

## **EXPERT JUDGEMENT REPORT WITH CLASSIFICATION** **FIRES-JR-037-16-NURE Edition 2**

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### **Roof deck**

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# EXPERT JUDGEMENT REPORT WITH CLASSIFICATION OF ROOF EXPOSED TO EXTERNAL FIRE

**FIRES-JR-037-16-NURE**  
**Edition 2**

**Name of the product:** Roof deck

**Sponsor:** Fatra, a.s.  
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763 61 Napajedla  
Czech Republic

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**Notified Body No.:** 1396

**Task No.:** PR-15-0246

**Date of issue:** 18. 10. 2016

**Reports:** 3  
**Copy No.:** 2

**Distribution list:**

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## 1. INTRODUCTION

This expert judgement report with classification defines the classification of roof exposed of external fire assigned to element Roof deck in accordance with the classes given in EN 13501-5: 2005 + A1: 2009.

This expert judgement report defines field of application which is outside the field of direct application according test standard or outside the field of extended application according to relevant extended application standard. This expert judgement expresses the opinion of the FIRES and is based on the experience or internal rules of FIRES.

The classification according to this European standard is based on the test methods, which are described in CEN/TS 1187:2012. The four distinct test methods that correspond to different fire hazard scenarios are incorporated in this standard. There is no direct correlation between the test methods and hence no generally acceptable hierarchy of classification between them.

Products classified in a given class are deemed to satisfy all the requirements of any lower class for the same test method/fire hazard scenario. The classification and relevant fire characteristics are stated in table No. 1 of the standard EN 13501-5: 2005 + A1: 2009.

## 2. DETAILS OF CLASSIFIED PRODUCT

### 2.1 GENERAL

The element, Roof deck is defined as a roof/roof covering with fire characteristics.

### 2.2 PRODUCT DESCRIPTION

The product is made of following layers (from the bottom face):

- a) vapour barrier: - SBS bitumen sheet GLASTEK 40 Special mineral with mineral finish (manufacturer/distributor: FOL KVK PARABIT a.s., Svoboda nad Úpou, Czech Republic) mas per unit area measure by testing laboratory 5,16 kg.m<sup>-2</sup>, thickness 4 mm.
- b) thermal insulation: - one layer of mineral wool board Rockwool Monrock MAX E (manufacturer: Rockwool, a.s. Bohumín, Czech Republic), thickness 60 mm, bulk density 136 kg.m<sup>-3</sup>.
- c) thermal insulation: - one layer of EPS 100 S Stabil, EPS-EN13163-T2-L3-W3-Sb5-P5-BS150-CS(10)100-DS(N)2-DS(70,-)3-DLT(1)5-WL(T)5 (manufacturer: KVK PENOPOL s.r.o., Kunčice nad Labem č.p. 150, 543 71 Kunčice nad Labem, Czech Republic), thickness 50 mm, bulk density 18,5 kg.m<sup>-3</sup>.
- d) waterproofing membrane:- waterproofing membrane FATRAFOL 810/V – roofing membrane based on PVC-P reinforced by nonwoven PES textile (manufacturer: Fatra, a.s., tř. T. Bati č.p. 1541, PSČ: 763 61 Napajedla, Czech Republic).

The layers of the roof are joined together by fasteners screws SFS intec IR2-C-4,8 mm with washers IRC/W-82x40 mm (manufacturer: SFS intec AG FasteningSystems, Rosenbergsaustraße 10, 9435 Heerbrugg, Switzerland).



### 3. TEST REPORTS IN SUPPORT OF CLASSIFICATION

#### 3.1 TEST REPORTS

No.	Name of laboratory	Name of sponsor	Test report No.	Date of the test	Test method
[1]	FIRES, s.r.o., Batizovce, SK	Fatra, a.s., Napajedla, Czech Republic	FIRES-RF-019-16-AUNS	16. 03. 2016	CEN/TS 1187:2012, test method No. 4
[2]	FIRES, s.r.o., Batizovce, SK	Fatra, a.s., Napajedla, Czech Republic	FIRES-RF-020-16-AUNS	17. 03. 2016	CEN/TS 1187:2012, test method No. 4

[1] - [2] The test specimens were conditioned according to CEN/TS 1187:2012

#### 3.2 TEST RESULTS

##### Test conditions [1]:

Tested roof pitch: 0° from the horizontal plane;

Continuous deck: Particleboard without surface treatment with dimensions (250 x 840 x 16) mm (width x length x thickness) which were secured to supporting frame (840 x 740) mm made of timbers with cross-section (60 x 40) mm. Particle board are lined up on wooden frame with 5 mm width gaps between boards.

