

Assessment Report

Concerning the fire resistance test of a scissor stair casing with fire resistant cover, type Gorter® EI-60.

Nr: 01945-01

This declaration is strictly meant for certification purposes

Object: Assessment report concerning the fire resistance of:
Concerning the fire resistance of a scissor stair casing with fire resistant cover, type Gorter® EI-60.

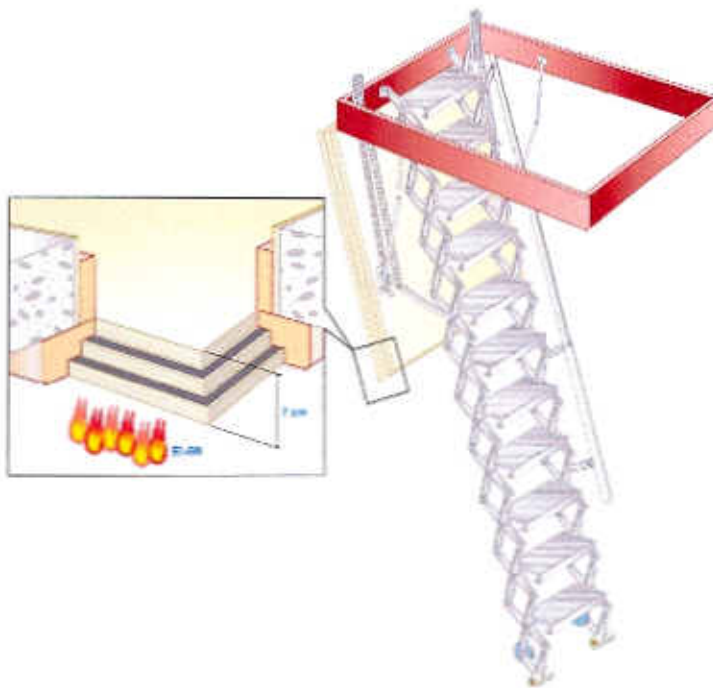


Fig.1 Overall view of the scissor stairs assembly with fire resisting bottom cover

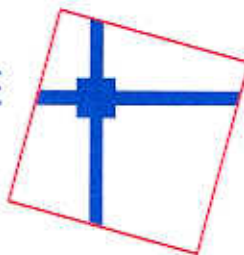
Principal: Gorter Bouwprodukten BV

Address: P.O. Box 265
NL-1740 AG SCHAGEN
Netherlands

Contact: Mr. Peter Hoogerdijk

Dated: October 16, 2006

Revision: October 28, 2008



- According to: AS 1530-4 (2005), Methods for fire tests on building materials, components and structures.
Part 4: Fire-resistance test of elements of construction
AS 1530-7 (2005) – Smoke spread
EN 1634-1(2007), Fire resistance test for door en shutter assemblies.
Part 1: Fire doors and shutters
EN 1634-3 (2007), Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware.
Part 3: Smoke control test for door and shutter assemblies
EN 13501 (2003), Fire classification of construction products and building Elements.
Part 1: Classification using test data from reaction to fire tests
NEN 6073 (2005), Determination by calculation of the fire resistance. Wooden structures.
NEN 6075 (2005), Determination of the resistance to smoke movement between spaces.
- Declaration: Based the provided test results, our renowned authority and experience in assessments of fire rated constructions BouwTechnologie RDA BV declares that the fire resistance of the tested scissor stair casing assembly is 60 minutes. The fire rating classification is EI 60.
- The smoke resistance of the construction is > 60 minutes.
- Information Rapport 54/1/87 from the Instituto per la Tecnologia del Legno, dated 24 March 1987.

Construction

The description of the scissor stairs casing with fire resistant cover:
Construction, details and materials are known to BouwTechnologie RDA.

Test conditions

The test was stopped on request of the principal after an elapsed time of 1 hour 14 minutes. At that moment the cover fulfilled all requirements of thermal insulation, flame tightness and integrity.

Five thermocouples were installed on the not exposed side of the cover.

Test deviations

The test conditions deviated from the actual conditions of oven pressure. During the test an average oven pressure of 10 Pa was maintained. AS 1530-4 and EN 1634-1 specify test pressure conditions of 20 Pa.

Consequences of the deviations

After an elapsed time of 1 hour and 14 minutes the non exposed side showed a temperature increase of 38°C. Strong deformations and smoke

leakage were not reported. Based on these facts we may conclude that the thermal insulation and the flame tightness of the closure were correct.

Smoke resistance

The smoke resistance of the roof hatch and floor access doors are calculated according to EN 1634-3 and AS 1530-7. The calculated smoke resistance is > 60 minutes

The classification of the smoke resistance is according to EN 13501-2.

Fire resistance in the case of the fire in downside direction

The wooden casing was mounted on the fire exposed side of a concrete test frame, the window frame protruded 70 mm into the oven. The window frame was installed into the concrete test frame. The perimeter of the gap between concrete and window frame was filled with 10 mm ceramic wool with a density of 64 kg/sqm.

The concrete test frame was finished with 24 mm sheet material. The gap between casing and test frame was filled with rock wool.

