

# Wind fact sheet – Germany

## Window shutters

Pantograph shutter | Sliding bi-fold shutter | Sliding shutter | Wing shutter

Product	Sash width	Sash height	Shading width	Permissible wind resistance classes (WRC) limit values <sup>1</sup>
	max.	max.	max.	
Pantograph shutter	550	2600	3300	6 [8] <sup>2</sup>
Sliding bi-fold shutter	600	3000	3600	6 [8] <sup>3</sup>
Sliding shutter	2000	3000	4000	6 [8] <sup>4,5</sup>
Wing shutter	800	2500	3200	6

<sup>1</sup> Tests in accordance with product standard EN 13659. Product size limitations according to technical data sheet.

[ ] Class [8] corresponds to an internal standard. That corresponds to a safety test pressure of 800 Pa.

The tests are carried out and evaluated in accordance with the provisions of EN 1932.

<sup>2</sup> The specified wind resistance class applies for pantograph shutters with installation type S1 (bottom wall mounting).

Pantograph shutters with the installation type S2 (bottom floor mounting) achieve in their maximal sizes the WRC 5.

<sup>3</sup> The specified wind resistance class applies for sliding bi-fold shutters with installation type S2 (bottom floor mounting). Sliding bi-fold shutters with the installation type S1 (bottom wall mounting) achieve in their maximal sizes the WRC 6.

<sup>4</sup> In the case of sliding shutters in installation situations bottom S2/S4/S6 and with the maximum dimensions, the specified wind resistance class applies. In installation situations S1/S3, the following restrictions apply with regard to the wind resistance classes:

- WRC 6 for a surface area of between 2 m<sup>2</sup> and 2.5 m<sup>2</sup>
- WRC 5 for a surface area of between 2.5 m<sup>2</sup> and 3.5 m<sup>2</sup>
- WRC 4 for a surface area larger than 3.5 m<sup>2</sup>

In multi-rail systems with installation situations S5, the following restrictions apply with regard to the wind resistance classes:

- WRC 6 for a surface area of between 3.3 m<sup>2</sup> and 4.5 m<sup>2</sup>
- WRC 5 for a surface area larger than 4.5 m<sup>2</sup>

<sup>5</sup> In the case of sliding shutters Vento in models A with vertical frieze, S and SL with the maximum dimensions, the specified wind resistance class applies.

For sliding shutters Vento model A without vertical frieze, the following restrictions apply with regard to the wind resistance classes:

- WRC 6 [8] for the maximum dimensions 1600 x 3300 or 1350 x 3500 (width x height)
- WRC 6 [7] up to the maximum dimensions

For sliding shutters Vento model H timber and H aluminium, the following restrictions apply with regard to the wind resistance classes:

- WRC 6 [8] for the maximum dimensions of 1100 x 3500 or 1350 x 3300 or 1600 x 3100 (width x height)
- WRC 6 [7] for the maximum dimensions of 1250 x 3500 or 1550 x 3300 (width x height)

- All WRC up to the maximum dimensions on request

### The values shown in the table apply with the following qualifications:

- Product dimensions and use comply with the Griesser technical data sheet.
- Installation, fastening and operation are carried out in accordance with installation and operating instructions.
- The products should be installed in the soffit / directly on the facade, with the sashes <100 mm away from the facade.
- If the distance from the facade is between 100 and 300 mm, the value in the table must be reduced by 1 class.
- If the distance from the facade is between 300 and 500 mm, the value in the table must be reduced by 2 classes.
- In the event of a facade offset > 500 mm (e.g. for use on balconies and loggias), the system must be structurally inspected and tested in situ. Please contact us for further information.

### Pantograph shutters, sliding bi-fold shutters, sliding shutters

In the event of approaching bad weather, these window shutters must be fully retracted if the wind speed corresponds to the wind resistance class. The retracted position corresponds to the parked position (the product does not shade the window area).

### Wing shutters

In the event of approaching bad weather, wing shutters must be closed and locked if the wind speed corresponds to the wind resistance class.

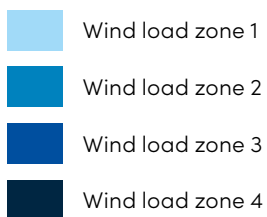
### Setting values for sensors according to producer

Sensors fitted next to product.

