water supply system for testing flushometer valve water closets shall be as follows:

- (a) Set the static pressure at gauge 7 by adjusting pressure regulator 4 to
 - (i) 240 kPa (35 psi) for flushometer valve water closets; and
 - (ii) 310 kPa (45 psi) for blowout bowls.

- (b) Attach the flushometer valve, with matching supply stop in the fully open position, at the discharge end of the water supply system and leave the flushometer valve discharge outlet open to the atmosphere.
- (c) Activate the flushometer valve and establish a peak flow rate, by adjusting valve 8, of
 - (i) 95 ± 4 L/min (25 ± 1 gpm) for flushometer valve water closets; and
 - (ii) 133 ± 4 L/min (35 ± 1 gpm) for blowout bowls.
 If the flushometer valve specified by the manufacturer is not capable of attaining the applicable minimum flow rate, adjust the flushometer to its fully open position.
- (d) Connect the flushometer valve to the test bowl.
- (e) Record the peak flowing pressure at gauge 10 and the peak flow rate through the flushometer valve while it is attached to the bowl. While conducting water consumption testing at 350 and 550 kPa (50 and 80 psi), maintain the peak flow rate at ± 4 L/min (± 1 gpm) by adjusting valve 9 as necessary.

7.1.6 Test medium

If a test requires a test medium, the medium shall be placed in the water closet bowl and the flushing device activated as specified in the applicable test procedure clause of this Standard. The specimen shall discharge into a receiving vessel or drainage system. The medium remaining in the bowl, if any, and that discharged into the receiving vessel or drainage system shall be observed. If necessary, the specimen shall be flushed again to remove the remaining medium from the bowl or trap before each test run.

7.1.7 Reports

Test results shall be evaluated and reported in accordance with the procedure specified for each test. Suggested formats for reporting test results are shown in Figures A.1 to A.6. Alternative formats for accurately reporting test data shall also be acceptable.

7.2 Trap seal depth determination test

Note: See Figure 13.

7.2.1 Apparatus

Figure 13 shows an acceptable apparatus for determining trap seal depth. Another apparatus, e.g., a steel tape measure or a steel rule with a perpendicular horizontal element secured to one end, may also be used.

7.2.2 Procedure

The trap seal depth determination test shall be conducted as follows:

- (a) Lower the probe until the horizontal element is resting against the trap dip.
- (b) Record the corresponding scale value as h_1 .
- (c) Disengage the horizontal element from the probe.
- (d) Elevate the probe completely out of the water.
- (e) Confirm that the specimen is at full trap seal depth by slowly pouring water into the well until a slight overflow is detected dripping from the bowl outlet.
- (f) When the dripping ceases, adjust the probe so that its point is exactly at the water surface.
- (g) Record the corresponding scale value as h_2 .
- (h) Calculate the full trap seal depth, H_f , by subtracting h_1 from h_2 ($H_f = h_2 - h_1$).

7.2.3 Report

The full trap seal depth, H_f , shall be reported.

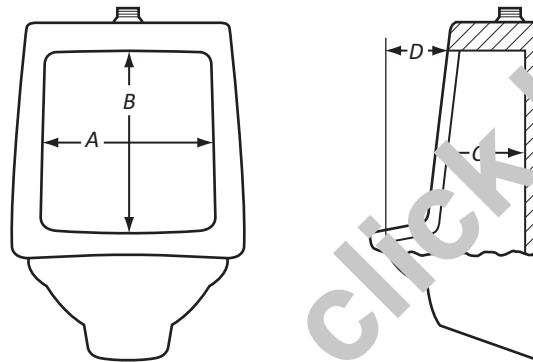
7.2.4 Performance

The full trap seal depth, H_f , shall be at least 51 mm (2.0 in).

Table 4
Minimum dimensions for urinals, mm (in)
 (See Clause 4.7.2.)

Type of urinal	A	B	C		D	
	Interior width	Interior height	Interior depth		Projection	
			Without shields	With shields	Regular	Extended lip
Wall mounted	216 (8.5)	191 (7.5)	76 (3.0)	178 (7.0)	152 (6.0)	203 (8.0)
Stall	305 (12.0)	813 (32.0)	76 (3.0)	178 (7.0)	152 (6.0)	203 (8.0)

Note: Interior width and interior depth shall be measured halfway between the top and bottom of the interior opening.



