

## GLASS RAILING SYSTEMS

# QUALITY. TESTS. SECURITY. REGULATIONS

## 1. CE MARKING

CE marking states that the product is assessed before being placed on the market and meets EU safety, health and environmental protection requirements.

EN 1090-1:2009/EC 1-2011 regulation will be effect beginning on July 1st, 2014. There is a provision for CE labeling, according to the 305/2011 European guideline, concerning aluminium and steel structural elements in construction: from metal stairs to lofts, from roofing to entire buildings (or part of). Regulation introduces Execution classes and concept, in terms of requirements for the creation of an entire building, a single element or just a simple detail. As a consequence, it specifies an appropriate quality level on the strength of the safety that is desired. CE labeling therefore indicates if the building is in compliance with the expected use.



**In accordance with the EN1090-1 provisions, the word structural kit means:**

**Structural kit** = series of structural components to be assembled and installed according to the manufacturer's technical specifications

We present the new line of tested and certified posts to satisfy all the current safety standard.

These structural kits are available in the versions with lateral or floor anchorage. They resist the following loading stress of 1kN/m, 2kN/m and 3kN/m. Look at the chart provided to find which kit is more suitable to your needs.

## 2. MATERIALS AND FINISHING

### AISI 304 Stainless Steel

Satin finish **AISI 304** is a stainless steel alloy composed by a Cr content between 18% and 20% and a Ni one between 8% and 11%. It is the most utilized stainless steel in the world, and represents more than 50% of the total consumption it is also perfect for interiors.



### AISI 316 Stainless Steel

Satin finish **AISI 316** is a stainless steel alloy composed by a Cr content between 16% and 18%, a Ni one between 11% and 14% and a Mo one between 2% and 3%. Molybdenum percentage guarantees a better corrosion resistance, so it is the perfect material for exteriors. In case of strong external locations, mirror finish AISI 316 is recommended, because it proves to be really resistant in terms of atmospheric agents, pollution and seaside chlorides.



### AISI 316 Stainless Steel – Mirror

Mirror finish is achieved mechanically thanks to specific abrasive brushes that polish the surface and increase corrosion resistance. Upon several tests effected with the collaboration of main institutes of research, SGB Systems recommends the use of mirror polished products in saline surrounding sonly (area within 12 km from the seaside) or in areas with high level of polluting agents (city center/industrial areas)



### Aluminium

**Aluminium** used in SGB Systems items is anodized and brushed. The anodization chemical procedure is able to convert a material surface, making it more resistant and longer lasting in terms of oxidation. Brushing is a finish that gives the extrusion a specific scratching, as the one of the glazed stainless steel. It is a cheap solution, suitable both for interiors and exteriors.



Steel elements are 100% recyclable: they can be recovered to produce new objects.



### 3. FINISHING

#### **Satin finish**

SATIN finish is mechanically achieved thanks to 400 grained abrasive strips that give the steel a polished effect



#### **Mirror**

MIRROR finish is achieved mechanically thanks to specific abrasive brushes that polish the surface and increase corrosion resistance.



#### **Electropolishing**

This finish is achieved through an electrochemical procedure that removes irregularities on the items surface, making it smooth and increasing its reflection. Aesthetically, mirror reflection will not be equal to the one achievable with mechanical polishing procedure. Practically, smoother surface increases corrosion resistance, making the possibility of contamination particles retention more difficult. Moreover, it is easier to clean

#### 4. DEFINITION OF THE STRENGTH BALUSTRADES HAVE TO RESIST

	Cat.	Use	Example	EUROPEAN REGULATION (EUROCODE 1) QSK (KN/M) EN 1991	Project value (kN/m)	Project calculation break value x ks 1,5
Domestic	A	Areas for domestic and residential activities	Rooms in residential buildings and detached houses; rooms and aisles in hospitals, hotel rooms and hotel kitchens and bathrooms.	0,5	1	1,5
	B	Office areas				
Commercial	C	Areas where people can meet (with the exception of A, B and D1 areas)	C1: Areas with tables, etc, such as in schools, cafés, restaurants, halls and libraries.	0,5	1	1,5
			C2: Seating areas, such as in churches, theaters, cinemas, lecture halls and railway station lounges.	1	2	3
			C3: Areas without barriers to people movement, such as museums, exhibitions, admission areas in public places and administrative centers, hotels, hospitals and railway stations entrance halls.	1	3	4,5
			C4: Areas liable to physical activities, such as dance halls, gyms and stages.	1	3	4,5
			C5: Crowded areas, for example buildings that host public events, such as concert halls, indoor stadium including grandstands, bleachers and access areas and railway platforms.	3	3	4,5
	D	Business areas	D1: Areas in retail stores D2: Areas in shopping centers	3	2	3
Extra	E	Warehouses	E1: Areas liable to merchandise accumulation, admission and storing areas included. E2: Manufacturing use	2	1	1,5

## 5. SECURITY

Our products have always been manufactured in order to reach the highest standards in quality and safety because we want to be sure that our systems are up to their function. To verify compliance with the specific functional and performance requirements, we carry in our test area a set of tests, measurements, investigations and inspections.

