



SWISSPEARL®

PREMIUM

SWISS QUALITY

FAÇADE SYSTEMS

FOR HIGH-END

ARCHITECTURE

High-rise buildings

High-rise buildings

In Europe there are many of buildings up to around 25 stories with classical rear ventilated facades. This is standard design has been used in many countries since several decades.

More greatly various taller buildings have also been clad with rear ventilated SWISSPEARL facade systems in the USA, Canada and Mexico.

Many such projects are in planning all around the world.

There are no technical reasons, not to use classical rain screen claddings on high-rise buildings.

SWISSPEARL panels are suitable as cladding panels for high-rise buildings. Subject to an adequate quantity of fasteners and sub framings, SWISSPEARL panels do withstand to any wind load and there is no limit to the building height.



High-rise buildings



Video sequences wind load testing

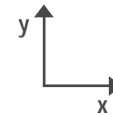
Spacing between fasteners

On high rise buildings the wind loads are generally higher than on low buildings. Local engineer to determine applicable loads for all building zones.

Spacing between panel fasteners to be determined in accordance with the SWISSPEARL table of distances between panel fasteners.

This table is applicable for 8 mm panels fastened with rivets onto metal sub-framing

Windload [kPa = kN/m ²]	Windload [psf]	Wind velocity [km/h]	Vertical panels		Horizontal panels	
			Spacings		Spacings	
			[mm] horizontally x	[mm] vertically y	[mm] horizontally x	[mm] vertically y
0.9	19	138	570	720	720	530
1.0	21	145	570	720	720	530
1.1	23	152	570	580	720	530
1.2	25	159	570	580	590	530
1.3	27	166	570	580	590	530
1.4	29	172	380	580	490	530
1.5	31	178	380	580	490	530
1.6	33	184	380	580	490	530
1.7	36	190	380	480	490	530
1.8	38	196	380	480	490	350
1.9	40	201	380	480	490	350
2.0	42	206	380	480	490	350
2.5	52	230	380	480	420	350
3.0	63	252	380	410	420	350
3.5	73	280	280	410	420	260
4.0	84	300	280	360	370	260
4.5	94	> 300	280	320	370	240



Maximum distances between panel fasteners

Windload

The value means the actual wind load occurring on the cladding.

Spacings

Maximum distance between panel fasteners.

Interpolation

Intermediate values for wind load/spacing may be interpolated.

Safety factor

A safety factor of 3.0 is taken into account for the admissible system load (rivet and panel).

Engineering responsibility

Structural Engineer/ Contractor shall assume overall responsibility for the façade engineering.

High-rise buildings



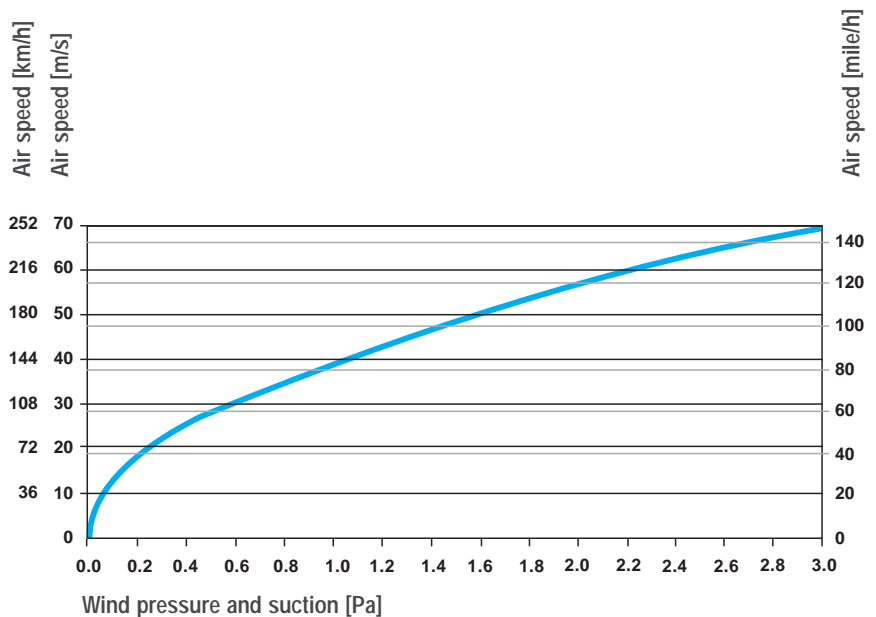
SWISSPEARL panels are engineered/designed for high-rise buildings without any defect/lack using a relevant stiff sub-framing.