Supporting construction: timbers with cross-section (60 x 40) mm.

##### Preliminary ignition test [1] (stage 1)

Parameter	Criteria				Test results	Compliance			
	Class B <sub>ROOF(t4)</sub>	Class C <sub>ROOF(t4)</sub>	Class D <sub>ROOF(t4)</sub>	Class E <sub>ROOF(t4)</sub>	Specimen No. 0	Class B <sub>ROOF(t4)</sub>	Class C <sub>ROOF(t4)</sub>	Class D <sub>ROOF(t4)</sub>	Class E <sub>ROOF(t4)</sub>
Burn time	< 5 min	< 5 min	< 5 min	< 5 min	0 min	Yes	Yes	Yes	Yes
Flame spread distance	< 0,38 m	< 0,38 m	< 0,38 m	No limit	0 mm	Yes	Yes	Yes	Yes
Penetration	No	No	No	No	No	Yes	Yes	Yes	Yes

**Penetration test [1] (stage 2)**

Parameter	Criteria				Test result				Compliance			
	Class B <sub>ROOF</sub> (t4)	Class C <sub>ROOF</sub> (t4)	Class D <sub>ROOF</sub> (t4)	Class E <sub>ROOF</sub> (t4)	Specimen No. 1	Specimen No. 2	Specimen No. 3	Mean <sup>a)</sup>	Class B <sub>ROOF</sub> (t4)	Class C <sub>ROOF</sub> (t4)	Class D <sub>ROOF</sub> (t4)	Class E <sub>ROOF</sub> (t4)
Penetration time	> 60 min	≤ 60 min > 30 min	≤ 30 min	≤ 30 min	60 min	60 min	60 min	60 min	Yes	Yes	Yes	Yes

<sup>a)</sup> If one or two of the specimens have not failed at one hour, a time of 60 min shall be used in calculating the mean time of penetration.

**Test conditions [2]:**

Tested roof pitch: 0° from the horizontal plane;

Continuous deck: Particleboard without surface treatment with dimensions (250 x 840 x 16) mm (width x length x thickness) which were secured to supporting frame (840 x 740) mm made of timbers with cross-section (60 x 40) mm. Particle board are lined up on wooden frame with 5 mm width gaps between boards.

Supporting construction: timbers with cross-section (60 x 40) mm.

**Preliminary ignition test [2] (stage 1)**

Parameter	Criteria				Test results	Compliance			
	Class B <sub>ROOF</sub> (t4)	Class C <sub>ROOF</sub> (t4)	Class D <sub>ROOF</sub> (t4)	Class E <sub>ROOF</sub> (t4)	Specimen No. 0	Class B <sub>ROOF</sub> (t4)	Class C <sub>ROOF</sub> (t4)	Class D <sub>ROOF</sub> (t4)	Class E <sub>ROOF</sub> (t4)
Burn time	< 5 min	< 5 min	< 5 min	< 5 min	0 min	Yes	Yes	Yes	Yes
Flame spread distance	< 0,38 m	< 0,38 m	< 0,38 m	No limit	0 mm	Yes	Yes	Yes	Yes
Penetration	No	No	No	No	No	Yes	Yes	Yes	Yes



## Penetration test [2] (stage 2)

Parameter	Criteria				Test result				Compliance			
	Class B <sub>ROOF</sub> (t <sub>4</sub> )	Class C <sub>ROOF</sub> (t <sub>4</sub> )	Class D <sub>ROOF</sub> (t <sub>4</sub> )	Class E <sub>ROOF</sub> (t <sub>4</sub> )	Specimen No. 1	Specimen No. 2	Specimen No. 3	Mean <sup>a)</sup>	Class B <sub>ROOF</sub> (t <sub>4</sub> )	Class C <sub>ROOF</sub> (t <sub>4</sub> )	Class D <sub>ROOF</sub> (t <sub>4</sub> )	Class E <sub>ROOF</sub> (t <sub>4</sub> )
Penetration time	> 60 min	≤ 60 min > 30 min	≤ 30 min	≤ 30 min	60 min	60 min	60 min	60 min	Yes	Yes	Yes	Yes
<sup>a)</sup> If one or two of the specimens have not failed at one hour, a time of 60 min shall be used in calculating the mean time of penetration.												

