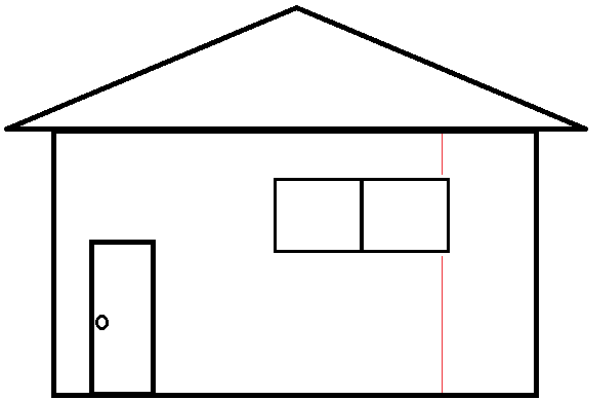
AMIA
Advance Metal Industries Australia

Pressure Conversion Chart

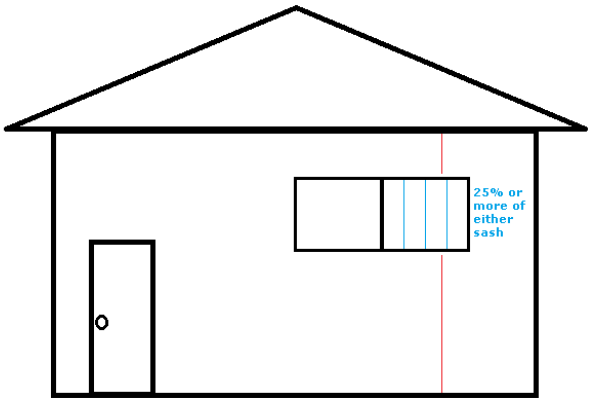
Pascals	Kpa	Klm/hr	m/sec.
75	0.075	40.25	11.18
100	0.100	46.48	12.91
150	0.150	56.92	15.81
200	0.200	65.73	18.26
250	0.250	73.48	20.41
300	0.300	80.50	22.36
400	0.400	92.95	25.82
500	0.500	103.92	28.87
600	0.600	113.84	31.62
700	0.700	122.69	34.16
800	0.800	131.45	36.51
900	0.900	139.43	38.73
1000	1.000	146.97	40.82
1100	1.100	154.14	42.82
1200	1.200	161.00	44.72
1300	1.300	167.57	46.55
1400	1.400	173.90	48.30
1500	1.500	180.00	50.00
1600	1.600	185.90	51.64
1700	1.700	191.62	53.23
1800	1.800	197.18	54.77
1900	1.900	202.58	56.27
2000	2.000	207.85	57.74
2100	2.100	212.98	59.16
2200	2.200	218.00	60.55
2300	2.300	222.90	61.91
2400	2.400	227.68	63.25
2500	2.500	232.38	64.55
3000	3.000	254.56	70.71
4000	4.000	293.65	81.65
5000	5.000	328.63	91.29
6000	6.000	360.00	100.00

Note: The above figures are intended as a guide only. An Engineer should always be consulted when determining site specific pressure requirements. Design pressures may vary according to factors such as air temperature, air density, façade areas that the pressure applies and the angle of wind directed at the façade are some examples that can affect these conversion numbers.



If the window is here or futher away from the corner, no upgrades are required.

1200mm



If the window is here, or closer to the corner, 'upgrades' may be needed depending on the size & site wind rating.

1200mm

2.3.1.2 *Window ratings*

The following shall apply:

(a) Window assemblies shall be rated in accordance with Table 2.1 and by achieving the test results detailed in Clauses 2.3.1.3 to 2.3.1.7 to the appropriate test in AS 4420.2, AS 4420.3, AS 4420.4, AS 4420.5 and AS 4420.6.

(b) The supporting members shall have sufficient thickness of material and strength to ensure the performance of the window-operating hardware.

Windows and doors with 25% or more of the width of a single panel or pane within 1200 mm of the building edge shall be classified as corner windows and doors.

NOTE: Appendix C nominates window ratings or design wind pressures for each window and door assembly.