For a correctly engineered façade, SWISSPEARL panels may be used for wind loads up to 3 kN/m² and more when fastened with rivets on the relevant sub-framing.

The wind load caused by the wind velocity is the main impact for the designing of external cladding. It depends on

- the location
- the exposition
- the height
- the shape of the building

The relation between wind velocity and wind load is shown on the right.



Wind velocity and wind loads

Hurricane test live

Cyclone Gamède raged over Reunion island from 24th to 28th February, 2007 with wind speeds above 250 km/h and torrential rains. SWISSPEARL façade of the building on the right, located in St. Pierre, had not changed its appearance after this natural catastrophe: the Carat Coral panels were neither displaced nor showed any alteration in surface aspect or colour.



Category IV

Area in which at least 15% of surface is covered with buildings and their average height exceeds 15 m

Roughness $a = 0.40$

Category III

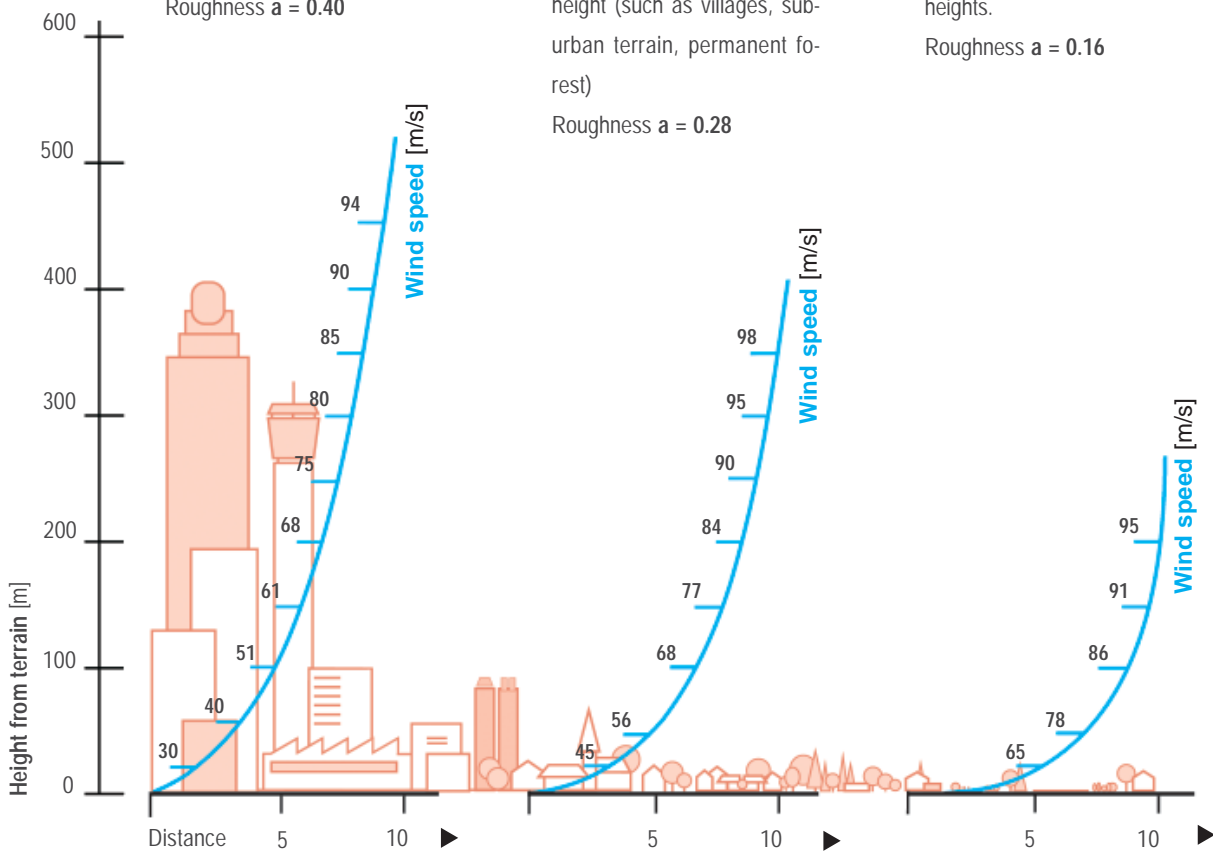
Area with regular cover of vegetation or buildings or with isolated obstacles with separations of maximum 20 obstacles height (such as villages, suburban terrain, permanent forest)

