FIRE RESISTANCE EXPERT JUDGEMENT REPORT WITH CLASSIFICATION FIRES-JR-004-11-NURE

Fire resistance shutter with retractable stairs, type LMF

FIRES 004/S2-03/11/2009-E-el

FIRES
The Experts on Fire Safety

FIRE RESISTANCE EXPERT JUDGEMENT REPORT WITH CLASSIFICATION

FIRES-JR-004-11-NURE

Name of the product: Fire resistance shutter with retractable stairs, type LMF

Sponsor:
FAKRO Sp z o.o.
Węgierska 144a
33-300 Nowy Sącz
Poland

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1. INTRODUCTION

This expert judgement report with classification defines the resistance to fire classification assigned to fire resistance shutter with stairs, type LMF in accordance with the classes given in EN 13501-2 + A1: 2009.

This expert judgement report defines field of application which is outside the field of direct application according test standard. The reason is that although EN 1634-1 may be used to determine the fire resistance of non-loadbearing horizontal oriented doors, shutters and openable windows, these are not specifically addressed in EN 1634-1 and the field of direct application given in EN 1634-1 is not valid for such horizontally oriented products.
The field of application presented in this expert judgement expresses the opinion of the FIRES and is based on the experience or internal rules of FIRES.

2. DETAILS OF CLASSIFIED PRODUCT

2.1 GENERAL

The element is used as a shutter with fire separating function fixed in the ceiling of houses, administrative and polyfunctional buildings.

2.2 PRODUCT DESCRIPTION

Dimensions

overall dimensions of product	(897 x 1335) mm (width x length)
flap dimensions	(825 x 1262) mm (width x length)
opening dimensions	(800 x 1240) mm (width x length)

Frame of shutter

Frame of shutter is made of profiled steel sheets of thickness 1,5 mm (bottom part of the frame) and thickness 2 mm (upper part of the frame) as well as 20 mm thick board PROMATECT®-H (produced by Promat TOP Sp z o.o., PL).

Covering of flap

The closing cap is made of 1 mm thick profiled steel sheet. Side edges of flap are made of perforated steel sheet of thickness 1 mm

Core of flap

- 2 x 20 mm thick boards of mineral wool ROCKWOOL CONLIT 150 P with bulk density 150 kg/m^3 (producer: ROCKWOOL POLSKA Sp z o.o., PL);
- 2 x 20 mm thick boards of mineral wool ROCKWOOL FASROCK with bulk density 135 kg/m^3 (producer: ROCKWOOL POLSKA Sp z o.o., PL).

Ladder and hardware

- steel folding sector ladder;
- two hinges placed 80 mm from edges of flap;
- a lock placed against the hinges in the middle of flap width;

Intumescent tapes

KERAFIX FLEXTREM 100 (produced by GLUSKE GmbH, D) - 1 stripe (2 x 60) mm (thickness x width) or 3 stripes (2 x 20) mm (thickness x width) is/ are placed along the perimeter of shutter flap.

Sealing - system silicone sealing is placed along the perimeter of fixed frame.

More detailed information about construction of product is shown in the drawings which form an integral part of test report [1].

2.3 PRODUCT FIXATION

The shutter is fixed in rigid supporting construction with minimum thickness 250 mm and minimum bulk density 613 kg/m^3 by means of threaded bars M8 and washers with nuts placed in product corners. Gap of thickness circa 20 mm between frame and supporting construction is filled by mineral wool. Fixed frame is also sealed in contact with supporting construction by fire resistant putty INTUMEX from both sides of shutter.

3. TEST REPORTS AND EXTENDED APPLICATION REPORTS IN SUPPORT OF CLASSIFICATION

3.1 TEST REPORTS AND EXTENDED APPLICATION REPORTS

No.	Name of laboratory	Name of sponsor	Test report No.	Date of the test	Test method
[1]	FIRES, s.r.o., Slovakia	FAKRO Sp z o.o, PL	FIRES-FR-216-10-AUNE	07. 12. 2010	STN EN 1634-1

[1] Test specimens were conditioned according to EN 1363-1 before the fire resistance test

3.2 TEST RESULTS

No./ Test method	Parameter		Results
[1] STN EN 1634-1	applied load		--
	supporting construction		rigid: 250 mm thick with bulk density 613 kg/m^3
	temperature curve		standard temperature time curve
	load-bearing capacity		--
	integrity	cotton pad	121 minutes no failure
		gap gauges	121 minutes no failure
		sustained flaming	121 minutes no failure
	thermal insulation	I_1	63 minutes
		I_2	121 minutes no failure
	radiation		121 minutes no failure
	mechanical action		--
	self closing		25 cycles
	specimen orientation		stairs of shutter on exposed face
[1] STN EN 1634-1	applied load		--
	supporting construction		rigid: 250 mm thick with bulk density 613 kg/m^3
	temperature curve		standard temperature time curve
	Load-bearing capacity		--
	integrity	cotton pad	121 minutes no failure
		gap gauges	121 minutes no failure
		sustained flaming	121 minutes no failure
	thermal insulation	I_1	88 minutes
		I_2	121 minutes no failure
	radiation		121 minutes no failure
	mechanical action		--
	self closing		--
	specimen orientation		stairs of shutter on unexposed face

