

## Wind Resistance according to EN 13659

Dear customers,

You often ask us about different values of Climax external blinds wind resistance as presented in the external blinds pricelist for 2015 and for 2016. In pricelist for 2016 the values are lower, as it can be seen here below:

Pricelist 2015 (page 134) – values according to standard EN 13659:

Blind type	C-80, C-80 VENTAL/ C-80 CC		Z-90 NOVAL		Z-70		F-80			EXT-50 / EXT-50 H	
	do 240 cm	241-500 cm	do 240 cm	241-500 cm	do 240 cm	241-500 cm	do 200 cm	201-300 cm	301-350 cm	do 200 cm	201-250 cm
Wind resistance	6	4	6	5	5	4	3	2	1	3	2
Max. wind speed (km/h)	90	60	90	75	75	60	45	35	30	45	35
Wind resistance class based on Beaufort scale	10	7	10	9	9	7	6	5	5	6	5

Pricelist 2016 (page 115) – values according to standard EN13659+A1:

Wind resistance for external blinds guided in rails													
Wind resistance classes valid for loading both with pressure and intake of blinds	Blind height	A ≤ 2 000		2 000 < A ≤ 3 000		3 000 < A ≤ 4 000		4 000 < A ≤ 4 500		4 500 < A ≤ 4 800		4 800 < A ≤ 5 000	
		EN 13 659 + A1	Beaufort	EN 13 659 + A1	Beaufort	EN 13 659 + A1	Beaufort	EN 13 659 + A1	Beaufort	EN 13 659 + A1	Beaufort	EN 13 659 + A1	Beaufort
		C-80, C-80 CC	up to 400 cm	4	7	3	6	2	5	1	4	0	3
C-80 VENTAL	5	8		4	7	3	6	2	5	1	4	0	3
C-60	5	8		4	7	3	6	2	5	1	4	0	3
Z-90 NOVAL	4	7		3	6	2	5	1	4	0	3	0	2
Z-70	5	8		4	7	3	6	2	5	1	4	0	3
F-80	3	6		2	5	1	4	0	3	0	2	0	1
EXT-50, EXT-50 H	2	5		1	4	0	3	0	2	0	1	0	0

Wind resistance for external blinds guided in wire													
Wind resistance classes valid for loading both with pressure and intake of blinds	Blind height	A ≤ 2 000		2 000 < A ≤ 3 000		3 000 < A ≤ 4 000		4 000 < A ≤ 4 500		4 500 < A ≤ 4 800		4 800 < A ≤ 5 000	
		EN 13 659 + A1	Beaufort	EN 13 659 + A1	Beaufort	EN 13 659 + A1	Beaufort	EN 13 659 + A1	Beaufort	EN 13 659 + A1	Beaufort	EN 13 659 + A1	Beaufort
		C-80, C-80 CC	up to 250 cm	2	5	1	4	0	3	0	2	0	1
	up to 400 cm	1	4	0	3	0	2	0	1	0	0	0	0
C-80 VENTAL	up to 250 cm	2	5	1	4	0	3	0	2	0	1	0	0
	up to 400 cm	1	4	0	3	0	2	0	1	0	0	0	0
C-60	up to 250 cm	2	5	1	4	0	3	0	2	0	1	0	0
	up to 400 cm	1	4	0	3	0	2	0	1	0	0	0	0
Z-90 NOVAL	up to 250 cm	2	5	1	4	0	3	0	2	0	1	0	0
	up to 400 cm	1	4	0	3	0	2	0	1	0	0	0	0
Z-70	up to 250 cm	2	5	1	4	0	3	0	2	0	1	0	0
	up to 400 cm	1	4	0	3	0	2	0	1	0	0	0	0
F-80	up to 250 cm	2	5	1	4	0	3	0	2	0	1	0	0
	up to 400 cm	1	4	0	3	0	2	0	1	0	0	0	0
EXT-50, EXT-50 H	up to 250 cm	1	4	0	3	0	2	0	1	0	0	0	0
	up to 400 cm	0	3	0	2	0	1	0	0	0	0	0	0

Product standard EN13659 and also testing method standard EN1932 have changed recently which had impact to wind resistance classification of external blinds.

#### **Product standard EN13659 editions:**

In November 2015 a new edition of standard EN13659 is issued. Its full name is EN13659:2015 and it replaces edition EN 13659+A1:2008 (or EN13659+A1) of the same standard.

Until February 28, 2017 an interim period lasts when both editions EN13659+A1:2008 and EN13659:2015 can be referred to.

*(Notice: don't be confused by fact that there is no "+A1" suffix in the name of the new edition of the standard valid since November 2015. It means that the name of the new edition is the same as the name of the edition EN13659:2004 which was valid since 2004 until 2009. It was also called just EN13659.)*

#### **Testing method standard EN1932 editions:**

In 2013 a new edition of standard EN1932 is issued. Its full name is EN1932:2013 and it replaces edition EN1932:2010 (or EN1932) of the same standard.

