

TEST REPORT No. 423810

Customer

AKOS DIS TICARET Ltd

Sokak Imsan, 10756 - Fevzicakmak Mahallesi - 42050 KONYA Karatay - Türkiye

Item#

**glass parapet named
"ALUSMART EL 51"**

Activity

**resistance to outward horizontal static loading
and resistance to dynamic impact in accordance
with standard NF P01-013:1988**



Results

Activity	Use	Result
outward horizontal static loading	private (1,3 kN)	compliant
	public (1,0 kN/m)	compliant
50 kg soft body dynamic impact	//	compliant

(#) according to that stated by the customer.

Bellaria-Igea Marina - Italy, 12 December 2024

Chief Executive Officer

Order:
96286

Item origin:
sampled and supplied by the customer

Identification of item received:
2024/3436/B dated 12 November 2024

Activity date:
from 2 December 2024 to 3 December 2024

Activity site:
Istituto Giordano S.p.A. - Strada Erbosa Uno, 72 -
47043 Gatteo (FC) - Italy

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The results relate only to the item examined, as received, and are valid only in the conditions in which the activity was carried out.

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Chief Test Technician:

Dott. Andrea Bruschi

Head of Security and Safety Laboratory:

Dott. Andrea Bruschi

Compiler: Dott. Marina Bonito

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Description of item#

The item under examination consists of a glass parapet with aluminum structure, having the dimensional characteristics shown in the following table.

Measured overall width	1000 mm
Measured overall height from floor	1000 mm
Glass type	88.4 (PVB) tempered

Further details of item specifications in annex "A".



Photograph of the item



Detail

Normative references

Standard	Title
NF P01-013:1988	Essais des garde-corps - Méthodes et critères (<i>Railing tests - Methods and criteria</i>)
NF P08-301:1991	Ouvrages verticaux des constructions - Essais de résistance aux chocs - Corps de chocs - Principe et modalités générales des essais de choc (<i>Vertical building elements - Impact resistance tests - Impact bodies - Principle and general test procedures</i>)

Apparatus

Description	In-house identification code
AEP Transducers "TS" 100 kg load cell with "MP2000" reader, measuring range 0-1 kN	EDI107A
Gefran "PZ-34-S150" electronic displacement transducers for measuring deflection, measuring range 0-150 mm	FT451/1, FT451/2 FT451/3
Istituto Giordano soft body consisting of a sphero-conic bag, diameter 0,40 m and height 0,60 m, filled with hardened glass beads, diameter 3 mm, until reaching a total mass of (50 ± 1) kg	EDI062

(#) according to that stated by the customer, apart from characteristics specifically stated to be measurements; Istituto Giordano declines all responsibility for the information and data provided by the customer that may influence the results.



LAB N° 0021 L

Description	In-house identification code
La Crosse Technology "WS8009" digital thermo-hygrometer	EDI111
Steel frame simulating actual installation of the item on the floor	EDI048
Würth "mEssfix" metric ruler, measuring range 0-5 m, accuracy 0,1 mm	EDI083

Method

The test was carried out using detailed internal procedure PP083 in its current revision at testing date.

The item was secured just to the floor.

Test procedure

Normative reference	Activity	Description
clause 2.2.1.2 of standard NF P01-013:1988	horizontal static loading	<p>The item was subjected to uniformly distributed load over three points, using this sequence:</p> <ul style="list-style-type: none"> – preload applied gradually until reaching the preset value and maintained for 3 min; – load removal setting the gauges back to zero; – horizontal static load applied gradually until reaching the preset value and maintained for 60 s following which deflection whilst loaded was measured; – removal of load and recording of permanent deflection after 3 min; – horizontal static safety load, with 1,7 aluminum coefficient, applied and maintained for 5 min, following which deflection whilst loaded was measured; – removal of safety load and recording of permanent deflection after 3 min; – verification of permissible permanent deflection "a", in mm, using the following equation: $a \leq \frac{8 \cdot X}{1000}$ <p>where: X = height of item from fixing point, in mm</p>
clause 4.5 of standard NF P08-301:1991	dynamic impact	<p>All impacts were made by releasing the impactor from a specified height with a pendulum movement and without initial velocity. The impactor was hung by an inextensible pendulum wire of negligible mass so that when at rest it made contact with the point of intended impact. After each impact, the impactor was prevented from hitting the item again after bouncing.</p> <p>Energy = 600 J (0,50 kN × 1,20 m).</p>
//	failure load	horizontal static load applied gradually until failure

Environmental conditions

Temperature	(19 ± 2) °C
Relative humidity	(37 ± 5) %

Results

Resistance to outward horizontal static loading

Applied load [#]	Deflection whilst loaded	Permanent deflection	Maximum permanent deflection ^{##}	Result
[kN]	[mm]	[mm]	[mm]	
1,30	59	5,4	//	//
2,21 ^{###}	110	6,3	8	pass

(#) in accordance with clause 2.2.1.2 "Description de l'essai" ("Description of the test") of standard NF P01-013:1988.

(##) permissible permanent deflection "a" calculated in accordance with clause 2.2.1.2.4 "Déformation admissible des garde-corps métalliques" ("Permissible deflection of metal railings") of standard NF P01-013:1988.

(###) safety load with aluminum coefficient 1,7.



Photograph of the item during resistance to outward horizontal static loading test

Resistance to dynamic impact

Impact area	Drop height [m]	Energy [J]	Result
centre of infill	1,2	600	no damage [#]
on the border of glass	1,2	600	no damage [#]

- (#) no falling fragments that could cause personal injury were found below.
 no gaps were formed between the bars of sufficient size to allow the passage of the gauge specified in figure 7 of standard NF P01-013:1988.
 no item performance loss compared to design specifications was witnessed.



Photograph of the item after the central impact

Findings

Activity	Use	Result
outward horizontal static loading	public (1,0 kN/m)	compliant
	private (1,3 kN)	compliant
50 kg soft body dynamic impact		compliant

The compliance has been determined on the basis of the values obtained by experimental measurements/calculation, without considering measurement uncertainties, in line with clause 4.2.1 “Decision Rules” of ILAC-G8:09/2019 guide “Guidelines on Decision Rules and Statements of Conformity”.

Chief Test Technician
(Dott. Andrea Bruschi)

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

Andrea Bruschi

Andrea Bruschi

ANNEX "A"
TO TEST REPORT No. 423810

Customer

Akos Dis Ticaret Ltd

Sokak Imsan, 10756 - Fevzicakmak Mahallesi - 42050 KONYA Karatay - Türkiye

Item#

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"ALUSMART EL 51"**

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technical documentation of the item

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96286

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Bellaria-Igea Marina - Italia, 12 December 2024

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