catim centro de apoio tecnológico à indústria metalomecânica

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TESTING LABORATORY PROCESS **20234001749**

Product: Temporary edge protection Class A

Test standard: EN 13374: 2013+A1:2018

Tests performed: General requirements (sections 5.1 and 5.2)
Static load (section 7.4.2 and 7.4.3 for horizontal loads)

Model tested*: Posts: SG Guardrail zinc plated with rotating base **REF.a*:** S.05000.01200
Principal/Interm. guardrail: Wooden security barrier
Toeboard: Wooden security barrier S.05100.0157

Customer:
SIMÕES & RODRIGUES, SA
ZONA INDÚSTRIAL DE PENELA LOTE 9
PENELA
3230 - 347 - PENELA

Manufacturer:
SIMÕES & RODRIGUES, SA
ZONA INDÚSTRIAL DE PENELA LOTE 9
PENELA
3230 - 347 - PENELA

Requisition: *E-mail* **Date:** *2023-12-03*

Test date: *2023-12-21*

Report date: *2024-01-24*

**Information provided by the customer.*

TECHNICIAN ***TECHNICAL RESPONSIBLE***

(Ivan Pereira) *(Pedro Castro)*

Note: *This report cannot be reproduced, except in its entirety, without authorization from the laboratory and refers exclusively to the tested sample, with sampling being the responsibility of the manufacturer.*

1. SAMPLE DESCRIPTION

One sample composed by the elements described on Table 1 was tested.

Table 1 – Sample's description

Manufacturer references	Product Description
S.05000.01200* - Posts: SG Guardrail zinc plated with rotating base S05100.0157* - Wooden safety barrier	Edge protection system composed by: - Two posts with slab edge clamp system identified as "A" in Figure 3; - Principal guardrail, Intermediate guardrail and toeboard composed by wooden safety barrier as "B" in Figure 3 Edge protection system class A according to requirements of section 4 of EN 13374:2013+A1:2018*

Note: *Information provided by the customer.

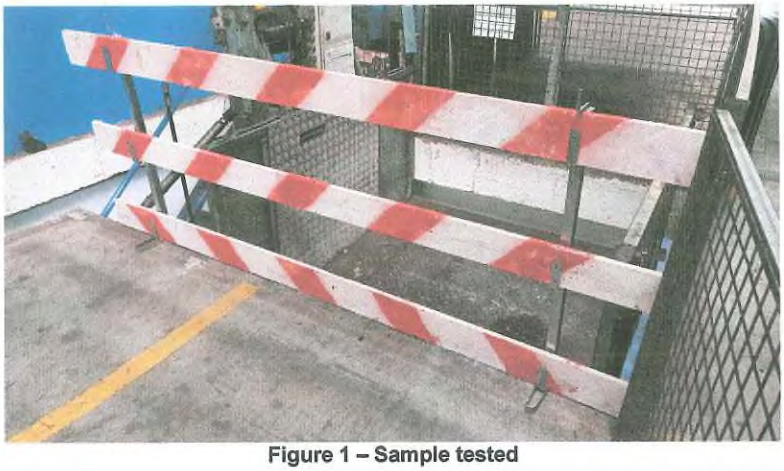


Figure 1 – Sample tested

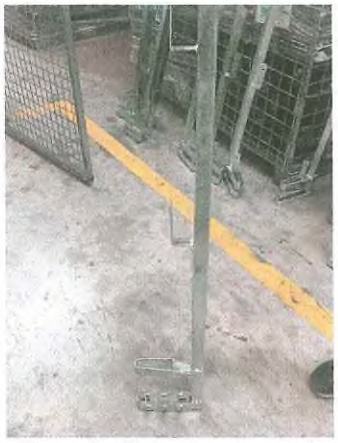


Figure 2 - Slab edge clap system

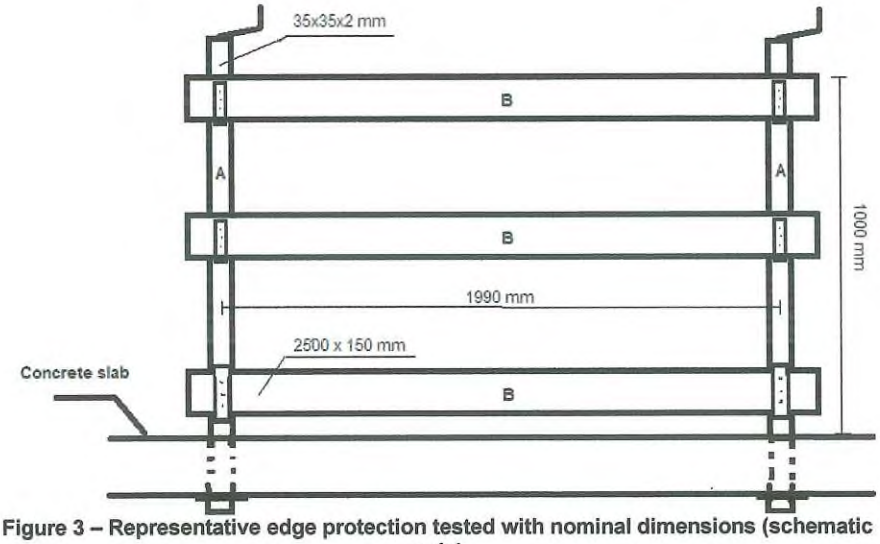


Figure 3 – Representative edge protection tested with nominal dimensions (schematic only)

2. TESTING RESULTS

Sample was tested on the installations of the manufacturer and mounted by the customer and was not subject to any pre-conditioning process other than those stated in individual clauses.
Testing plan specified by the customer.

