

# Contents

Preface 11

## 0 Introduction 13

- 0.1 General 13
- 0.1.1 Applicability 13
- 0.1.2 Content 13
- 0.2 Performance Classes and Grades 14
- 0.2.1 General 14
- 0.2.2 Guidance for the specifier/purchaser 14
- 0.2.3 Performance Grade (PG) designations 14
- 0.2.4 Positive and negative ASD design pressure (DP) 15
- 0.2.5 Water penetration resistance testing and performance 15

## 1 Scope 15

- 1.1 General 15
- 1.2 Terminology 16
- 1.3 Units of measurement 17
- 1.4 Clause categories 17

## 2 Reference publications 18

## 3 Definitions 30

## 4 General requirements 30

- 4.1 General 30
- 4.1.1 Interpretations 30
- 4.1.2 Compliance 31
- 4.1.3 Additional standards for Canada 31
- 4.2 Gateway performance requirements 31
- 4.3 Performance Class 31
- 4.4 Performance Grades (PG) 31
- 4.4.1 General 31
- 4.4.2 Assignment of Performance Grade (PG) 32
- 4.5 Maximum size tested (MST) 32
- 4.6 Product designations 32
- 4.6.1 General 32
- 4.6.2 Primary Designator 33
- 4.6.3 Secondary Designator 34
- 4.7 Fenestration type and test size requirements 36
- 4.7.1 General 37
- 4.7.2 Product dimensions and tolerances 37
- 4.8 Basement windows, hinged windows, side lites, fixed doors, door transoms, dual windows or dual doors, and secondary storm products 38
- 4.8.1 Basement windows 38
- 4.8.2 Hinged windows 38
- 4.8.3 Side lites, fixed doors, and door transoms 38
- 4.8.4 Dual windows or dual doors 38

4.8.5	Secondary storm products	39
4.8.6	Specialty Products (SP)	41
4.9	Special shapes and sizes	42
4.9.1	Special shapes and sizes — Single-hung windows	42
4.9.2	Special shapes and sizes — Double-hung windows	45
4.9.3	Special shapes and sizes — Single sliding windows and doors	48
4.9.4	Special shapes and sizes — Double sliding windows and doors	50
4.10	Qualification of designs, configurations, and assemblies	53
4.10.1	General	53
4.10.2	Geometry and components	53
4.10.3	Operation and orientation	53
4.10.4	Dividers (muntins)	54
4.10.5	Qualifying unequal lite assemblies	54
4.10.6	Unique framing members	54
<b>5</b>	<b>Mullions</b>	<b>59</b>
5.1	Mullion rating AWS	59
5.1.1	General	59
5.1.2	Mullion rating options	59
5.1.3	Mullion rating specific requirements and qualifications	59
5.2	Field mulling without manufacturer's involvement	60
5.3	Vertical (dead load) deflection AWS	60
5.4	Mullion assembly performance	60
5.4.1	General	60
5.4.2	Water testing AWS	60
5.4.3	Air leakage testing AWS	60
5.5	Mullion assembly Primary Designator	61
5.6	Mullion assembly Secondary Designator	61
<b>6</b>	<b>Side-hinged, dual-action side-hinged, and folding doors (all classes)</b>	<b>62</b>
6.1	General	62
6.2	Performance requirements	62
6.2.1	Dual door designation	62
6.2.2	Gateway performance requirements	62
6.2.3	Test specimen installation AWS	65
6.2.4	Limited Water testing AWS	65
6.2.5	Uniform load deflection test AWS	65
6.2.6	Side-hinged door assembly qualification	65
6.2.7	Side-hinged door assembly qualification limits	67
6.2.8	Folding door assembly qualification	67
<b>7</b>	<b>Unit skylights, including roof windows and tubular daylighting devices (TDDs)</b>	<b>69</b>
7.1	General	69
7.2	TDD, roof window, and unit skylight requirements	69
7.2.1	General	69
7.2.2	Test specimen installation AWS	73
7.2.3	Air leakage testing AWS	73
7.2.4	Water penetration testing AWS	73
7.2.5	Uniform load testing (see Clause <a href="#">8.3.4</a> ) AWS	73

## 7.2.6 Auxiliary tests for roof windows and unit skylights DUR 74

**8 General testing requirements 75**

- 8.1 Testing requirements and sequence 75
  - 8.1.1 Applicability 75
  - 8.1.2 Testing requirements 75
  - 8.1.3 Alternative minimum test sizes and minimum Performance Grades (PG) for selected Class LC products (optional) AWS 81
  - 8.1.4 Details of testing sequence AWS DUR 85
  - 8.1.5 Test specimens 86
- 8.2 Test specimen requirements 86
  - 8.2.1 General 86
  - 8.2.2 Alterations 86
  - 8.2.3 Specimen size 86
  - 8.2.4 Test specimen installation AWS DUR 87
- 8.3 Testing methods AWS DUR 89
  - 8.3.1 Operating force DUR 89
  - 8.3.2 Air leakage resistance test AWS 92
  - 8.3.3 Water penetration resistance test AWS 93
  - 8.3.4 Uniform load tests AWS 96
  - 8.3.5 Forced-entry resistance test AWS 98
  - 8.3.6 Auxiliary (durability) tests DUR 98
- 8.4 Laboratory test report 102
  - 8.4.1 Summary data 102
  - 8.4.2 Detailed data 104

