

Dansk Dekor-Laminat AS  
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Danmark

## Reaction to fire classification report according to CEN/TS 45545-2

### Introduction

SP has by request of Dansk Dekor-Laminat A/S performed fire tests according to ISO 5658-2, ISO 5659-2 and ISO 5660-1. The purpose of the tests is basis for technical fire classification.

### Product description

The product, "Alunit Interior Panels", is fully described below.

According to the client:

Sandwich panel with "1.6 mm Alunit type F" on both side, with a surface of melamine impregnated paper. Core of the panel is plywood. The edges consists of exposed plywood. The product has a nominal thickness of  $\leq 30$  mm and nominal area weight of  $\leq 25.2$  kg/m<sup>2</sup>.

### Test reports & test results in support of classification

This classification is based on test reports listed below:

Name of laboratory	Name of sponsor	Test report ref no	Accredited test method
SP	Dansk Dekor-Laminat A/S	PX12666-6rev1	ISO 5659-2
SP	Dansk Dekor-Laminat A/S	PX12666-5rev1	ISO 5658-2
SP	Dansk Dekor-Laminat A/S	PX12666-4rev1	ISO 5660-1

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**Test results**

Test method	Parameter	Number of tests	Results	
			Mean value (m)	Hazard level classification, Table 7, R1
ISO 5658-2		3		
Lateral flame spread	CFE (kW/m <sup>2</sup> )		35.7	HL3
ISO 5659-2		3		
50 kW/m <sup>2</sup>				
Specific optical density of smoke	D <sub>s</sub> (4)		142	HL3
Cumulative value of specific optical densities in the first 4 min of the test	VOF <sub>4</sub> (min)		315	HL2
Conventional Index of Toxicity	CIT <sub>G</sub>		0.34	HL3
ISO 5660-1		3		
Maximum average rate of heat emission	MARHE (kW/m <sup>2</sup> )		55	HL3

**Criteria**

According to “Railway application – Fire protection on railway vehicles – Part 2: Requirements for fire behaviour of materials and components”, CEN/TS 45545-2, 2009.

To meet set of material requirements, table 7, R1, interior components have to meet the following limits when tested according to ISO 5658-2.

HL1

- Lateral flame spread (CFE) shall be minimum 20 kW/m<sup>2</sup>.

HL2

- Lateral flame spread (CFE) shall be minimum 20 kW/m<sup>2</sup>.

HL3

- Lateral flame spread (CFE) shall be minimum 20 kW/m<sup>2</sup>.

To meet set of material requirements, table 7, R1, interior components have to meet the following limits when tested according to ISO 5660: heat flux 50 kW/m<sup>2</sup>.

HL1

- Maximum average rate of heat emission (MARHE) no limit.

HL2

- Maximum average rate of heat emission (MARHE) does not exceed 90 kW/m<sup>2</sup>.

HL3

- Maximum average rate of heat emission (MARHE) does not exceed 60 kW/m<sup>2</sup>.

To meet set of material requirements, table 7, R1, interior components have to meet the following limits when tested according to EN ISO 5659-2: 50 kW/m<sup>2</sup> in the presence of pilot flame.

HL1

- Specific optical density of smoke ( $D_s(4)$ ) does not exceed 600.
- Conventional Index of Toxicity ( $CIT_G$ ) does not exceed 1.2.
- Cumulative value of specific optical densities in the first 4 min of the test (VOF4) does not exceed 1200 min.

HL2

- Specific optical density of smoke ( $D_s(4)$ ) does not exceed 300.
- Conventional Index of Toxicity ( $CIT_G$ ) does not exceed 0.9.
- Cumulative value of specific optical densities in the first 4 min of the test (VOF4) does not exceed 600 min.

HL3

- Specific optical density of smoke ( $D_s(4)$ ) does not exceed 150.
- Conventional Index of Toxicity ( $CIT_G$ ) does not exceed 0.75.
- Cumulative value of specific optical densities in the first 4 min of the test (VOF4) does not exceed 300 min.

**Classification**

The tested product called “Alunit Interior Panels”, having a nominal thickness of  $\leq 30$  mm meets the technical fire requirements for R1, hazard level 2, according to the criteria mentioned above.

**Reaction to fire classification: *R1, HL2***

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