TABLE 2.1

WINDOW RATINGS FOR HOUSING

Window rating	Serviceability pressure, Pa	
	General	Corner windows
N1	400	600
N2	400	600
N3	600	800
N4	800	1200
N5	1200	1800
N6	1600	2500
C1	600	800
C2	800	1200
C3	1200	1800
C4	1600	2500

NOTE: The pressures are as per AS 4055, rounded to the nearest 100 Pa.

2.3.1.3 *Deflection/span ratio*

Window assemblies for housing shall be subjected to the deflection test in accordance with AS 4420.2. The test pressure shall be the serviceability wind pressure as specified in Table 2.1. No structural members in a completely assembled and glazed window shall deflect by an amount greater than the following, when tested at the serviceability design wind pressure:

(a) Span/250 for windows and sliding doors.

(b) Span/100 for doors other than sliding.

NOTE: Glazing bars, awning, and casement sash stiles and rails are not members that require deflection tests; however, they should comply with the ultimate strength test requirements.

2.3.1.4 *Operating force*

Windows for housing shall be subjected to the operating force test in accordance with AS 4420.3. The test force shall be not greater than the value for windows given in Table 2.2.

TABLE 2.5

ULTIMATE STRENGTH TEST PRESSURES

Window rating	Ultimate limit state pressure, Pa	
	General	Corner windows
N1	600	900
N2	900	1300
N3	1400	2000
N4	2000	3000
N5	3000	4500
N6	4000	6000
C1	1800	2700
C2	2700	4000
C3	4000	5900
C4	5300	8000

NOTE: The pressures are as per AS 4055, rounded to the nearest 100 Pa.

2.3.2 Residential and commercial buildings

2.3.2.1 *General*

This Clause covers residential buildings of Class 2, Class 3 and Class 4, commercial buildings of Classes 5, 6, 7, 8 and 9, as described in the NCC, and Class 1 and 10 buildings outside the limitations specified in AS 4055.

Window assemblies shall achieve the test results detailed in Clauses 2.3.2.3 to 2.3.2.7 to the appropriate test in AS 4420.2, AS 4420.3, AS 4420.4, AS 4420.5 and AS 4420.6.

2.3.2.2 *Design wind pressures*

The design wind pressures for serviceability limit state and ultimate limit state shall be determined in accordance with AS/NZS 1170.2. All local pressure factors and internal pressure coefficients relevant to the location of the window on the building shall be considered.

NOTES:

1 For guidance on design wind pressure, see Appendix A.

2 Appendix C nominates window ratings or design wind pressures for each window and door assembly.

2.3.2.3 *Deflection/span ratio*

Windows shall be subjected to the deflection test in accordance with AS 4420.2. The test pressure shall be the serviceability limit state wind pressure determined in Clause 2.3.2.2. No structural members in a completely assembled and glazed window shall deflect by an amount greater than span/250 for windows and sliding doors, and span/100 for all other doors.

2.3.2.4 *Operating force test*

Windows shall be subjected to the operating force test in accordance with AS 4420.3. The test force shall be not greater than the value given in Table 2.2.

2.3.2.5 *Air infiltration*

Windows shall be subjected to the air infiltration test in accordance with AS 4420.4. The air infiltration shall not exceed the amount given in Table 2.3.

3.4 PRESSURES FOR TYPICAL APPLICATIONS

Based on the net pressure coefficients in Tables 3.1 and 3.2, ultimate limit state design pressures for the N and C categories are as given in Table 3.3. Serviceability limit state design pressures from N and C categories are as given in Table 3.4.