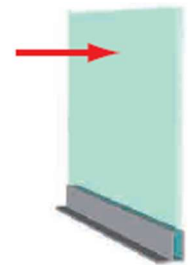
Our products are qualitatively tested before, during and after production by qualified experts.



Even more so, for 15 years we relied upon several certification authorities to certify our products, submitting them to several tests apt to determine in an objective way their performance. The design and production quality of item allowed us to obtain certifications according to the standards currently in force in many European countries and to ensure the choice of our customers.

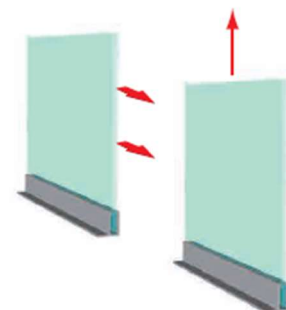
### Horizontal pressure resistance

This test is achieved as recommended in the regulation (UNI EN 1991-1-2, UNI 10806:1999, D.M. 14/01/08); it examines mechanical resistance to loads in railings, balustrades and balconies. Horizontal thrusts are applied up to the handrail for a fixed time; in this way, item break load can be identified.



### Traction resistance

This test is achieved as recommended in the following regulations:  
 UNI 10808:1999 tests mechanical resistance to loads in railings, balustrades and balcony panels.  
 UNI 10809:1999 establishes size features and mechanical performances of ready-made railings, balustrades and balconies, depending on the final use and installation location.

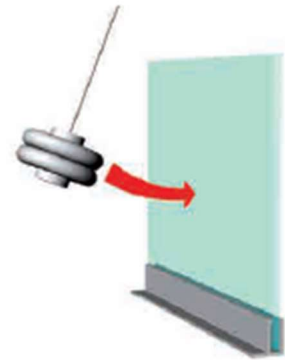


### Impact resistance

This test is achieved as recommended in the regulations. We make a shifting body crash into the most critical spot of a glass sustained by Glass U profiles; from the release to the crash, the 1,5 m long and 50 kg heavy pendulum goes through 30 degrees.

UNI EN 12600:2004 identifies a procedure for the pendulum crash test.

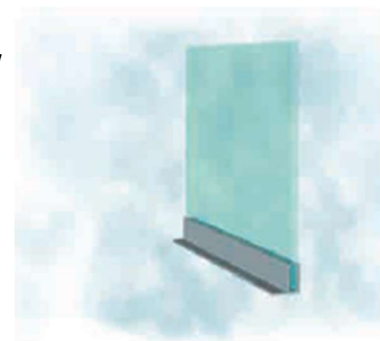
UNI 1087:1999 examines mechanical resistance to loads in railings, balustrades and balconies.



### Corrosion resistance

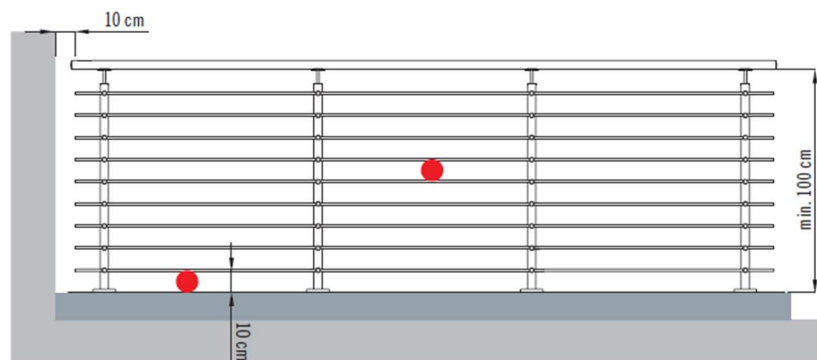
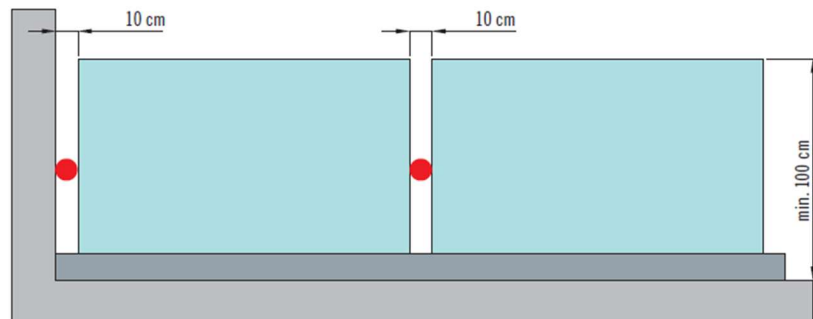
This test is achieved as recommended in the regulation UNI EN ISO 9227:2012 , that identifies device, reagents and procedure to follow in case of neuter salt mist (NSS), acetic-salt mist (AASS) and cupro acetic salt mist (CASS) tests. It therefore evaluates corrosion resistance to metallic materials, with or without anticorrosive protection, permanent or temporary.

