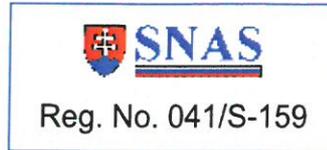


CLASSIFICATION OF FIRE RESISTANCE **FIRES-CR-122-13-AURE**

Non-loadbearing wall made of sandwich panels KINGSPAN with PIR core, type:

- **KS 1000 TF 100 IPN**
- **KS 1000 TF 80 IPN**
- **KS 1000 TF 60 IPN**

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CLASSIFICATION OF FIRE RESISTANCE IN ACCORDANCE WITH EN 13501-2: 2007 + A1: 2009 with direct field of application

FIRES-CR-122-13-AUPE

Name of the product: Non-loadbearing wall made of sandwich panels KINGSPAN with PIR core, type:

- KS 1000 TF 100 IPN
- KS 1000 TF 80 IPN
- KS 1000 TF 60 IPN

Sponsor: KINGSPAN a.s.
Vážní 465
500 03 Hradec Králové
Czech Republic

Prepared by: FIRES, s.r.o.
Approved Body No. SK01
Osloboditeľov 282
059 35 Batizovce
Slovak Republic

Notified Body No.: 1396

Task No.: PR-13-0268

Date of issue: 21. 06. 2013

Reports: 3

Copy No.: 2

Distribution list:

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1. INTRODUCTION

This classification report defines the resistance to fire classification assigned to element "Non-loadbearing wall made of sandwich panels KINGSPAN with PIR core, type:

KS 1000 TF 100 IPN

KS 1000 TF 80 IPN

KS 1000 TF 60 IPN

in accordance with the procedures given in EN 13501-2: 2007 + A1: 2009.

2. DETAILS OF CLASSIFIED PRODUCT

2.1 GENERAL

The element is defined as a non-loadbearing wall with fire separating function used as external wall acc. to EN 14509.

2.2 PRODUCT DESCRIPTION

Product is made of vertically oriented self-supporting double skin metal faced insulating panels KINGSPAN with PIR core, type:

KS 1000 TF 100 IPN, 100 mm thick

KS 1000 TF 80 IPN, 80 mm thick

KS 1000 TF 60 IPN, 60 mm thick

with symmetrical joints and modular width 1000 mm.

Panel core

Polyisocyanurate foam, type IPN with density of 37 kg.m^{-3} (manufacturer: KINGSPAN Hradec Králové, CZ).

Panel covering

Interior steel sheet 0,4 mm thick and exterior steel sheet 0,5 mm thick with Plastisol - PVC 200 μm thick coating.

Wall made of sandwich panels KINGSPAN KS 1000 TF 100 IPN is made in two variants:

Variant A: Panels junctions are bilaterally fixed by steel screws JA3-6,5x32 – E16, maximally spaced each 150 mm. Fire intumescent tape PROMASEAL XT (20 x 1,5) mm (width x thickness) – manufacturer Promat and sealing tape ALVEO TAPE (70 x 2) mm – manufacturer YATE, are applied in the panels junctions. The mastic type SOUDAL SFC 210 FR (manufacturer: SOUDAL) is applied in the junctions of panels at the external side.

Variant B: Panels junctions are not fixed together. Only the PE sealing tape is applied in the panels junction.

Wall made of panels KINGSPAN KS 1000 TF 60 IPN or KINGSPAN KS 1000 TF 80 IPN is made in only one variant, when the panels junctions are not fixed together and only the PE sealing tape is applied in the panels junction.

More detailed information about product construction is shown in drawings which form an integral part of test report [1], [2], [3], [4], [5] acc. to paragraph 3.1 of the document.

2.3 PRODUCT FIXING

The panels are fixed to the loadbearing elements by self – drilling screws $\varnothing 6,3 \text{ mm}$, (80+125) mm long (in regard to the panels thickness). Position of the screws:

- at the upper and bottom product part, 50 mm from the panels edges;
- at the both vertical product edges, maximally spaced each 1000 mm.

Supports, load-bearing profiles are placed in distance 3000 mm.

More detailed information about product fixation to the supporting construction is shown in drawings which form an integral part of test report [1], [2], [3], [4], [5] acc. to paragraph 3.1 of the document.