Δ

Table 5
Static test pressures for water closets, kPa (psi)
 (See Clauses 7.1.1 to 7.1.4, 7.4.3, 7.4.5, and 9.6.2.)

Test sequence (Note 1)	Clause	Test	Gravity flush tank, electro-hydraulic, and flushometer tank water closets	Flushometer valve water closets	
				Siphonic bowl	Blowout bowl
1	7.2	Trap seal depth determination	140 (20)	240 (35)	310 (45)
2	7.3	Trap seal restoration	140 (20)	240 (35)	310 (45)
3	7.4	Water consumption	550 (80), 350 (50), and 140 (20)	550 (80) and 240 (35)	550 (80) and 310 (45)
4	7.5	Granule and ball	140 (20)	240 (35)	310 (45)
5	7.6	Surface wash	140 (20)	240 (35)	310 (45)
6	7.7	Mixed media	140 (20)	240 (35)	310 (45)
7	7.8	Drain line transport characterization	140 (20)	240 (35)	310 (45)
8	7.9	Overflow for gravity tanks	550 (80)	—	—
9	7.10	Waste extraction test	350 (50)	350 (50)	350 (50)
10	7.11	Consistent water level	140 (20), 410 (60), and 550 (80)	—	—
11	7.12	Fill Valve shut off integrity	140 (20), and 550 (80)	—	—
12	7.13*	Adjustability test with original equipment	140 (20), and 550 (80)	—	—
13	7.14*	Adjustability test with after-market seals	140 (20), and 550 (80)	—	—

Notes:

- (1) Tests shall be performed in the sequence specified in this Table.
- (2) Adjustments to tank trim components shall be permitted only when changes to test pressures are indicated. No adjustments shall be allowed between tests employing like pressures.
- (3) For water closets with alternative materials in the trap, the auger test of Clause 6.10 shall be conducted before the tests in this Table.
- (4) Where a higher minimum operating pressure is specified for a fixture by a manufacturer, the specified pressure shall be substituted for the minimum test pressure specified in this Table. The manufacturer's specified operating pressure shall be indicated in its product literature and on its product packaging.
- (5) Gravity flush tank and flushometer tank water closet types include siphonic, pressure-assist (other than flushometer valve models), and washout bowl.
- (6) The manufacturer's safe-operating pressure recommendations shall be followed for all water closets. The maximum static water pressure shall be not more than 550 kPa (80 psi) and shall be not less than
 - (a) 140 kPa (20 psi) for low-consumption gravity flush tank and flushometer tank water closets;
 - (b) 240 kPa (35 psi) for low-consumption flushometer-valve-activated water closets; and
 - (c) 310 kPa (45 psi) for blowout flushometer-valve-activated water closets.
- (7) Pressures higher than 550 kPa (80 psi) are considered unsafe.

*Applicable to HET's only.