## 4. CLASSIFICATION AND FIELD OF APPLICATION

Following changes of the product or end use conditions were permitted:

1. Roof covering: - all types of roof covering and waterproofing membrane FATRAFOL made of plasticized PVC-P with or without fire retardants with minimal mass pre unit area 2,48 kg.m<sup>-2</sup> is allowed to use;
2. Thermal insulation- all types of thermal insulation based on mineral wool with reaction to fire class A1, with minimal bulk density 136 kg.m<sup>-3</sup> and with minimal thickness 60 mm per one layer is allowed to use, several layers with thickness 60 mm can be used, joints in adjacent layers have to be overlapped - shall not be placed above each other; width of overlapping have to be minimally 100 mm;
3. Thermal insulation- all types of thermal insulation based on EPS board with reaction to fire class E, with minimal bulk density 18,5 kg.m<sup>-3</sup> and with minimal thickness 50 mm per one layer is allowed to use, several layers with thickness 50 mm can be used, layer can be totally omitted from compositions of roof deck;
4. Vapour barrier - other marks of vapour barrier based on SBS bitumen sheet is allowed to use under fulfilment of the following conditions:
  - maximal mas per unit area – 5,16 kg.m<sup>-2</sup>;
  - maximal thickness – 4 mm;
5. Continuous deck - product can be used with continuous substrate plates with reaction to fire class A1 or A2 with minimal thickness 10 mm and with maximally 5 mm width gaps;
  - product can be used with continuous substrate plates made of wood based materials with minimal thickness 12 mm;
  - product can be used with continuous substrate plates made of wood based materials with flat side surfaces;
  - product can be used with substrate plates made of trapezoidal steel sheets with minimal thickness 0,75 mm (thickness must meet with static requirements for stability and load capacity of roof deck);
  - minimal overlapping in the joint of two trapezoidal steel sheets is in the lower edge of the valley (joint in longitudinal direction of waves) and 100 mm (joint in perpendicular direction of waves);
  - spacing of bolts in the joints along the valley of trapezoidal steel sheets is maximally 350 mm (joint in longitudinal direction of waves) and minimal one screw in each valley (joint in perpendicular direction of waves).



## 5. ARGUMENTS IN FAVOR OF THE EXTENSION

FIRES s.r.o. allowed changes of the product mentioned in clause 4 of this document for the following reasons:

1. Degradation the properties of roof deck are not expected with using of roofing and waterproofing membrane FATRAFOL with properties defined in chapter 4 because there are smaller or equal quantities of flammable materials (PVC). During preliminary ignition test the surface layer did not ignite and no penetration of the specimen occurred.
2. Degradation the properties of roof deck are not expected with using of thermal insulation with properties defined on clause 4. The used thermal insulation does not impair load bearing capacity and stability of roof deck.
3. Degradation the properties of roof deck are not expected with using of thermal insulation with properties defined on clause 4. The used thermal insulation does not impair load bearing capacity and stability of roof deck.
4. Degradation the properties of roof deck are not expected with using of vapour barriers with properties defined in clause 4.
5. Degradation the properties of roof deck are not expected with using of continuous deck with properties defined in clause 4. The used load bearing layer has to satisfy static requirements in order to retain stability and load bearing capacity of roof deck.

## 6. CLASSIFICATION AND FIELD OF APPLICATION

### 6.1 CLASSIFICATION

The product, Roof deck, in relation to its external fire performance is classified:

**B<sub>ROOF</sub> (t4)**

### 6.2 FIELD OF APPLICATION

This classification is also valid for the following product parameters:

- range of the pitches: from 0° to 10°C from the horizontal plane;
- continuous deck: the product can be used only with continuous deck and supporting construction described in clause No. 2.2. and No. 4;
- supporting construction: wooden supporting construction made of timber.

## 7. LIMITATIONS

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

The classification is valid until 31. 03. 2021 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. Samuel Skokan  
technician of the testing laboratory