

Standards Progression - Windows, Doors & Unit Skylights

Category/Topic	AAMA/NWDA 101/I.S.2-97 (Windows and Glass Doors) AAMA/WDMA 1600/I.S.7-2000 (Skylights) [Separate ANSI Standards]	AAMA/WDMA 101/I.S.2/NAFS-02 (Windows, Glass Doors & Skylights) [Combined ANSI Standard]	AAMA/WDMA/CSA 101/I.S.2/A440-05 (Windows, Doors & Skylights) [CSA format]	AAMA/WDMA/CSA 101/I.S.2/A440-08 (Windows, Doors & Skylights) [CSA format]	AAMA/WDMA/CSA 101/I.S.2/A440-11 (Windows, Doors & Skylights) [CSA format]
General and Window Topics					
Format	Primarily by operator type	Similar to '97	Reorganized per CSA format	Same as '05	Organized by product type, performance class, materials and components
Basis of Rating	IP Only	IP Primary (Metric Optional)	Same as '02	Same as '05	Same as '08
Compliance Measurement Units	IP Primary (Metric Secondary)	Metric Primary (IP Secondary)	Same as '02	Same as '05	Same as '08
# of Product Operator Types	20	26	30	31	36
Operator Type Codes	H, HS, VS, AP, C, VP, HP, SHW, TH, F, DA, BW, HE, GH, J, JA, TA, HGD, DA-HGD, SGD	Added SHW, SLT, SP	Added ATD, SHD and SD; changed DA to DAW, F to FW and FD	Same as '05	Added POW, SSP (-CSD, -KSD, -SGE, -SGL, -FEW, -FWI, -HWE, -HWI, -VWE, -VWI); Changed ATD to ATW, GH to GW.
# of Performance Classifications	Five: (R, LC, C, HC, AW)	Same as '97	Same as '02	Four: (R, LC, CW, AW.) [Requirements for CW same as C in '05 and must meet L/175]	Same as '08
Performance Grade Caps	No upper limit on Grade (Design Pressure)	Upper limit of 60 psf above Gateway except AW	Same as '02	Upper limit of PG 100 for R, LC, CW. No limit for AW.	Same as '08
Alternative Minimum Test Sizes and minimum PG for Class R Products	Not included			Added	Same as '08
US Operating Force	Force to maintain motion ONLY	Force to initiate and maintain motion	Force to maintain motion but test and record force to initiate	CW: Same as Class C in '05. Class R Hung increased from 30 to 35 lb. Class LC Hung increased from 35 to 40 lb.	Same as '08
Canadian Operating Force	Not included		Optional	Optional, but now based on "Normal Use" and "Cleaning & Maintenance" categories	Same as '08
US Air Leakage	0.3 and 0.1 cfm/ft ²	0.3 cfm/ft ² ONLY	0.3 and 0.1 cfm/ft ²	CW: Same as Class C in '05.	Same as '08
Canadian Air Leakage	Not included	Optional levels	Same as '02	Optional. CW: Same as Class C in '05.	Same as '08
Frame/Sash Deflection Limits	AW and HC Hung ONLY	AW and HC ONLY	Same as '02	CW and AW only	Same as '08
Glass Deflection Limits	Exception Noted	Exception Noted	Same as '02	Same as '05	Same as '08
Frame/Sash Permanent Deformation	0.4% (0.2% for AW)	0.4% (0.2% for AW)	0.4% for R & LC; 0.3% for C & HC, 0.2% for AW	0.4% for R & LC; 0.3% for CW, 0.2% for AW	Same as '08
Forced Entry Resistance Standard	ASTM, CMBSO, or AAMA	ASTM, CMBSO, or AAMA	ASTM ONLY	Same as '05	Same as '08
Glass Strength Standard - basis of glass selection	ASTM E 1300-94 - use weakest glass for testing	ASTM E 1300-00 - use weakest & thinnest glass for testing	ASTM E 1300-02 - use weakest glass for testing	ASTM E 1300-04 - use weakest glass for testing	ASTM E 1300-09a- use weakest glass for testing
Plastic Glazing Requirements	[From 1600/I.S. 7] Light, Haze, Brittleness, Smoke, Ignition, Combustibility, Safety glazing, Effect of Weathering	Reference AAMA/WDMA 1600/I.S. 7	Incorporated provisions of AAMA/WDMA 1600/I.S. 7	Same as '05	Same as '08
Secondary Storm Products	Not included				Added SSP (-CSD, -KSD, -SGE, -SGL, -FEW, -FWI, -HWE, -HWI, -VWE, -VWI)
Materials Referenced	aluminum, wood and vinyl	Added cellular PVC, fiberglass, steel, fiber-reinforced PVC, and ABS	Added flush and molded wood fiber doors, and cellulosic composite materials	Same as '05	Same as '08
Lead content	Not included		0.02% max for finished framing & cladding per ASTM E1753 (not included for hardware)	Same as '05, but expanded the explanation and added ASTM E1613 as a confirmation test if E1753 test is positive.	Updated testing for framing / cladding to parallel US EPA field testing criteria, and expanded the criteria for testing for lead in hardware
Wood requirements	Max. 12% moisture content. Suitable for opaque finish. Adhesives compliant with D572, D5751 and D3110. Treated per I.S.4	Same as '97, but removed D3110	Same as '02, but added formula for determining moisture content. Also added requirement for treatment formulations to have a Health Canada registration no.	Same as '05, but added D4442 for determining moisture content, and removed references to "suitable for an opaque finish" and "suitable for structural performance".	Same as '08, but removed reference to D4442.