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Ceramic plumbing fixtures



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Contents

ASME A112 Standards Committee on Plumbing Materials and Equipment *viii*

CSA Technical Committee on Plumbing Fixtures (B45) *x*

CSA/ASME Harmonization Task Group on Plumbing Fixtures (B45-JHTG) *xii*

Preface *xiii*

0 Introduction 1

1 Scope 1

2 Reference publications 2

3 Definitions and abbreviations 3

3.1 Definitions 3

3.2 Abbreviations 7

4 General requirements 7

4.1 Dimensions and tolerances 7

4.1.1 Thickness 7

4.1.2 Tolerances 7

4.2 Glazing 7

4.3 Waste fitting openings, drainage, and overflows 8

4.3.1 Openings and drainage 8

4.3.2 Overflows 8

4.4 Off-the-floor plumbing fixture supports 9

4.5 Non-vitreous china plumbing fixtures 9

4.5.1 Glazing 9

4.5.2 Integral traps 9

4.6 Additional requirements for water closets 9

4.6.1 Outlet dimensions 9

4.6.2 Non-standard outlets 9

4.6.3 Bolt hole spacing 9

4.6.4 Roughing-in details 9

4.6.5 Seat-mounting holes 9

4.6.6 Rim profiles 9

4.6.7 Water surface dimensions 9

4.6.8 Trap diameter 9

4.6.9 Spuds 10

4.6.10 Rim heights 10

4.7 Additional requirements for urinals 10

4.7.1 Integral trap diameter 10

4.7.2 Dimensions 10

4.7.3 Spuds 10

4.7.4 Materials and construction 10

4.7.5 Non-water-consuming urinals 10

4.8 Additional requirements for lavatories, sinks, and bidets 10

4.8.1 Openings and mounting surfaces for supply fittings 10

4.8.2 Wall-mounted commercial lavatories and sinks 11

4.8.3 Spuds for clinic sinks 11

4.9	Additional requirements for bathtubs and shower bases	11
4.9.1	Minimum dimensions for bathtubs	11
4.9.2	Slope to the waste outlet	11
4.9.3	Flanges	11
4.10	Additional requirements for drinking fountains	11
4.11	Accessible design fixtures	11
5	Flushing devices used with fixtures	12
5.1	General	12
5.2	Gravity flush tanks	12
5.2.1	General	12
5.2.2	Fill valve opening diameter and location	12
5.2.3	Critical level	12
5.2.4	Low-profile gravity tanks	12
5.2.5	Water closet fill valve	12
5.2.6	Water closet tank capacity	12
5.3	Pressurized flushing devices	12
5.3.1	General	12
5.3.2	Low-profile tanks with pressurized flushing devices	13
5.4	Plastic water closet tanks	13
5.5	Electrical components of electro-hydraulic water closets	13
5.5.1	Pump motor and impeller	13
5.5.2	Jet hose	13
5.5.3	Electrical supply cords	13
5.5.4	Wiring harnesses and electrical controls	13
5.6	Dual-flush water closets	13
6	Tests — Materials, finishes, structural integrity, and seals	13
6.1	Water absorption test	13
6.1.1	Test specimen	13
6.1.2	Specimen preparation	14
6.1.3	Procedure	14
6.1.4	Report	14
6.1.5	Performance	14
6.2	Crazing test	14
6.2.1	Test specimen	14
6.2.2	Procedure	14
6.2.3	Performance	14
6.3	Surface examination	15
6.3.1	Procedure	15
6.3.2	Evaluation	15
6.3.3	Performance	15
6.3.4	Other fixtures	15
6.4	Warpage test	15
6.4.1	Procedure	15
6.4.2	Performance	16
6.5	Field-installed tiling-flange seal test	16
6.5.1	Procedure	16
6.5.2	Performance	16
6.6	Overflow test	16
6.6.1	Procedure	16
6.6.2	Performance	16
6.7	Structural integrity tests for wall-mounted plumbing fixtures	16
6.7.1	All wall-mounted fixtures	16

6.7.2	Wall-mounted water closets	17
6.7.3	Wall-mounted lavatories	17
6.7.4	Wall-mounted urinals	17
6.8	Structural integrity test for bathtubs, shower bases, and non-vitreous service sinks	17
6.8.1	Apparatus	17
6.8.2	Procedure	17
6.8.3	Performance	18
6.9	Joint seal test	18
6.10	Auger test	18
6.10.1	Procedure	18
6.10.2	Performance	18
6.11	Condensation-free (insulated) tank test	18
6.11.1	Procedure	18
6.11.2	Performance	18
7	Water closet tests	18
7.1	General	18
7.1.1	All tests	18
7.1.2	Gravity flush tank water closets	19
7.1.3	Flushometer tank, electro-hydraulic, or other pressurized flushing device water closets	19
7.1.4	Flushometer valve water closets	19
7.1.5	Procedures for standardizing the water supply system	19
7.1.6	Test medium	20
7.1.7	Reports	20
7.2	Trap seal depth determination test	20
7.2.1	Apparatus	20
7.2.2	Procedure	20
7.2.3	Report	20
7.2.4	Performance	20
7.3	Trap seal restoration test	21
7.3.1	Apparatus	21
7.3.2	Procedure	21
7.3.3	Report	21
7.3.4	Performance	21
7.4	Water consumption test	21
7.4.1	General	21
7.4.2	Apparatus	21
7.4.3	Procedure	21
7.4.4	Report	22
7.4.5	Performance	22
7.5	Granule and ball test	22
7.5.1	Test media	22
7.5.2	Procedure	22
7.5.3	Report	22
7.5.4	Performance	22
7.6	Surface wash test	23
7.6.1	Test medium	23
7.6.2	Procedure	23
7.6.3	Report	23
7.6.4	Performance	23
7.7	Mixed media test	23
7.7.1	Test media	23
7.7.2	Procedure	23
7.7.3	Report	24