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TABLE 3.3

ULTIMATE STRENGTH PRESSURES FOR WIND CLASSIFICATION FROM THE NET PRESSURE COEFFICIENTS GIVEN IN CLAUSE 3.1

Wind class	Walls		Roofs		
	Away from corners[1]	Within 1200 mm of corners[2]	Away from edges[1]		Within 1200 mm of edges[2]
	$C_{p,n} = 1.0$ kPa	$C_{p,n} = -1.5$ kPa	$C_{p,n} = -1.1$ kPa	$C_{p,n} = 0.7$ kPa	$C_{p,n} = -2.0$ kPa
N1	0.69	−1.04	−0.76	0.49	−1.39
N2	0.96	−1.44	−1.06	0.67	−1.92
N3	1.50	−2.25	−1.65	1.05	−3.00
N4	2.23	−3.35	−2.46	1.56	−4.47
N5	3.29	−4.93	−3.61	2.30	−6.57
N6	4.44	−6.66	−4.88	3.11	−8.88
	$C_{p,n} = -1.35$	$C_{p,n} = -2.0$	$C_{p,n} = -1.6$	$C_{p,n} = 1.05$	$C_{p,n} = -2.5$
C1	−2.03	−3.00	−2.40	1.58	−3.75
C2	−3.01	−4.47	−3.57	2.34	−5.58
C3	−4.44	−6.57	−5.26	3.45	−8.21
C4	−5.99	−8.88	−7.10	4.66	−11.09

NOTES:

1 General areas, including wall studs more than 1200 mm from corners and roof trusses and rafters more than 1200 mm from edges.

2 Areas of cladding and fasteners within 1200 mm of wall corners or roof edges; windows within 1200 mm of wall corners; immediate supporting members such as battens and purlins within 1200 mm of roof edges.

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TABLE 3.4

SERVICEABILITY PRESSURES FOR WIND CLASSIFICATION FROM THE NET PRESSURE COEFFICIENTS GIVEN IN CLAUSE 3.1

Wind class	Walls		Roofs		
	Away from corners[1]	Within 1200 mm of corners[2]	Away from edges[1]		Within 1200 mm of edges[2]
	$C_{p,n} = 1.0$ kPa	$C_{p,n} = -1.5$ kPa	$C_{p,n} = -1.1$ kPa	$C_{p,n} = 0.7$ kPa	$C_{p,n} = -2.0$ kPa
$N1_{serv}$	0.41	−0.61	−0.45	0.28	−0.81
$N2_{serv}$	0.41	−0.61	−0.45	0.28	−0.81
$N3_{serv}$	0.61	−0.92	−0.68	0.43	−1.23
$N4_{serv}$	0.91	−1.37	−1.00	0.64	−1.83
$N5_{serv}$	1.33	−1.99	−1.46	0.93	−2.65
$N6_{serv}$	1.82	−2.72	−2.00	1.27	−3.63
$C1_{serv}$	0.61	−0.92	−0.68	0.43	−1.23
$C2_{serv}$	0.91	−1.37	−1.00	0.64	−1.83
$C3_{serv}$	1.33	−1.99	−1.46	0.93	−2.65
$C4_{serv}$	1.82	−2.72	−2.00	1.27	−3.63

NOTES:

1 General areas, including wall studs more than 1200 mm from corners and roof trusses and rafters more than 1200 mm from edges.

2 Areas of cladding and fasteners within 1200 mm of wall corners or roof edges; windows within 1200 mm of wall corners; immediate supporting members such as battens and purlins within 1200 mm of roof edges.

(iii) water running down the indoor face of louvres, which is completely contained within a purpose-built drainage area.

The required water penetration level shall be based on the location of the building and the amount of shielding protection provided by the design of the building.

NOTES:

1 If the building is in an exposed site and is likely to be subjected to driving rain, the exposed level of water penetration resistance should be specified in the design.

2 If the window is protected from driving rain by elements of the building such as a wide veranda, a lower level of water penetration resistance may be specified in the design as part of an alternative solution.

TABLE 2.4

WATER PENETRATION RESISTANCE TEST PRESSURES

Rating	Non-exposed Pa	Exposed Pa
N1, N2	150	200
N3, C1	150	300
N4, C2	200	300
N5, C3	300	450
N6, C4	450	600

2.3.1.7 *Ultimate strength*

Windows for housing shall not collapse when subjected to the ultimate strength test in accordance with AS 4420.6. 'Collapse' shall mean any one, or any combination, of the following:

(a) Failure or dislodgment of any glazing.

(b) Dislodgment of a frame or any part of a frame.

(c) Removal of a light, either with or without its framing sash, from a frame.

(d) Loss of support of a frame, such as when it is unstable in its opening in the building structure.

(e) Failure of any sash, locking device, fastener or supporting stay, allowing an opening light to open.

The test pressure shall be not less than the value given in Table 2.5.

Windows and doors with 25% or more of the width of a single panel or pane within 1200 mm of the building edge shall be classified as corner windows and doors.