Roughness $a = 0.28$

Category II

Area with low vegetation such as grass and isolated obstacles (trees, building) with separations of at least 20 obstacles heights.

Roughness $a = 0.16$



Wind velocity in function of height and roughness [Davenport]

High-rise buildings



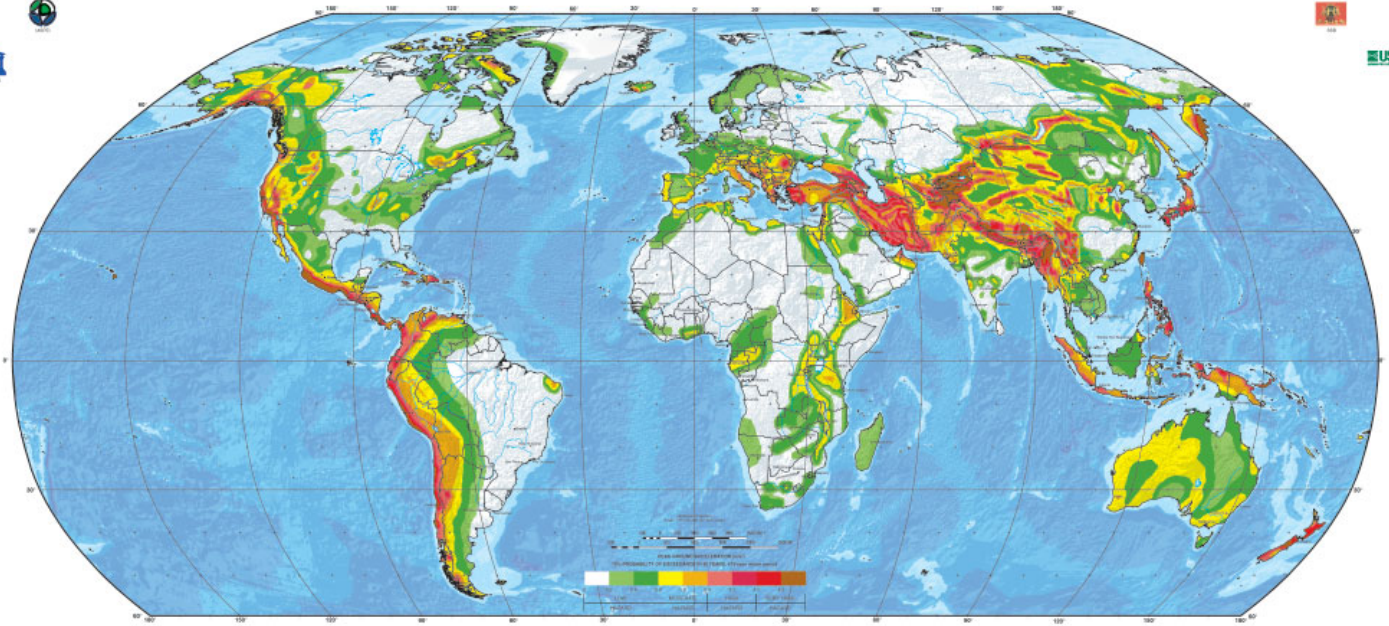
Ventilation cavity

Minimum thickness for uninterrupted cavities shall be 75 mm for buildings up to a height of 100 m, and 100 mm cavity for higher buildings. For high rise buildings it can be considered to use waterproof horizontal joint flashing profiles instead of standard SWISSPEARL L-flashings that are not completely watertight. When dividing the cavity height wise into sections, the cavity thickness can be decreased to 50 mm.

The major criterion for the design of the ventilation cavity is certainly the use of non inflammable material for insulation, sub-framing and cladding. Besides adequate sizing of cavity and ventilation openings there are no specific further SWISSPEARL recommendations regarding the design of the ventilation cavity.

GLOBAL SEISMIC HAZARD MAP