[1] The test was discontinued in 122nd minute at the request of test sponsor

4. CHANGES OF THE PRODUCT OR END USE CONDITIONS OUTSIDE OF THE FIELD OF DIRECT OR EXTENDED APPLICATION

1. Substitution of mineral wool ROCKWOOL CONLIT 150 P (produced by ROCKWOOL POLSKA Sp z o.o., PL) by another type of mineral wool (e.g. PAROCK FPS 17 t produced by PAROC POLSKA SP. z o.o., PL, etc.).
2. Substitution of mineral wool ROCKWOOL FASROCK (produced by ROCKWOOL POLSKA Sp z o.o., PL) by another type of mineral wool (e.g. PAROCK FAB 3 produced by PAROC POLSKA SP. z o.o., PL, etc.).
3. Changes described in clause 6.3 of the document.

5. ARGUMENTS IN FAVOR OF THE EXTENSION

Change 1 and 2
Substitution of ROCKWOOL CONLIT 150 P as well as ROCKWOOL FASROCK by another type of mineral wool is allowed on conditions that alternative insulation has the following parameters:
- thickness is 2 x 20 mm;
- bulk density is 150 -170 kg/m^3 (if ROCKWOOL CONLIT 150 P is substituted);
- bulk density is 135 - 160 kg/m^3 (if ROCKWOOL FASROCK is substituted);
- reaction to fire classification acc. to EN 13501-1 is A1.

Change 3
Field of direct application introduced in EN 1634-1, cl. 13 is used in case of horizontally oriented shutter with retractable stairs, type LMF. The judge, FIRES, s.r.o. does not suppose that product changes (described in clause 6.3) based on field of application in EN 1634-1could lead to the decrease in fire resistance of product

6. CLASSIFICATION AND FIELD OF APPLICATION

6.1 REFERENCE OF CLASSIFICATION

This classification has been carried out in accordance with classes defined in clause 7.5.5 of EN 13501-2 + A1: 2009.

6.2 CLASSIFICATION

Fire resistance shutter with retractable stairs, type LMF is classified according to the following combinations of performance parameters and classes as appropriate.

Fire resistance classification:
E 120-C0 / EI_1 60-C0 / EI_2 120-C0 / EW 60-C0*

* Standard EN 13501-2, clause 7.5.5.4 does not define class EW 120 (only EW 20, EW 30, EW 60). Anyway product fulfills criteria of integrity as well as radiation during 120 minutes of fire.

6.3 FIELD OF APPLICATION

This classification is valid for the following end use applications:

Product dimensions	- increase in product dimensions: 15% length, 15% width, 20% product area on conditions: 1) fire resistance classification is changed in the following way: E 90-C0 / EI_1 45-C0 / EI_2 90-C0 / EW 60-C0; 2) amount of fixings (used to fasten the product to the supporting construction) i.e. threaded bars M8 + washers + nuts shall be increased in such way that tension in the fixing is not higher that during the test [1]; 3) lock is always placed in the middle of flap width; 4) the distance between each of hinges and flap edge shall be maximum 80 mm; - decrease in product dimensions to 50% of product width and to 75% of product length; For smaller sizes the relative positioning of movement restrictors (e.g. hinges, latches, etc.) shall remain the same as during test [1] or any change to the distances between them will be limited to the same percentage reduction as the decrease of product size.
Material and construction	- dimensions of metal wrap around frame may be increased to accommodate increased supporting construction thickness; - the thickness of the metal may also be increased by up to 25%; - alternative mineral wool used as a core of the flap on conditions defined in cl. 5 of the document;
Decorative finishes	- where the paint finish is not expected to contribute to the fire resistance of the product alternative paints are acceptable and may be added to flap or frame; - decorative laminates and timber veneer up to 1,5 mm thickness may be added to the faces (but not edges) of flap and frame;
Fixings	- the number of fixings used to attach shutter to supporting constructions may be increased but shall not be decreased and the distance between fixings may be reduced but shall not be increased;
Building hardware	- the number of any movement restrictors such as locks, latches and hinges may be increased but shall not be decreased;

7. LIMITATIONS

This classification document does not represent type approval or certification of the product.

The classification is valid until 31. 01. 2016 provided that the product, field of application and standards and regulations are not changed.

Approved:

Ing. Štefan Rástocký
leader of the testing laboratory

Signed:

Ing. Henrieta Lapková
technician of the testing laboratory