**9 Material and component requirements 111**

- 9.1 Requirements without alternative 111
  - 9.1.1 General 111
  - 9.1.2 Glazing and glass 111
  - 9.1.3 Framing/cladding materials 114
  - 9.1.4 Weatherstrip and/or weatherseal CPM DUR 117
  - 9.1.5 Sealants CPM DUR 117
  - 9.1.6 Hardware 117
  - 9.1.7 Insect screens CPM 120
  - 9.1.8 Door lite insert frame materials CPM DUR 121
  - 9.1.9 Coatings and finishes CPM DUR 121
  - 9.1.10 Other components or materials CPM 122
- 9.2 Requirements with alternative 122
  - 9.2.1 General 122
  - 9.2.2 Plastic glazing 122
  - 9.2.3 Wood adhesives CPM DUR 123
  - 9.2.4 Aluminum exterior cladding CPM 123
  - 9.2.5 Aluminum thermal barrier construction 123
  - 9.2.6 Aluminum thermal barrier extrusions CPM DUR 123
  - 9.2.7 Fiberglass and carbon fiber door skins CPM DUR 123
  - 9.2.8 Steel sheet CPM DUR 124
  - 9.2.9 Material tolerance CPM DUR 124
  - 9.2.10 Other components and materials CPM 124

9.3	Design Guidance	124
9.3.1	Fasteners CPM	124
9.3.2	Reinforcing members DUR	124
9.3.3	Setting blocks CPM	125
9.3.4	Window opening control devices (WOCDs) and window fall prevention devices CPM	125

Annex A (informative)	— Commentary	126
-----------------------	--------------	-----

## Tables

4.1	— Product types	36
4.2	— Gateway performance requirements for secondary storm products	40
6.1	— Available Performance Grades (PG) requirements for side-hinged and folding doors <sup>(3)</sup>	63
6.2	— Folding door assembly qualification	68
7.1	— Available Performance Grades (PG) for unit skylights, roof windows, and TDDs	70
7.2	— Load for distributed load test	75
8.1	— Available Performance Grade (PG) requirements for Class R and LC windows and sliding doors*	76
8.2	— Available Performance Grade (PG) requirements for Class CW and AW windows and sliding doors*	77
8.3	— Minimum gateway test sizes for products other than Performance Class R and Specialty Products (SP)	79
8.4 a)	— Alternative minimum test sizes and associated minimum Performance Grades (PG) for Class LC awning/hopper/projected windows (AP)	82
8.4 b)	— Alternative minimum test sizes and associated minimum Performance Grades (PG) for Class LC casement windows (C)	82
8.4 c)	— Alternative minimum test sizes and associated minimum Performance Grades (PG) for Class LC dual action windows (DAW)	83
8.4 d)	— Alternative minimum test sizes and associated minimum Performance Grades (PG) for Class LC fixed windows (FW)	83
8.4 e)	— Alternative minimum test sizes and associated minimum Performance Grades (PG) for Class LC horizontal sliding windows (HS)	84
8.4 f)	— Alternative minimum test sizes and associated minimum Performance Grades (PG) for Class LC hung and vertical sliding windows (H and VS)	84
8.4 g)	— Alternative minimum test sizes and associated minimum Performance Grades (PG) for Class LC side lites (SLT)	85
8.4 h)	— Alternative minimum test sizes and associated minimum Performance Grades (PG) for Class LC transoms (TR)	85
8.5	— Operating force requirements AWS DUR	90
8.3	— Primary Designator	94
8.4	— Primary Designator	95
8.6	— Deflection limits for sash/leaf torsion test	99
8.7	— Loads for casement hardware load test	100
8.8	— Deflection limits for sash blocked operation test	101
8.5	— Example test report summary of results	102
8.6	— Example test report summary of results	103
8.7	— Example test report summary of results for side-hinged entry door with hardware excluded	103
8.8	— Example test report summary of results for any Class AW rating above the minimum ASD design pressure (DP) of 1920 Pa (~40.10 psf)	105

8.9 — Gateway Performance Requirements	106
8.10 — Auxiliary test matrix	108
9.1 — Corrosion resistance requirements for steel reinforcing members	117
9.2 — Test Method B materials	119
9.3 — Side-hinged door hardware reference standards	120
9.4 — Requirements for finishes	121
9.5 — Plastic glazing combustibility classes	123
A.7.2.1 — Primary and Secondary Designator example	147
A.9.1.2.3.2 — Allowable IGU glass loads for Examples 1 and 2	160

---

## Figures

4.1 — Primary Designator (Example 1)	33
4.2 — Primary Designator (Example 2)	34
4.3 — Primary Designator (Example 3)	34
4.4 — Special shapes and sizes — Specialty Products (SP)	42
4.5 — Special shapes and sizes — Single-hung windows	43
4.6 — Special shapes and sizes — Double-hung windows	46
4.7 — Special shapes and sizes — Single sliding windows and doors	49
4.8 — Special shapes and sizes — Double sliding windows and doors	51
4.9 — Window and door assembly qualification — Typical configurations	55
5.1 — Mullion assembly Primary Designator	61
5.2 — Mullion assembly Secondary Designator	61
6.1 — Side-hinged door assembly qualification	66
7.1 — Set-up for roof window and unit skylight hardware load test	74
8.1 — Test specimen mounting	88
8.2 — Water test plane detail	89
A.4.7 — Product type illustrations	132
A.4.7.2.1 — Product dimension measurement	137
A.4.10.5 — Examples of unequal lite products	139
A.5.1 — Mullion types and applications	140
A.5.5 — Trapezoidal tributary area	145
A.7.2.2.1 a) — Air leakage test configurations	148
A.7.2.2.1 b) — TDD test specimen mounting	149
A.8.3.6.3 — Set-up for sash/leaf torsion test	155
A.8.3.6.4 a) — Set-up for casement hardware load test	156
A.8.3.6.4 b) — Optional alternative set-up for casement hardware load test	157
A.8.3.6.6 — Set-up for awning, hopper, projected hardware load test	158