Produced by the Global Seismic Hazard Assessment Program (GSHAP),
a demonstration project of the UN/International Decade of Natural Disaster Reduction, conducted by the International Lithosphere Program.
Global map assembled by D. Giardini, G. Grünthal, K. Shedlock, and P. Zhang
1999



www.seismo.ethz.ch/gshap/

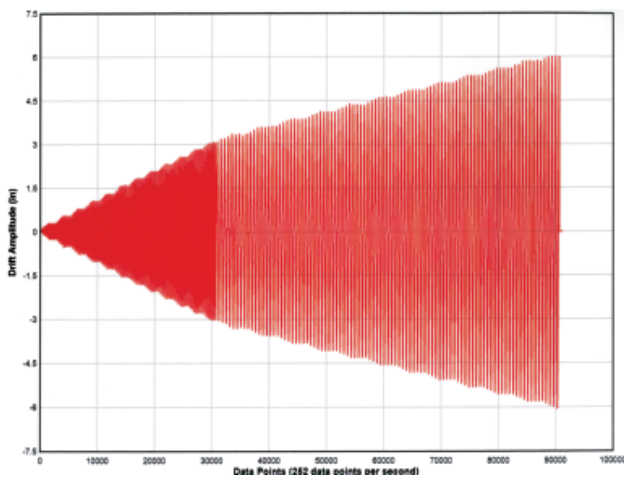
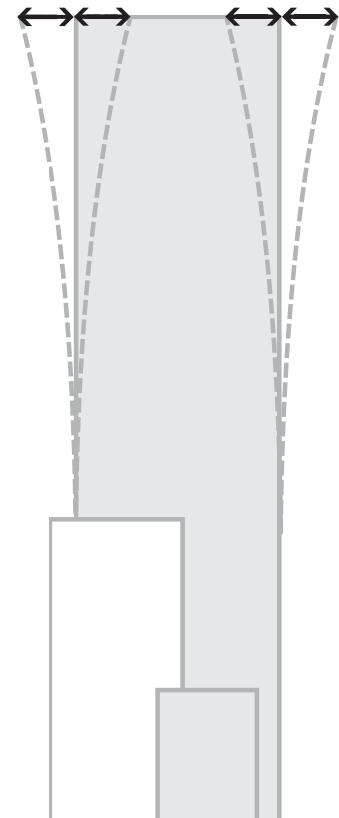


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ATI Summary of Results

Summary of Results: The Swisspearl exterior wall cladding system has been proven for an interstory drift of 6" for the vertical layout and horizontal layout configurations when configured with the components, assembly and spans documented in this report.

"The SWISSPEARL exterior wall cladding system has been proven for an interstory drift of 6"/152 mm for the vertical layout and horizontal layout configurations when configured with the components, assembly and spans documented in this report." (cf 70780.01-120-32)



Interstory drift for horizontal layout configuration [ATI]

Flexural displacement capacity

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