Based on the details and results we conclude that the fire resistance of the scissor stairs assembly in the case of fire in the downside direction arithmetical is equal to the fire resistance in the upside direction.

The major difference result in de fire resistance is the effect of the raise of temperature on the exposed side.

In the case of fire in the upside direction the temperature will raise according to the standard fire curve according to ISO 834.

In the case the fire is on top of the scissor stair combination the temperature will raise less. This is the result of the supply of relative cold air for the burning process.

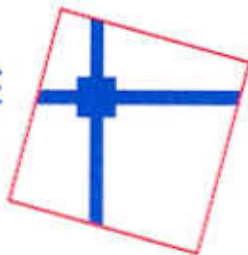
The construction is less loaded with hot gasses with the result of a higher fire resistance.

We conclude that the fire resistance of the scissor stair assembly in the case of a fire load from upside is equal tot the classification EI60.

Evaluation

Scissor stairs (retractable stairs) installed in a casing with a fire resistant bottom cover were fire tested in the laboratories of the Instituto per la Tecnologia de Legno. The test was stopped on request of the principal after an elapsed time of 1 hour and 14 minutes. With a minimal fire resistance of 74 minutes the criterion limit of 60 minutes + 6 minutes was fulfilled.

As the oven pressure was not in accordance with EN 1634-1 we reduced the fire resistance to 60 minutes.



Conclusion

Based on the test results, our reknowned authority and experience in assessments of fire rated constructions we declares that the fire resistance of the tested scissor stairs assembly is 60 minutes.

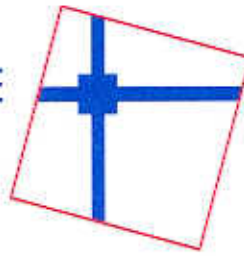
The fire rating classification is EI 60.

The resistance to smoke > 60 minutes

This performance is only valid if the assembly is installed into a concrete floor following the installation details as specified in this report.

Rotterdam
October 28, 2008

Ir. H. Brummel
Sr. Consultant Fire Safety Engineer



Construction

Scissor stairs (retractable stairs) of cast aluminium, installed in a wooden casing with a window frame in which a fire resistant bottom cover of 70 mm thickness hinges. External size of the casing 1500 x 800 mm. Internal size 1450 x 750 mm.

The wooden casing was mounted on the fire exposed side of a concrete test frame, the window frame protruded 70 mm into the oven. The concrete test frame was finished with 24 mm sheet material. The gap between casing and test frame was filled with rock wool.

The window frame of the casing was provided with two joints along the perimeter (see picture 2).

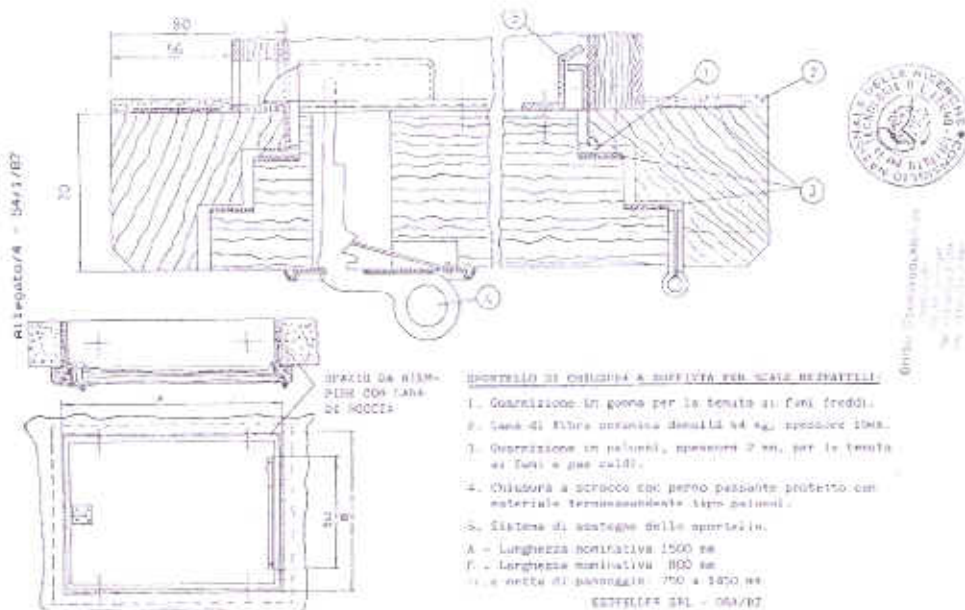


Fig. 2. Details of fire resisting casing with bottom cover.

One joint was provided with a 2 mm Palusol strip along the perimeter. Palusol tumescent tape will expand being exposed to fire. In normal conditions there is a small tolerance will be left between cover and window frame. The other joint was provided with a normal rubber gasket for a tight closure between window frame and cover.

The window frame was installed into the concrete test frame. The perimeter of the gap between concrete and window frame was filled with 10 mm ceramic wool with a density of 64 kg / sqm.

The cover was provided with a self-closing snaplock. The snaplock fitting was all around protected by a tumescent tape, type Palusol.