7.7.4	Performance	24
7.8	Drain line transport characterization test	24
7.8.1	Test medium	24
7.8.2	Apparatus	24
7.8.3	Procedure	24
7.8.4	Report	25
7.8.5	Performance	25
7.9	Overflow test for gravity flush tanks	25
7.9.1	Apparatus	25
7.9.2	Procedure	25
7.9.3	Report	25
7.9.4	Performance	25
7.10	Waste extraction test	25
7.10.1	Apparatus	25
7.10.2	Test media	26
7.10.3	Procedure	27
7.10.4	Report	27
7.10.5	Performance	27
7.11	Consistent water level test	27
7.11.1	Procedure	27
7.11.2	Performance	27
7.12	Fill valve shutoff integrity test with increased water pressure	28
7.12.1	Procedure	28
7.12.2	Performance	28
7.13	Adjustability test for tank-type gravity water closets with original equipment	28
7.13.1	Procedure	28
7.13.2	Report	28
7.13.3	Performance	28
7.14	Adjustability test for tank-type gravity water closets with aftermarket closure seals	29
7.14.1	Procedure	29
7.14.2	Report	29
7.14.3	Performance	29

8 Urinal tests 30

8.1	General	30
8.2	Test apparatus and general instructions	30
8.3	Trap seal depth determination test	31
8.3.1	Apparatus	31
8.3.2	Procedure	31
8.3.3	Report	31
8.3.4	Performance	31
8.4	Surface wash test	31
8.4.1	Test medium	31
8.4.2	Procedure	31
8.4.3	Report	31
8.4.4	Performance	32
8.5	Dye test	32
8.5.1	Test medium and apparatus	32
8.5.2	Procedure	32
8.5.3	Report	32
8.5.4	Performance	32
8.6	Water consumption test	32
8.6.1	Apparatus	32
8.6.2	Procedure	32

- 8.6.3 Report 33
- 8.6.4 Performance 33
- 8.7 Tests for non-water-consuming urinals 33

9 Markings, packaging, and installation instructions and other literature 33

- 9.1 General 33
- 9.2 Non-standard fixtures 33
- 9.3 Additional markings for water closets and urinals 34
 - 9.3.1 Close-coupled water closets 34
 - 9.3.2 Water consumption 34
 - 9.3.3 Water level mark in gravity flush tank water closets 34
 - 9.3.4 Water closet tank repair parts 34
- 9.4 Field-installed flanges 34
- 9.5 Packaging 34
 - 9.5.1 General 34
 - 9.5.2 Water closets and urinals 35
- 9.6 Installation instructions and other literature 35
 - 9.6.1 General 35
 - 9.6.2 Water closets 35
 - 9.6.3 Urinals 35
 - 9.6.4 Field-installed flange kits 35

Annexes

- A** (informative) — Suggested formats for reporting test results 55
- B** (informative) — Unit conversion criteria 60

Tables

- 1** — Permitted defects in water closets and urinals 35
- 2** — Permitted defects in lavatories and drinking fountains 36
- 3** — Integral trap diameter requirements for urinals, mm (in) 36
- 4** — Minimum dimensions for urinals, mm (in) 37
- 5** — Static test pressures for water closets, kPa (psi) 38
- 6** — Static test pressures for urinals, kPa (psi) 39