3. TEST REPORTS IN SUPPORT OF CLASSIFICATION

3.1 TEST REPORTS

No.	Name of laboratory	Name of manufacturer	Test report No.	Date of the test	Test method
[1]	FIRES, s.r.o., Batizovce, Slovak Republic	KINGSPAN a.s., Hradec Králové, Czech Republic	FIRES-FR-100-07-AUNS	07. 06. 2007	EN 1364-1: 2001
[2]			FIRES-FR-072-07-AUNS	24. 04. 2007	
[3]			FIRES-FR-023-07-AUNS	06. 02. 2007	
[4]			FIRES-FR-024-07-AUNS	07. 02. 2007	
[5]			FIRES-FR-184-07-AUNS	25. 09. 2007	

[1] – [5] Test specimens were conditioned according to EN 1363-1 before the fire resistance test

3.2 TEST RESULTS

No./ Test method/ Tested variant	Parameter	Results	
[1] EN 1364-1 Wall made of panels KS 1000 TF 100 IPN (o → i) Note: panels junctions are fixed by screws	applied load	-	
	supporting construction	horizontally steel U - profiles 80 mm, placed in distance 3000 mm	
	temperature curve	external fire exposure curve	
	orientation of specimen	exterior specimen side exposed to fire	
	loadbearing capacity	-	
	integrity	cotton pad	63 minutes no failure
		gap gauges	63 minutes no failure
		sustained flaming	63 minutes no failure
	thermal insulation	average temperature	63 minutes no failure
		maximum temperature	30 minutes
	radiation 15 kW.m ²	63 minutes no failure	
	deflection	deflection did not exceed 100 mm during the test	
	mechanical action	-	
[2] EN 1364-1 Wall made of panels KS 1000 TF 60 IPN (o → i) Note: panels junctions are not screwed	applied load	-	
	supporting construction	horizontally steel U - profiles 80 mm, placed in distance 3000 mm	
	temperature curve	external fire exposure curve	
	orientation of specimen	external specimen side exposed to fire	
	loadbearing capacity	-	
	integrity	cotton pad	16 minutes no failure
		gap gauges	16 minutes no failure
		sustained flaming	16 minutes no failure
	thermal insulation	average temperature	16 minutes no failure
		maximum temperature	15 minutes
	radiation 15 kW.m ²	16 minutes no failure	
	deflection	deflection did not exceed 100 mm during the test	
	mechanical action	-	



No./ Test method/ Tested variant	Parameter	Results	
[3] EN 1364-1 Wall made of panels KS 1000 TF 100 IPN (o → i) Note: panels junctions are not screwed	applied load	-	
	supporting construction	horizontally steel U - profiles 80 mm, placed in distance 3000 mm	
	temperature curve	external fire exposure curve	
	orientation of specimen	exterior specimen side exposed to fire	
	loadbearing capacity	-	
	integrity	cotton pad	50 minutes no failure
		gap gauges	47 minutes
		sustained flaming	50 minutes no failure
	thermal insulation	average temperature	50 minutes no failure
		maximum temperature	20 minutes
	radiation 15 kW.m ²	50 minutes no failure	
	deflection	deflection did not exceed 100 mm during the test	
	mechanical action	-	
[4] EN 1364-1 Wall made of panels KS 1000 TF 80 IPN (o → i) Note: panels junctions are not screwed	applied load	-	
	supporting construction	horizontally steel U - profiles 80 mm, placed in distance 3000 mm	
	temperature curve	external fire exposure curve	
	orientation of specimen	exterior specimen side exposed to fire	
	loadbearing capacity	-	
	integrity	cotton pad	34 minutes no failure
		gap gauges	34 minutes no failure
		sustained flaming	34 minutes no failure
	thermal insulation	average temperature	34 minutes no failure
		maximum temperature	18 minutes
	radiation 15 kW.m ²	34 minutes no failure	
	deflection	deflection did not exceed 100 mm during the test	
	mechanical action	-	
[5] EN 1364-1 Wall made of panels KS 1000 TF 60 IPN (i → o) Note: panels junctions are not screwed	applied load	-	
	supporting construction	horizontally steel U - profiles 80 mm, placed in distance 3000 mm	
	temperature curve	standard temperature / time curve	
	orientation of specimen	specimen is symmetric	
	loadbearing capacity	-	
	integrity	cotton pad	15 minutes no failure
		gap gauges	15 minutes no failure
		sustained flaming	15 minutes
	thermal insulation	average temperature	15 minutes no failure
		maximum temperature	15 minutes no failure
	radiation 15 kW.m ²	15 minutes no failure	
	deflection	deflection did not exceed 100 mm during the test	
	mechanical action	-	

[1] – The test was discontinued in 64th minute at the request of the test sponsor.

