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TEST REPORT No. 337962

Place and date of issue: Bellaria-Igea Marina - Italia, 24/11/2016

Customer: REGAL ALÜMINYUM KÜPESTE AKS. SAN. TIC. LTD. STI - Emek Mah. Sivat Yolu Cad. No:2 - 34785 SANCAKTEPE/ISTANBUL - Turkey

Date test requested: 20/10/2016

Order number and date: 71310, 21/10/2016

Date sample received: 04/11/2016

Test date: 14/11/2016

Purpose of test: resistance to horizontal static loading in accordance with standard NF P01-013:1988 of a railing

Test site: Istituto Giordano S.p.A. - Via Erbosa, 72 - 47043 Gatteo (FC) - Italia

Origin of sample: sampled and supplied by the Customer

Identification of sample received: No. 2016/2236

Sample name*

The test sample is called “REGAL ALUMINIUM OVAL HORIZONTAL RAILING SYSTEM”.

(*) according to that stated by the Customer

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Description of sample*

The test sample consists of an aluminum railing and handrail with the following characteristic:

– measured overall width = 1000 mm;

– overall height = 1000 mm.

Further details of sample technical specifications can be seen in Customer-supplied schematic drawings shown hereafter.

Photos of the sample

(*) according to that stated by the Customer

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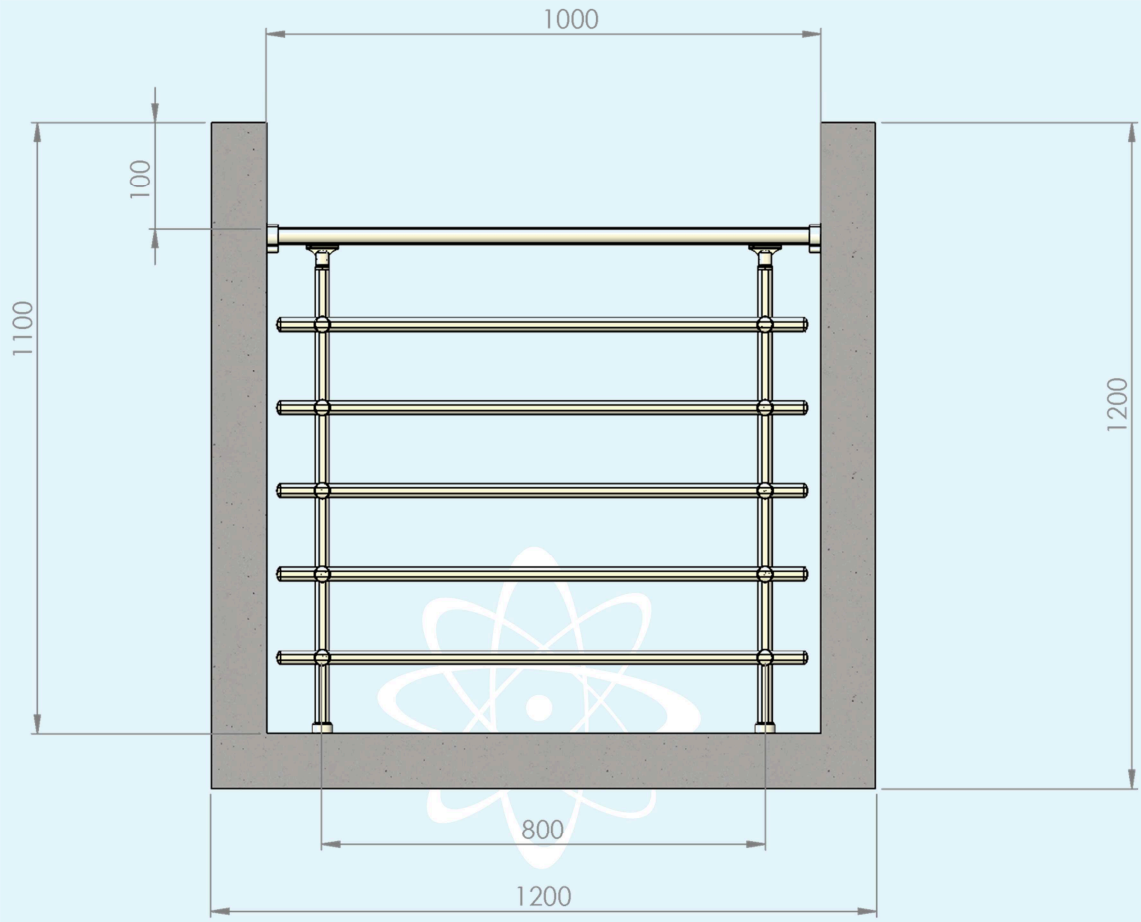
SAMPLE SCHEMATIC DRAWING



Customer-supplied list of components

Code	Description	Quantities
RGL-7001	50 mm × 25 mm semi-circular set with joint	2 pcs
RGL-7201	50 mm × 25 mm perpendicular flange	2 pcs
RGL-9901	Anchor	2 pcs
RGL-7610	14 mm × 24 mm holder of the impost	10 pcs
RGL-7305	80 mm × 30 mm wall connection accessory	2 pcs
RGL-7557	20 mm × 20 mm end cap	10 pcs
RGL-35-A	80 mm × 30 mm profile	1 m
RGL-31-A	50 mm × 25 mm profile	2 m
RGL-23-A	Cover for 50 mm × 25 mm profile	2 m
RGL-32-A	14 mm × 24 mm profile	10 m

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Normative references

The test was carried out in accordance with the requirements of the standard NF P01-013:1988 dated August 1988 “Essais des garde-corps. Méthodes et critères” *(“Railing tests. Methods and criteria”)*.