Items are placed in a room that nukes a 5% NaCl saline solution, with pH between 6,5 and 7,2 and a +35°C fixed temperature. Test duration: 120 hours.

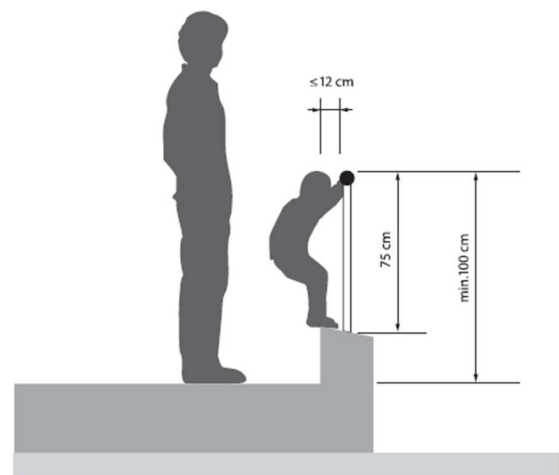


## 6. REGULATIONS

Surfaces that imply a fall risk from a 50 cm or more height must be safeguarded with a protective device. According to UNI 10809:1999 regulation, the balcony minimum height must be 100 cm, and any gaps between protective devices must not overtake 10 cm. These precautions prevent the balcony from climbing and avoid children squeezing in between the gaps.

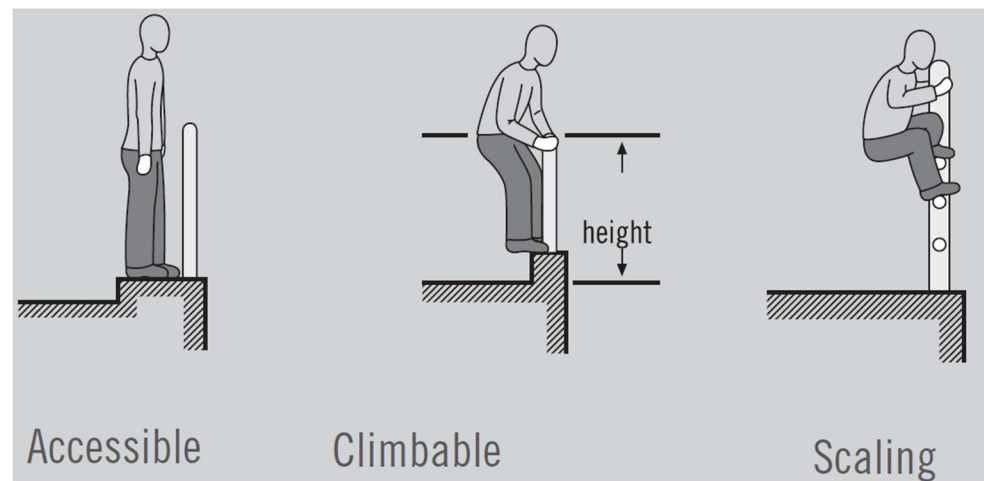


In case of climbing elements whose pillar surface is wider than 12 cm, the minimum height must be considered starting from the highest surface.



### Accessible, climbable and scaling

“Accessible” and “climbing” refer to the surface from the which protective device height is measured, while “scaling” refers to the protective device’s geometrical configuration. Surfaces shorter than 65 cm, in which it is easy to stand without the use or hands for support, are considered accessible. Slim platforms or wall crowning where it is possible to climb, but where it is necessary to grasp at the protective device to stand are considered scalable.





## UNI 10809 – Railings, balconies and handrails minimum height

	Public use	Main private use	Secondary private use
Railings and parapets minimum height	100 cm	100 cm	90 cm
Handrail height	90 -100 cm	90 cm	90 cm