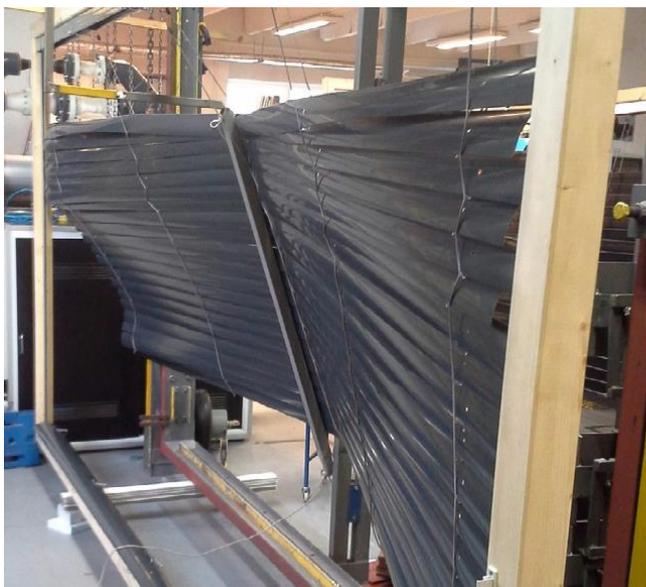
Until December 10, 2014 an interim period lasts when both editions EN1932:2010 and EN1932:2013 can be referred to. It means that external blinds could be tested either according to methods prescribed in EN1932:2010 or in EN1932:2013.

Since December 11, 2014 only the new methodology as prescribed in EN1932:2013 can be used for external blinds testing.

There were both changes in EN13659 and EN1932. The new pricelist reflects changes in EN1932 methodology. EN1932 new testing methods have more impact to the external blinds classification in negative sense (drop down of almost all products to lower resistance classes).

#### **Strain simulating wind load**

According to EN1932:2010 methodology a metal rail positioned vertically in the middle of blind width and pushed by weight connected with the rail was used for testing wind load resistance. This method was quite a simplified simulation of real strain caused by wind.



According to EN1932:2013 methodology the blind is covered with plastic film, put in frame and exposed to air blow strain. The plastic film prevents from air pressure decrease caused by air flowing around and between slats. The new method is closer to real conditions to which the blinds are exposed.



### **Side guiding:**

According to EN1932:2010 methodology guiding in wires was not considered for testing.

According to EN1932:2013 methodology side guiding in rails and in wires are tested and classified separately. For that reason there are two tables in pricelist 2016

### **Size of tested sample**

According to EN1932:2010 methodology the biggest produced dimensions were tested. The values were valid for all smaller dimensions.

According to EN1932:2013 methodology the dimensions of sample for testing have to be 200 x 250 cm which is given by size of testing frame.

### **Slat deformation:**

According to EN13659+A1:2008 lasting (irreversible) bend of slats *after the rail load remove* could

be up to 0.5% blind width. E.g. if the blind was 5 m long, the wholesome bend of slat in the middle had to be less than 2.5 mm from its original straight position.

According to EN1932:2013 the wholesome bend of slats after load remove is not checked. Now local plastic (irreversible) deformation of slats shape *after the air pressure load remove* is checked instead of. It cannot be more than 4 mm. E.g. curving on one edge of slat cannot be more than 4 mm from original straight shape of the edge (even though the slat remains straight). Newly also flexible (elastic) bend of slats *during the air pressure load* is checked. The bend cannot exceed 10% blind width in any part of the blind.

### **Nominal and Permissible Pressure**

Beside **nominal pressure** resistance (corresponding with wind resistance classification) also **permissible pressure** resistance is tested. While the blind cannot be damaged by nominal pressure load, it cannot become dangers for people around when loaded by permitted pressure.

Permissible pressure = nominal pressure x 1.5.

This basic definition of two types of considered pressures remains the same.

For **nominal pressure** determination deformation of slats, head rail and guide rails or wires (cannot come loose) are basic parametres, which remains the same. The product has to be fully functional after nominal pressure testing.

According to EN1932:2013 partly or fully torn or moved ladder strings or tapes newly belong among parametres checked during **permissible pressure** load, beside guiding pins leaving guide rails or blind braking loose, which were parametres checked in the past. The product can be deformed, but it cannot fall to pieces, fall out from guiding, it cannot become dangers for surroundings.

First nominal and then permissible pressure are tested. If permissible pressure value does not reach 1.5 multiple of nominal pressure value, then the nominal pressure and wind resistance are deducted reduced as 2/3 of permissible pressure values reached during the test.

### **Impact of new methodology**

New EN1932 methodology general impact is 1-2 resistance classes drop down for all products. Still, the new figures are considered as more realistic than before.

### **How about building documentation created before December 11, 2014 when the new methodology only can be referred to?**

As the methodology is not so called "dated reference in standard EN13659 (which means the reference is mentioned as EN1932, without date of issue), the edition of standard valid at the moment has to be taken into consideration. If the building is being constructed today and the documentation is created before the new methodology started to be valid, you can explain to architects and construction engineers what changes have been made since then. But the binding results of testing are those reached according to today's methodology. A date of particular product release - not model, but the sold and installed pieces - remains the decisive date for determination of standard according to which it has to be evaluated (edition of European Standard valid at the moment of the product release).

Daniel Pala, February 2, 2017