Class 0	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8
<9,0 m/s	9,0 m/s	10,7 m/s	12,8 m/s	16,7 m/s	21,0 m/s	25,6 m/s	29,2 m/s	33,3 m/s
<32,5 km/h	32,5 km/h	38,5 km/h	46 km/h	60 km/h	76 km/h	92 km/h	105 km/h	120 km/h

## Planning Notes

Wind load zones (DIN EN 1991-1-4 / NA)



## Planning Notes

### Wind resistance classes depending on the terrain category and the installation height (DIN EN 1991-1-4/NA)

Wind load zone	Terrain category*	Installation height [m]				
		≤9	≤18	≤28	≤50	≤100
1	I Open sea	3	3	4	4	4
	II Agricultural areas	3	3	3	4	4
	III Urbanized or industrial zones	2	2	3	3	4
	IV Urban zones	1	1	2	3	3
2	I Open sea	4	4	4	4	5
	II Agricultural areas	3	4	4	4	4
	III Urbanized or industrial zones	2	3	3	4	4
	IV Urban zones	2	2	3	3	4
3	I Open sea	4	4	4	4	5
	II Agricultural areas	4	4	4	4	5
	III Urbanized or industrial zones	3	3	4	4	4
	IV Urban zones	2	3	3	4	4
4	I Open sea	4	5	5	5	5
	II Agricultural areas	4	4	4	5	5
	III Urbanized or industrial zones	3	4	4	4	5
	IV Urban zones	3	3	3	4	4

\* Terrain categories (DIN EN 1991-1-4/NA)

I Open sea | Lakes with at least 5km free area in wind direction | Smooth, flat terrain without obstacles

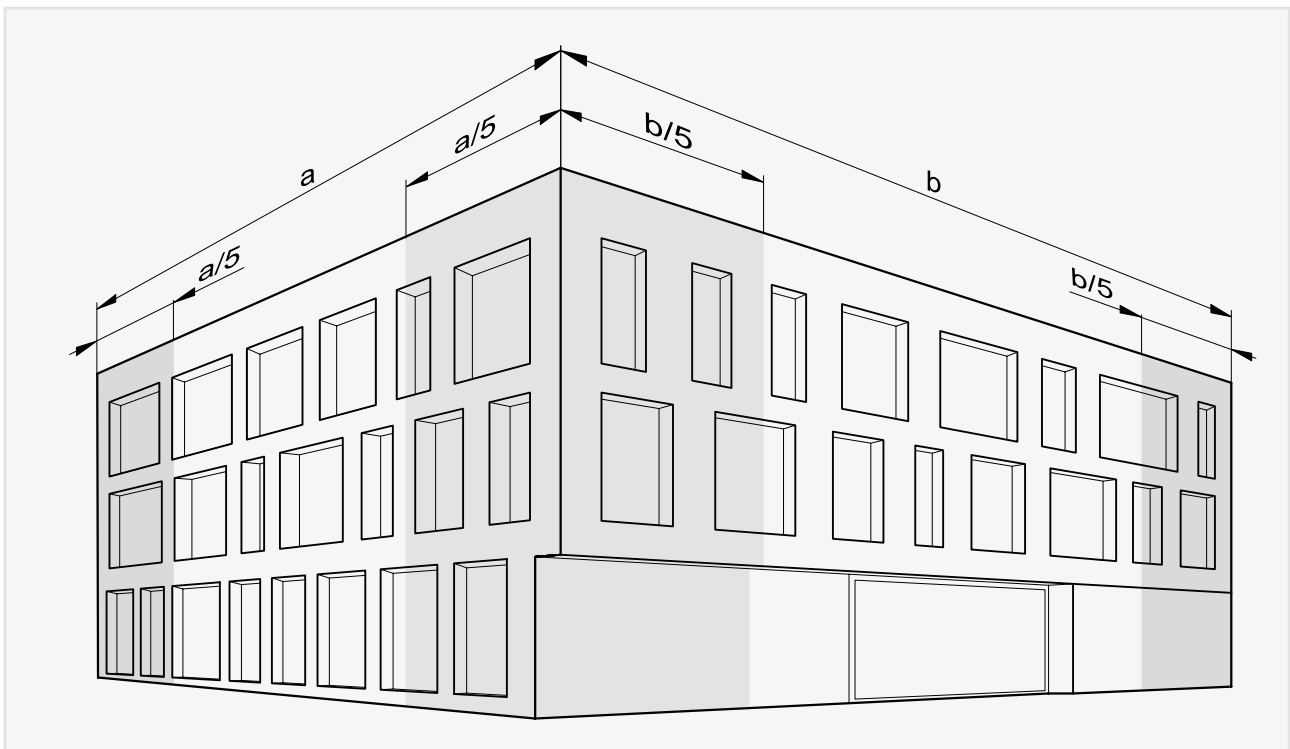
II Agricultural areas | Terrain with hedges, individual farmsteads, houses or trees

III Urbanized or industrial zones | Forests

IV Urban zones with at least 15% of the surface covered with buildings with an average height of more than 15m

### Higher wind resistance class

Wind speeds can be considerably higher at building corners and should be taken into consideration. Separate proof must be submitted for buildings without a square floor plan or buildings above 800m above sea level, separate proof must be provided in accordance with the standard.



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