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PRODUCTS CERTIFICATION N° 3041

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REACTION TO FIRE CLASSIFICATION REPORT

Object of classification: *Construction products excluding floorings and linear pipe thermal insulation products in accordance with EN 13501-1:2018, cl. 11*

Classification report No:

PK1-01-20-048-E-0

Type and product name: Fire protection coating *FRED*

Sponsor:

Intelligent Membranes Ltd
Clopton Farm
Lower Road
Croydon
SG 80EF
Cambridgeshire
United Kingdom

Prepared by:

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1. INTRODUCTION

- 1.1. This classification report defines the classification assigned to *FRED* in accordance with the procedures given in EN 13501-1:2018.
- 1.2. This classification report consists of 4 pages and may only be used or reproduced in its entirety.

2. DETAILS OF CLASSIFIED PRODUCT

2.1. General

The product *FRED* is supplied by company Intelligent Membranes Ltd, Clopton Farm, Croydon, SG 80EF, Cambridgeshire, United Kingdom. It is a reactive coating for fire protection.

2.2. Product description

Colour:	white
Composition:	waterbased intumescent coating
Coating density:	(1.35 ± 0.1) kg/l
Total indicative consumption:	580 g/m ²
Solids:	(70 ± 2) %

3. REPORTS AND RESULTS IN SUPPORT OF THIS CLASSIFICATION

3.1. Reports

Name of Laboratory Address Accreditation No.	Name of sponsor	Report ref. No. Date of issue	Test method and date Field of application rules and date
PAVUS, a.s. Veselí nad Lužnicí ATL No. 1026	Intelligent Membranes Ltd Clopton Farm, Lower Road, Croydon, SG 80EF, Cambridgeshire United Kingdom	Pr-20-1.164-En 2020-09-03	EN ISO 1716:2018
		Pr-20-1.165-En 2020-09-03	EN 13823:2010+A1:2014 13238:2010

3.2. Results

3.2.1 Testing according to EN ISO 1716

The gross heat of combustion in MJ/kg was determined for the coating itself.

Test method	Parameter	No. Tests	Results
EN ISO 1716	PCS ¹⁾ (MJ/kg)	3	9.83 MJ/kg

¹⁾ Identification of the gross heat of combustion according to EN ISO 1716:2018 is Q_{PCS} .

The value of the gross heat of combustion in MJ/m² is determined through basis weight of the dry coating. The required reaction to fire class A2 is satisfied with basis weight of the dry coating ≤ 0.4 kg/m².

Test method	Parameter	No. Tests	Results	
			Continuous parameter - mean	Compliance with parameters
EN ISO 1716 <i>FRED</i> – external non-substantial component	PCS (MJ/m ²)	3	3.9	≤ 4 (A2)
EN ISO 1716 substrate – substantial component	PCS (MJ/kg)	-	≤ 2	≤ 3 (A2)
EN ISO 1716 product as whole	PCS (MJ/kg)	-	≤ 3	≤ 3 (A2)

In order to be the coating classified as reaction to fire class A2 together with the substrate to which is applied, the gross heat of combustion of the coating together with the substrate must be $PCS_{total} \leq 3$ MJ/kg. A substrate with reaction to fire class A1 will be considered as a substrate. When calculating the minimum basis weight of the substrate $M_{substrate}$, the gross heat of combustion of the substrate $PCS_{substrate} = 2$ MJ/kg will be considered. It is the maximum value of the gross heat of combustion for reaction to fire class A1.

$$PCS_{total} = \frac{PCS_{Mcoating} + PCS_{Msubstrate}}{M_{coating} + M_{substrate}} = \frac{PCS_{coating}M_{coating} + PCS_{substrate}M_{substrate}}{M_{coating} + M_{substrate}}$$

where: $M_{coating}$ is the basis weight of the coating in kg/m²;
 $PCS_{Mcoating}$ is the gross heat of combustion in MJ/m²;
 $PCS_{Msubstrate}$ is the gross heat of combustion in MJ/m².

After editing: $M_{substrate} = M_{coating} \frac{PCS_{coating} - PCS_{total}}{PCS_{total} - PCS_{substrate}}$

From this formula a value for basis weight of the substrate is obtained to be ≥ 2.73 kg/m².

3.2.2 Testing according to EN 13823+A1

The coating was applied on the calcium silicate substrate of a thickness of 12 mm, density of 870 kg/m³ and reaction to fire class A1 for test according to EN 13823+A1. The substrate did not meet the requirement for a standard substrate according to EN 13238, because its reaction to fire class was not A2-s1,d0.

Test method	Parameter	No. Tests	Results	
			Continuous parameter - mean	Compliance with parameters
EN 13823+A1	FIGRA _{0.2MJ} (W/s)	3	0.0	≤ 120 (A2)
	THR _{600s} (MJ)		0.5	≤ 7.5 (A2)
	LFS < edge of specimen		-	yes (A2)
	SMOGRA ¹⁾ (m ² /s ²)		0.0	≤ 30 (s1)
	TSP _{600s} ¹⁾ (m ²)		37.1	≤ 50 (s1)
	No flaming droplets/ particles		-	yes (d0)

¹⁾ The alternative method of smoke calculation according to EN 13823+A1, cl. A.6.1.2 Note is used.

4. CLASSIFICATION AND FIELD OF APPLICATION

4.1. Reference of Classification

This classification has been carried out in accordance with EN 13501-1:2018.

4.2. Classification

The product *FRED* in relation to its reaction to fire behaviour is classified:

Reaction to fire classification: A2 – s1, d0

4.3. Field of application

This classification is valid for the following product parameters:

Product composition and ratio of components:	cannot be changed
Thickness of wet layer:	no more than ca. 420 μm
Mass of wet layer:	no more than 580 g/m^2
Mass of dry layer:	no more than 0.4 kg/m^2

The classification is valid for the following end use applications:

The product *FRED* is intended as a reactive coating for fire protection. Said reaction to fire class is valid only together with the substrate, to which the product is applied. This substrate must be homogeneous, reaction to fire class A1 and a basis weight of at least 10.4 kg/m^2 .

5. LIMITATIONS

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

This classification is valid, unless the conditions, under which it was issued, have been changed. The sponsor may request the issuing authority to review the influence of changes to the classification validity.

Elaborated by:

Approved by:

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