[2] – The test was discontinued in 17th minute at the request of the test sponsor.

[3] – The test was discontinued in 51st minute because of the specimen integrity failure.

[4] – The test was discontinued in 35th minute at the request of the test sponsor.

[5] – The test was discontinued in 16th minute because of the specimen integrity failure.



4. CLASSIFICATION AND FIELD OF APPLICATION

4.1 REFERENCE OF CLASSIFICATION

Classification of external wall has been carried out in accordance with EN 13501-2: 2007 + A1: 2009, clause 7.5.3

4.2 CLASSIFICATION OF EXTERNAL WALL

The element, **Non-loadbearing wall made of sandwich panels KINGSPAN KS 1000 TF 100 IPN with PIR core, 100 mm thick, Variant A according to cl. 2.2**, is classified according to the following combinations of performance parameters and classes as appropriate.

Fire resistance classification:

E 15 (o↔i) / EI 15 (o↔i) *

E 60-ef (o→i) / EI 30-ef (o→i) / EW 60-ef (o→i)

Note: * EN 13501-2, paragraph 7.5.3.4 does not define class EW 15 (o↔i) but the product meets criteria of radiation during 15 minutes

The element, **Non-loadbearing wall made of sandwich panels KINGSPAN KS 1000 TF 100 IPN with PIR core, 100 mm thick, Variant B according to cl. 2.2**, is classified according to the following combinations of performance parameters and classes as appropriate.

Fire resistance classification:

E 15 (o↔i) / EI 15 (o↔i) *

E 30-ef (o→i) / EI 15-ef (o→i)*** / EW 30-ef (o→i)****

Note: * EN 13501-2, paragraph 7.5.3.4 does not define class EW 15 (o↔i) but the product meets criteria of radiation during 15 minutes

** EN 13501-2, paragraph 7.5.3.4 does not define class E 45 (o→i) and EW 45 (o→i) but the product meets criteria of integrity and radiation during 45 minutes

*** EN 13501-2, paragraph 7.5.3.4 does not define class EI 20 (o→i) but the product meets criteria of insulation during 20 minutes



The element, **Non-loadbearing wall made of sandwich panels KINGSPAN KS 1000 TF 80 IPN with PIR core, 80 mm thick**, is classified according to the following combinations of performance parameters and classes as appropriate.

Fire resistance classification:

E 15 (o↔i) / EI 15 (o↔i) *

E 30-ef (o→i) / EI 15-ef (o→i) / EW 30-ef (o→i)

Note: * EN 13501-2, paragraph 7.5.3.4 does not define class EW 15 (o↔i) but the product meets criteria of radiation during 15 minutes

The element, **Non-loadbearing wall made of sandwich panels KINGSPAN KS 1000 TF 60 IPN with PIR core, 60 mm thick**, is classified according to the following combinations of performance parameters and classes as appropriate.

Fire resistance classification:

E 15 (o↔i) / EI 15 (o↔i) *

Note: * EN 13501-2, paragraph 7.5.3.4 does not define class EW 15 (o↔i) but the product meets criteria of radiation during 15 minutes

4.3 FIELD OF APPLICATION

This classification is valid according to EN 14509: 2006 and EN 1364-1 for the following end use applications:

Metal facings	changes in thickness of metal facing is allowed up to ± 50%;
	change in geometry of metal facing is allowed;
	all grades of normal steel can be used;
Core	changes in type of core is not allowed;
	changes in density of bulk of PIR core are allowed up to ± 10%;
	changes in chemical system and blowing agent are not allowed;
Panel orientations	changes in orientation of panels (vertical or horizontal) are allowed;
Change of the dimensions	decrease in the panels width is allowed;
	increase in the panels width is allowed up to 1 200 mm;
	increase in the thickness of panel core is allowed;
	in case of wall made of vertically oriented sandwich panels the length (width) of the wall can be increased;
	in case of wall made of horizontally oriented sandwich panels the height of the wall can be increased on condition that each panel is fixed to the bearing structure in such a way that the load is not accumulated from above to the lower parts of the wall;
Span length	decrease in distance between supports is allowed (< 3 000 mm);
	increase in distance between supports is allowed (> 3 000 mm up to 4000 mm) under condition expansion allowances are increased pro-rata;



5. LIMITATIONS

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

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

Approved:

Signed:

Ing. Štefan Rástocký
leader of the testing laboratory



Bc. Dávid Šubert
technician of the testing laboratory

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