

# Contents

Preface 6

## **0 Introduction 8**

0.1 General 8

0.1.1 Applicability 8

0.1.2 Sustainability 8

0.1.3 Content 8

0.2 Performance Classes and Grades 9

0.2.1 General 9

0.2.2 Guidance for the specifier/purchaser 10

0.2.3 Performance Grade (PG) designations 10

0.2.4 Positive and negative design pressure (DP) 10

0.2.5 Water penetration resistance testing and performance 11

0.2.6 Operation/cycling performance 11

0.3 Short-form specification 11

## **1 Scope 12**

1.1 General 12

1.2 Outside of scope 12

1.3 Terminology 13

1.4 Units of measurement 13

1.5 Clause labels 13

## **2 Reference publications 14**

## **3 Definitions 26**

## **4 General requirements 38**

4.1 General 38

4.1.1 Units of measurement 38

4.1.2 Interpretations 38

4.1.3 Partial compliance 38

4.1.4 Additional standards for Canada 38

4.2 Gateway performance requirements 39

4.3 Performance Grades (PG) 39

4.3.1 Assignment of Performance Grade (PG) 39

4.3.2 Optional Performance Grades (PG) 39

4.4 Product designations 40

4.4.1 General 40

4.4.2 Primary designator 40

4.4.3 Secondary designator 53

4.5 Dual windows or dual doors 55

4.5.1 General 55

4.5.2 Requirements 55

4.6 Mullions 56

4.6.1 Mullion rating AWS 56

4.6.2	Composite units AWS	56
4.6.3	Combination assemblies	57
4.6.4	Field mulling without manufacturer's involvement	57
4.6.5	Uniform load deflection	57
4.6.6	Vertical (dead load) deflection AWS	58
4.7	Mullion assembly performance	58
4.7.1	General	58
4.7.2	Water testing AWS	58
4.7.3	Air leakage testing AWS	59
4.8	Mullion assembly primary designator	59
4.9	mullion assembly secondary designator	60
<b>5</b>	<b>Class R and LC windows and sliding doors</b>	<b>60</b>
5.1	Class R and LC requirements (specific to the U.S.) AWS/DL	61
5.2	Class R and LC requirements (specific to Canada)	61
5.2.1	Infiltration/exfiltration AWS/DL	61
5.2.2	Canadian (only) air infiltration/exfiltration for gateway size (or maximum size tested) AWS	61
5.3	Requirements applicable to the U.S. and Canada	62
5.3.1	General AWS	62
5.3.2	Test specimen installation AWS	63
5.3.3	Operating force AWS	63
5.3.4	Uniform load deflection test AWS	64
5.3.5	Alternative minimum test sizes and minimum Performance Grades (PG) for selected Class R products (optional) AWS	65
5.3.6	Auxiliary/durability tests for Class R and LC windows DL	66
5.3.7	Safety drop test (non-hung vertical operating products only) DL	68
5.3.8	Unit dead load test (greenhouse windows only) DL	68
<b>6</b>	<b>Side-hinged and folding doors (all classes)</b>	<b>68</b>
6.1	General	68
6.2	Side-hinged door requirements (specific to the U.S.) AWS	69
6.3	Side-hinged door requirements (specific to Canada)	69
6.3.1	General	69
6.3.2	Canadian (only) air infiltration/exfiltration for gateway size (or maximum size tested) AWS	69
6.4	Requirements applicable to the U.S. and Canada	70
6.4.1	General	70
6.4.2	Gateway requirements	70
6.4.3	Test specimen installation AWS	74
6.4.4	Limited water testing AWS	74
6.4.5	Force-to-latch for side-hinged door systems DL	75
6.4.6	Uniform load deflection test AWS	75
6.4.7	Operation cycling performance (side-hinged door systems only) DL	76
6.4.8	Composite units and unique framing members	76
6.4.9	Folding door assembly qualification	78
<b>7</b>	<b>Class CW and AW windows and sliding doors</b>	<b>79</b>
7.1	Class CW and AW requirements (specific to the U.S.) AWS/DL	79
7.2	Class CW and AW requirements (specific to Canada)	79
7.3	Requirements applicable to the U.S. and Canada	79