Test apparatus

The following equipment was used to carry out the resistance to static loading test:

- steel frame simulating actual installation of the sample on the floor (apparatus in-house identification code EDI048);
- set of steel masses for static load test;
- Mitutoyo IDF Digimatic Indicator complete with calibration report issued by Istituto Giordano S.p.A.;
- AEP Transducers 100 kg load cell (apparatus in-house identification code EDI107);
- metric ruler (apparatus in-house identification code EDI083);
- digital thermo-hygrometer (apparatus in-house identification code EDI111).

Test method

The sample, secured both to the floor and to the sides, was subjected to the following test.

Outward horizontal static loading (with uprights)

With just underside secured to the floor, the sample was subjected to a load distributed uniformly over two points on the handrail in accordance with figure 1 “Garde-corps sans potelets, ancrés au niveau de l’appui” *(“Railings without posts anchored at the base”)* of standard NF P01-013:

- preload of 1,3 kN applied gradually until reaching the present value and maintained for 3 min;
- removal of load and resetting of gauge;
- horizontal static load of 1,3 kN applied gradually until reaching the present value and maintained for 60 s, following which deflection whilst loaded was measured;
- removal of load and recording of permanent deflection after 3 min and verification of permissible permanent deflection “a” in mm, following removal of safety load using the following equation:

$$a \leq 3$$

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- horizontal static safety load of 2,21 kN with coefficient of 1,7 for aluminium, applied and maintained for 5 min, following which deflection whilst loaded was measured;
- removal of load and recording of permanent deflection after 3 min and verification of permissible permanent deflection “a” in mm following removal of safety load using the following equation:

$$a \leq \frac{8 \cdot X}{1000}$$

where: X = height of sample from fixing point in mm.

Environmental conditions at the time of testing

Room temperature	(15,8 ± 2) °C
Relative humidity	(59 ± 5) %

Test results

Resistance to outward horizontal static loading of handrail

Applied load (clause 2.2.1.2 of standard NF P01-013) [kN]	**Deflection whilst loaded** [mm]	**Permanent deflection** [mm]	**Maximum permanent deflection**** [mm]	**Result**
1,30	1,48	0,02	3	pass
2,21*	3,22	0,09	8	pass

(*) safety load with coefficient of 1,7 for aluminium.

(**) permissible permanent deflection “a” calculated in accordance with 2.2.1.2.4 “Déformation admissible des garde-corps métalliques” *(“Permissible deflection of metal railings”)* of standard NF P01-013.

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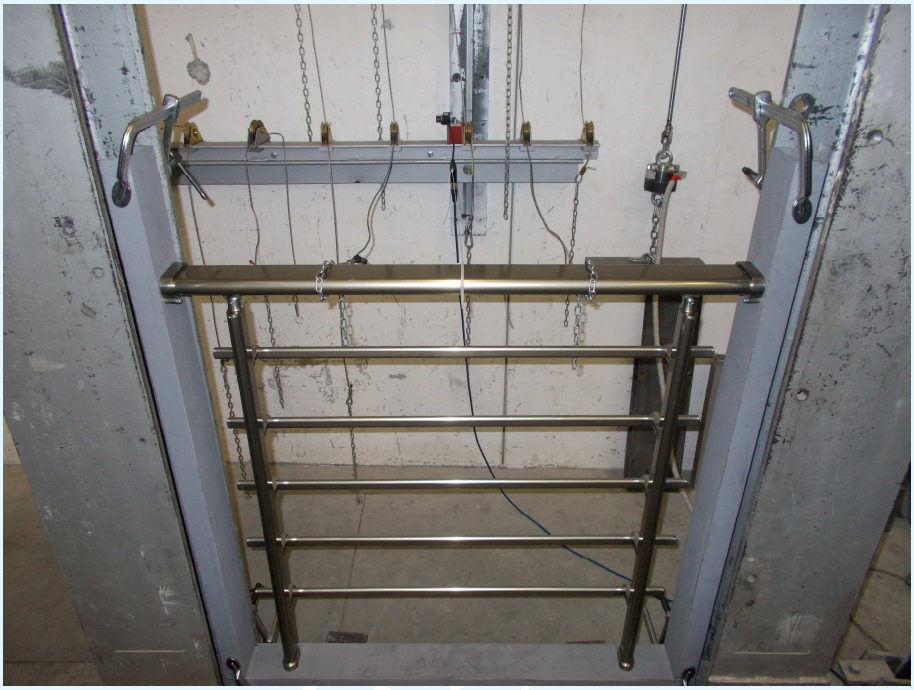

Photograph of the sample during resistance to horizontal static loading test

Findings

According to the test performed, according to the results obtained and according to what indicated in standard NF P01-013, the test sample, consists of an aluminum railing and handrail, called "REGAL ALUMINIUM OVAL HORIZONTAL RAILING SYSTEM" and presented by the company REGAL ALÜMINYUM KÜPESTE AKS. SAN. TIC. LTD. STI - Emek Mah. Sivat Yolu Cad. No:2 - 34785 SANCAKTEPE/ISTANBUL - Turkey, is:

Test	Use	Result
Outward horizontal static loading	Public (1,0 kN/m)	Compliant
Outward horizontal static loading	Private (1,3 kN)	Compliant

The results given refer exclusively to the test sample itself and are only valid under the same conditions in which testing was carried out.

Test Technician
(Dott. Ing. Paolo Bertini)

Head of Security and Safety Laboratory
(Dott. Andrea Bruschi)

Chief Executive Officer
(Dott. Arch. Sara Lorenza Giordano)

Firmato digitalmente da GIORDANO SARA LORENZA

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