Mullion Definitions and Illustrations	Definition Only	Examples & Illustrations	Expanded Explanation	Same as '05	New ratings and designations
Primary Designator Example	C-R25 30 x 60	C-R25 760 x 1520 (30 x 60)	C-R25 760 x 1520 (30 x 60)	Class R-PG25: Size tested 760 x 1520 mm (30 x 60 in)-Casement	Class R-PG25: Size tested 760 x 1520 mm (30 x 60 in)-Casement
Secondary Designator (optional)	Not included		Added	Positive DP allowed to be higher than negative DP or PG.	Same as '08
Secondary Designator Example	Not included		Design Pressure = 2880 Pa (60 psf) Water Penetration Resistance Test Pressure = 580 Pa (12 psf) Canadian Air Infiltration/Exfiltration Level = A3	DP = 2880 Pa (60 psf) Water Penetration Resistance Test Pressure = 580 Pa (12 psf) Canadian Air Infiltration/Exfiltration Level = A3	Same as '08
Definition of "DP" and "PG"	DP = design pressure rating based on lowest air/water/structural performance	Same as '97	Same as '02	PG = Performance Grade based on lowest air/water/structural performance; DP = design pressure	Same as '08
Use of Residential, Light Commercial, Commercial, Heavy Commercial and Architectural names in Ratings	Included		Deleted		
Specimen Structural Damage	No glass breakage, permanent damage to fasteners, hardware parts, support arms or actuating mechanisms	Added disengagements	Limits retests due to glass breakage or hardware to two	Same as '05	Same as '08
Deglazing Sash Movement	≤ 100%	≤ 90%	Same as '02	Same as '05	Same as '08
Laboratory Test Report	Per ASTM standards	Added laboratory test report requirements	Added drawings required by ASTM and additional ratings supplied by mfr.	Removed drawings required by ASTM and additional ratings language	Same as '08

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Tempered Glass	Can be used for testing if it was the weakest, thinnest glass per ASTM E 1300 to qualify other glass types in production.	Can be used for testing if it was the weakest, thinnest glass per ASTM E 1300 to qualify other glass types in production.	Can be used for testing if it is the weakest per ASTM E 1300 and meets the L/175 requirement for edge deflection, to qualify other glass types in production.	Same as '05	Same as '08
Water Penetration Resistance Pressure Cap	12 psf	15 psf	12 psf (US); 15 psf (CAN)	Same as '05	Same as '08
Transoms	Not included	Maximum height is 700 mm	Maximum height is 800 mm	Same as '05	Same as '08
Topics specific to Doors					
Side-Hinged Exterior Doors	Not included		Added SHD	Same as '05	Same as '08
Architectural Terrace Doors			Added ATD	Same as '05	Same as '08
US Operating Force for SHD			Force to maintain motion but test and record force to initiate	CW: Same as Class C in '05. Measure and record force / torque to operate dead-bolt for SHD.	Same as '08
US Air Leakage for SHD			Same as for windows	Same as for windows	Same as for windows
Canadian Air Leakage for SHD			Same as for windows	Same as for windows	Same as for windows
Force to Latch Requirement for SHD			Added	Same as '05	Same as '08
Sidelites			Added & Expanded	Same as '05	Changed operator designations
Side-Hinged Exterior Door Systems Operation/Cycling			R (25,000), LC (100,000), C (250,000), HC, except ATD (500,000), HC ATD (25,000), AW, except ATD (1,000,000), AW ATD (25,000)	R (25,000), LC (100,000), CW (250,000), AW, except ATD (500,000), AW ATD (25,000)	Same as '08
Limited Water Rating for SHD			Added	Same as '05	Same as '08
Cycle/Operating Testing for SHD			Added	Same as '05, but added measurement of dead-bolt op. force.	Same as '08
Hardware Water Testing for SHD			Added	Same as '05	Same as '08
Vertical Load Testing for SHD			Per AAMA 925-03	Per AAMA 925-07 (removed pass/fail criteria)	Same as '08
FER Testing for Swinging Doors			Added	Same as '05	Same as '08
Topics specific to Skylights, etc.					