EN13374:2013+A1:2018 Section/test	Requirement	Result	Conformity Yes/No/NA
5.1.1 Basic requirements	An edge protection system shall consist of a principal guardrail and either an intermediate guardrail or an intermediate protection. It shall also be possible to attach a toeboard. All components in the system shall be designed to avoid accidental removal or displacement of any component in any direction during use. The components shall be designed and manufactured so that injury to persons from puncturing or lacerating of the skin is prevented. NOTE: An edge protection system can be manufactured as an integrated unit.	Edge protection system composed by a wooden principal guardrail, intermediate guardrail and toeboard attached. Assembly and design of the protection does not allow the removal or partial displacement of any element that accidentally composes it.	YES
5.1.2 Nets	Safety nets used in edge protection systems shall be in accordance with EN 1263-1. The fixing of each net shall satisfy the load requirements of the intended class or classes. Nets shall be installed in tension to avoid slackness.	Edge protections with intermediate protection of wooden guardrails.	NA
5.1.3 Principal Guardrail	The distance between the uppermost part of the principal guardrail and the working surface shall be at least 1 000 mm, at any point, measured perpendicular to the working surface, see Figure 4 and 5. The principal guardrails shall be continuous, and any horizontal gaps shall be less than 120 mm.	**Height measured:** 1012 mm Absence of horizontal gap on the sample tested.	YES
5.1.4 Toeboard	The distance between the uppermost part of the toeboard and the working surface shall be at least 150 mm, at any point, measured perpendicular to the working surface, see Figure 4 and 5. The toeboard shall be designed to avoid gaps between it and the working surface. If there are gaps, a sphere with a diameter of 20 mm shall not pass through them. For other situations for example where the working surface is not flat, any gaps should be maintained as small as practicable.	**Distance between uppermost part of toeboard and the working surface measured:** 158 mm **Maximum gap measured:** 20 mm Note: Toeboard can be adjusted vertically using the holes on the notch fitting and fixing it with screws. Measurements recorded according to existing assembly.	YES

EN13374:2013+A1:2018 Section/test	Requirement	Result	Conformity Yes/No/NA
5.2.1 Edge protection system class A	The inclination of edge protection system class A shall not deviate from the perpendicular to the working surface by more than 15°, outwards or inwards. If an intermediate guardrail is provided, any gap shall be so dimensioned that a sphere of 470 mm diameter will not pass through the protection, see Figure 4. If there is no intermediate guardrail or if it is not continuous, the edge protection system shall be so dimensioned that a sphere with a diameter of 250 mm will not pass through it.	**Angle of inclination measured:** 3° Intermediate guardrail provided. **Maximum gap measured between intermediate guardrails:** 284 mm	YES
5.2.2 Edge protection system class B	The inclination of edge protection system class B shall not deviate from the perpendicular to the working surface by more than 15°, outwards or inwards. Any gap in a class B edge protection shall be so dimensioned that a sphere of 250 mm diameter will not pass through the protection.	Edge protection system class A	N.A.
5.2.3 Edge protection system class C	The inclination of the edge protection shall be between the vertical line AC of Figure 5, and a line perpendicular to the surface, line BC. Gaps in class C edge protection shall be dimensioned so that a sphere with a diameter of 100 mm will not pass through them.	Edge protection system class A	N.A.
7.4.2 Tests for serviceability	The deflection, δ, of the performed tests shall be maximum 55 mm. Prior to each test the system shall have a preliminary load, the same as the test load, applied to it. This load is to be held for one minute and then remove. The position of the system after this test shall be de datum for measurement of δ Test: Loads shall be applied at the most adverse positions. The system shall be loaded up to the maximum characteristic load according to 6.3.2. The instantaneous deflection of the edge protection, δ, at this maximum load shall the be measured.	**Load applied at each point considered:** 300 N (according to the serviceability Guardrails limit, F_{T1}, specified on Table 2 of EN 13374:2013+A1:2018); **Position** / **Deflection, δ (mm)** **Top end of the right post, outward** — 20 **Top end of the left post, outward** — 24 **Midspan of the principal guardrail, outward** — 53 **Note:** Top end considered to be the worst case due to the momentum caused at the slab edge clamp.	YES

EN13374:2013+A1:2018 Section/test	Requirement	Result	Conformity Yes/No/NA
7.4.3 Test strength	The loads shall be applied at the most adverse positions. The system shall be loaded up to the maximum test load, $F_{max}=\gamma_M \times \gamma_F \times Q_k$, where γ_M and γ_F are partial safety factors, see 6.2.1 and Q_K is the characteristic load for the case being considered. This maximum test load shall be held by one minute. During this period of maximum load there should be no identifiable yielding, fracture or separation of any parts assembly. The test shall be loaded up to the ultimate load, R_u, where there is identifiable failure in either the system as a whole or in one of its components parts. R_u shall not be less than F_{max}.	**Safety factor considered:** γ_M: 1,1 (for ductile metallic materials) γ_F: 1,5 (In accordance with table 2 of EN 13374:2013 for Ultimate Limit state. All other parts) **Characteristic load considered, Q_K:** 300 N (F_{H1}, for ultimate limit state. All other parts); **Position of load application:** Applied at Midspan of the top wooden principal guardrail, outward (Worst case based on the momentum created on slab edge clamp); **F_{max} applied:** 495 N sustained for 1 min without failure. **R_u:** > 500 N at the application point. Due to the maximum range of the equipment used to measure the applied load, it was not possible to increase application force to failure.	YES

Technician *Rubric:* *(Ivan Pereira)*