7.3.1	Gateway requirements	79
7.3.2	Test specimen installation AWS	81
7.3.3	Operating force AWS	81
7.3.4	Uniform load deflection test AWS	82
7.3.5	Auxiliary/durability tests for Class CW and AW windows and sliding doors DL	83
7.3.6	Life cycle testing (Class AW products only) DL	88
7.3.7	Operation/cycling-slam test performance (architectural terrace doors only) DL	89
<b>8</b>	<b>Unit skylights, including roof windows and tubular daylighting devices (TDDs)</b>	<b>89</b>
8.1	General	89
8.2	TDD, roof window, and unit skylight requirements (specific to the U.S.) AWS/DL	89
8.3	TDD, roof window, and unit skylight requirements (specific to Canada)	90
8.4	TDD, roof window, and unit skylight requirements (applicable to the U.S. and Canada)	90
8.4.1	General	90
8.4.2	Test specimen installation AWS	93
8.4.3	Air leakage testing AWS	94
8.4.4	Water penetration testing AWS	94
8.4.5	Uniform load testing AWS	94
8.4.6	Auxiliary tests for roof windows, unit skylights, and TDDs DL	94
<b>9</b>	<b>General testing requirements</b>	<b>96</b>
9.1	Testing sequence	96
9.1.1	Applicability	96
9.1.2	Details of testing sequence AWS/DL	96
9.1.3	Test specimens	96
9.2	Test specimen requirements	96
9.2.1	General	96
9.2.2	Composite units and combination assemblies	96
9.2.3	Alterations	97
9.2.4	Specimen size	97
9.2.5	Test specimen installation AWS/DL	97
9.3	Testing methods AWS/DL	99
9.3.1	Operating force DL	99
9.3.2	Air leakage resistance test AWS	100
9.3.3	Water penetration resistance test AWS	101
9.3.4	Uniform load tests AWS	102
9.3.5	Forced-entry resistance test AWS	104
9.3.6	Auxiliary (durability) tests DL	104
9.4	Laboratory test report	110
9.4.1	Summary data	110
9.4.2	Detailed data	110
<b>10</b>	<b>Material requirements</b>	<b>112</b>
10.1	Material tolerance CPM	112
10.2	Glazing and glass	112
10.2.1	Reference standards	112
10.2.2	General requirement AWS	113
10.2.3	Glass selection	113
10.2.4	Multiple glazing panels (MGPs)	116

10.2.5	Plastic glazing	116
10.3	Framing/cladding materials	118
10.3.1	General	118
10.3.2	Wood	118
10.3.3	Vinyl	119
10.3.4	Cellular PVC	119
10.3.5	Aluminum	120
10.3.6	Fiberglass	121
10.3.7	Steel materials and coatings	122
10.3.8	Cellulosic composite materials CPM/DL	122
10.3.9	Reinforced Thermoplastic	122
10.3.10	Door lite insert frame materials CPM/DL	123
10.3.11	Other materials CPM	123
<b>11</b>	<b>Component requirements</b>	<b>123</b>
11.1	General	123
11.2	Hardware	123
11.2.1	Testing	123
11.2.2	Window opening control devices (WOCDs) and window fall prevention devices CPM	125
11.2.3	Hung window hardware CPM	125
11.2.4	Casement, awning, hopper, and projected window hardware CPM	125
11.2.5	Parallel opening window hardware CPM	125
11.2.6	Door hardware	126
11.2.7	Side-hinged and top-hinged window hardware	127
11.2.8	Tropical window hardware	127
11.2.9	Dual-action window hardware CPM	128
11.2.10	Top turn reversible hardware	128
11.3	Fasteners CPM	128
11.4	Reinforcing members DL	128
11.5	Weatherstrip and/or weatherseal for non-static joints CPM/DL	129
11.6	Insect screens CPM	129
11.7	Sealants CPM/DL	130
11.8	Coatings and finishes CPM/DL	130
11.9	Integral ventilating systems/devices AWS	131
11.10	Blinds in dual-glazed products AWS	131
11.11	Setting blocks CPM	131
11.12	Other components	132
<b>12</b>	<b>Fenestration type and test size requirements</b>	<b>132</b>
12.1	General	132
12.2	Product dimensions and tolerances	132
12.2.1	Dimensions	132
12.2.2	Tolerances	132
12.3	Qualification of designs, configurations, and assemblies	133
12.3.1	General	133
12.3.2	Geometry and components	133
12.3.3	Operation and orientation	134
12.3.4	Dividers (muntins)	134
12.3.5	Qualifying unequal lite assemblies	134

12.3.6	Composite units and unique framing members	135
12.4	Specialty products, basement windows, hinged windows, side lites, transoms, and secondary storm products	139
12.4.1	Specialty products	139
12.4.2	Basement windows	139
12.4.3	Hinged windows	139
12.4.4	Side lites, fixed doors, and door transoms	140
12.4.5	Secondary storm products	140

---

Annex A (informative)	— Commentary	159
Annex B (informative)	— Contact information for organizations listed in Clause 2	217
Annex C (informative)	— Certification	221
Annex D (informative)	— Standards progression — Windows, doors and unit skylights	222