



**DuraShutter**  
WIND-RATED DOORS



## In-Plane and Out-of-Plane Forces acting on the DuraShutter Guide System

These forces should be used by the structural engineer to ensure sufficient strength of the door aperture and surrounding structure.

Zone	Air Pressure [kPa]	Max Wind Speeds		Door Opening Width [m]													
				3.0		4.0		5.0		5.5		6.0		7.0		8.0	
		[m/s]	[km/hr]	Out-of-Plane [kN/m]	In-Plane [kN/m]	Out-of-Plane [kN/m]	In-Plane [kN/m]	Out-of-Plane [kN/m]	In-Plane [kN/m]	Out-of-Plane [kN/m]	In-Plane [kN/m]	Out-of-Plane [kN/m]	In-Plane [kN/m]	Out-of-Plane [kN/m]	In-Plane [kN/m]	Out-of-Plane [kN/m]	In-Plane [kN/m]
Low	0.67	33.4	120	1.01	4.1	1.34	5.0	1.68	6.0	1.84	6.5	2.01	7.6	2.34	9.3	2.68	12.3
Medium	0.90	38.7	139	1.35	4.8	1.80	6.5	2.25	8.2	2.48	9.1	2.70	10.5	3.15	12.6	3.68	16.3
High	1.28	46.2	166	1.92	6.3	2.56	8.7	3.20	11.1	3.52	12.3	3.84	14.3	4.48	17.1	5.12	22.2
Very High	1.65	52.4	189	2.48	7.5	3.30	10.6	4.13	13.7	4.54	15.3	4.95	18.0	5.78	21.8	6.60	28.8
Extra High	2.00	57.7	208	3.00	9.3	4.00	12.9	5.00	16.6	5.00	18.4	6.00	21.5	7.00	25.8	8.00	33.8

CAT1	Minimum guide fixing vertical spacing: 1000mm
CAT2	Minimum guide fixing vertical spacing: 800mm
CAT3	Minimum guide fixing vertical spacing: 600mm
CAT4	Minimum guide fixing vertical spacing: 400mm
CAT5	Minimum guide fixing vertical spacing: 400mm

Forces given above are per m opening height, per side of the door  
 All guide fixings are M12  
 All guide fixings are centred 123mm back from the edge of the opening  
 Concrete fixings require a drill hole depth of 100mm into concrete, there should be no steel reinforcing in the concrete where guide fixings are to be located