# of Product Operator Types	Two (with 4 sub-types)	Three (removed sub-types)	Same as '02	Four	Seven
Operator Type Codes	SKG, SKP (1,2,3,4)	Added RW	Same as '02	Added TDD	Added RWG, RWP; changed TDD to TDDCC and TDDOC; dropped TDD
Performance Classes	Three (R, C, HC)	Same as '00	Same as '02	Two (R and CW)	One (PG)
Performance Grade Caps	No upper limit on Grade (Design Pressure)	R-135; C-150; HC-none	No limit	Same as '05	Same as '08
Performance Grade Defined by:	Positive design pressure only	Same as '00	Same as '02	Same as '05	Same as '08
Frame/Sash Permanent Set	0.4% of span	Same as '00	Same as '02	Same as '05	Same as '08
Materials Referenced	Aluminum, Wood, Vinyl, Fiberglass, Steel	Added 3 additional materials	Added additional materials	Same as '05	Same as '08
Tubular Daylighting Devices	Not included			Added TDD	Changed to two operator designations, and revised testing for closed ceiling and open ceiling types
Primary Designator Example	SKP-C30 48 x 48	SKP-C30 50 1200 x 1200 (48 x 48)	SKP-C30 1200 x 1200 (48 x 48)	Class CW-PG30: Size tested 1200 x 1200 mm (48 x 48 in)-SKG	SKG-PG30: Size tested 1200 x 1200 mm (48 x 48 in)
Secondary Designator Example	Not included		Design Pressure (Download = 4800 Pa (100.0 psf); Negative Design Pressure (Uplift) = 1680 Pa (35.0 psf); Water Penetration Resistance Test Pressure = 290 Pa (6.0 psf)	Positive Design Pressure (DP) = 2880 Pa (60.0 psf) or DP = 2880 Pa (60.0 psf (imperial); Negative Design Pressure (DP) = -2880 Pa (60.0 psf) or DP = -2880 Pa (-60.0 psf) or -2880 Pa (metric) or -60.0 psf (imperial); ; Water Penetration Resistance Test Pressure = 580 Pa (12.0 psf)	Positive Design Pressure (DP) (Downward) = 4800 Pa (~100.3 psf); Negative Design Pressure (DP) (Uplift) = -1680 Pa (~-35.1 psf); Water Penetration Resistance Test Pressure = 290 Pa (~6.1 psf)
Skylight Testing Orientation	Lowest slope allowed	Same as '00	Vertical or Sloped	Same as '05	Same as '08
Skylights Structural Test Load - Glass	1.4 to 1.5 times DP	Same as '00	2.0 times DP, Pos and Neg	Same as '05	2.0 times DP, Pos and 1.5 times DP Neg; not required to apply a structural test load more than 100 psf higher than rated PG.
Skylights Structural Test Load - Plastic	1.4 to 3.0 times DP	Same as '00	2.0 times DP, Pos and Neg	Same as '05	Same as '08
Skylights Structural Test Duration	Negative pressure 10 seconds; Positive Pressure 60 seconds	Same as '00	Negative and positive pressure 60 seconds	Same as '05	Same as '08
Reference Standards:	Title				
	AAMA/NWWDMA 101/I.S.2-97 Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors				
	AAMA/WDMA 1600/I.S.7-2000 Voluntary Specification for SKYLIGHTS				
	AAMA/WDMA 101/I.S.2/NAFS-02 North American Fenestration Standard - Voluntary Performance Specification for Windows, Skylights and Glass Doors				
	AAMA/CSA/WDMA 101/I.S.2/A440-05 Standard / Specification for windows, doors and unit skylights				
	AAMA/CSA/WDMA 101/I.S.2/A440-08 NAFS, North American Fenestration Standard / Specification for windows, doors, and skylights.				
	AAMA/CSA/WDMA 101/I.S.2/A440-11 NAFS, North American Fenestration Standard / Specification for windows, doors, and skylights.				