Figures

- 1** — Waste outlet dimensions 40
- 2** — Outlet dimensions for floor-mounted bottom-outlet water closets 41
- 3** — Outlet dimensions for rear-outlet and rear-spigot-outlet water closet bowls 42
- 4** — Bolt hole spacing for wall-mounted water closet bowls 43
- 5** — Roughing-in and seat bolt hole dimensions for water closets 44
- 6** — Water closet bowl rim profiles 46
- 7** — Supply fitting opening and mounting surface dimensions 47
- 8** — Dimensions for bathtubs 49
- 9** — Clearance for drinking fountains 50
- 10** — Gravity flush tank valve openings 50
- 11** — Standardization of water supply system for testing gravity and flushometer tank water closets 51
- 12** — Standardization of water supply system for testing flushometer valve water closets and urinals 52
- 13** — Suggested apparatus and required measurements for the trap seal depth determination test 53
- 14** — Suggested drain line transport characterization test assembly 54

Preface

This is the second edition of ASME A112.19.2/CSA B45.1, *Ceramic plumbing fixtures*.

It supersedes the previous edition published in 2008.

This edition of ASME A112.19.2/CSA B45.1 includes the following:

- (a) the addition of wall hung water closet dimensions;
- (b) the addition of the WaterSense® test protocol, but allows both cased and uncased media;
- (c) updated test pressures for urinals;
- (d) an update to water consumption markings;
- (e) an updated test medium size for the drain line characterization test, including the removal of the density requirement;
- (f) an updated pressure requirement for the joint seal test;
- (g) the addition of shower outlet dimensions;
- (h) the warpage test has been amended for clarity;
- (i) the flange test has been amended to make it consistent with other standards; and
- (j) other editorial changes were made for better clarification.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

This Standard was prepared by the ASME/CSA Joint Harmonization Task Group on Plumbing Fixtures, under the jurisdiction of the ASME Standards Committee on Plumbing Materials and Equipment and the CSA Technical Committee on Plumbing Fixtures. The CSA Technical Committee operates under the jurisdiction of the CSA Strategic Steering Committee on Construction and Civil Infrastructure. This Standard has been formally approved by the ASME Standards Committee and the CSA Technical Committee. This Standard was approved as an American National Standard by the American National Standards Institute on July 23, 2013.

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Secretary, A112 Standards Committee
The American Society of Mechanical Engineers
Three Park Avenue
New York, NY 10016-5990
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 - *cite the applicable edition of the Standard for which the interpretation is being requested.*
 - *phrase the question as a request for an interpretation of a specific requirement suitable for general understanding and use, not as a request for an approval of a proprietary design or situation. The inquirer may also include any plans or drawings, which are necessary to explain the question; however, they should not contain proprietary names or information.*

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CSA 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 publication 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 publication.
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Requests for interpretation should
 - (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) be phrased where possible to permit a specific “yes” or “no” answer.

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Ceramic plumbing fixtures

0 Introduction

0.1

This harmonized Standard was developed in response to an industry request for a Standard for evaluation of plumbing fixtures that would be acceptable for use in both Canada and the United States. Harmonized Standards for plumbing fixtures made of other materials are also available or under development.

0.2

Harmonization activities for plumbing fixtures Standards were undertaken in 2004 by a Joint Harmonization Task Group (JHTG) on Plumbing Fixtures, in which the ASME and CSA plumbing fixtures committees were equally represented. The responsibility for procedural matters and final approval of technical content was assumed by technical committees at higher levels within each SDO.

1 Scope

1.1

This Standard covers vitreous and non-vitreous china plumbing fixtures and specifies requirements for materials, construction, performance, testing, and markings. This Standard's performance requirements and test procedures apply to all types of water closets and urinals that discharge into gravity drainage systems in permanent buildings and structures, independent of occupancy.

1.2

This Standard covers the following plumbing fixtures:

- (a) bathtubs;
- (b) bidets;
- (c) drinking fountains;
- (d) fixtures for institutional applications;
- (e) lavatories;
- (f) shower bases;
- (g) sinks:
 - (i) laboratory sinks;
 - (ii) laundry sinks;
 - (iii) service sinks;
 - (iv) utility sinks;
 - (v) kitchen sinks; and
 - (vi) clinic sinks;
- (h) urinals; and
- (i) water closets.

1.3

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; "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.