L 1026

Order No.: Z210200262

FIRE TESTING LABORATORY VESELÍ NAD LUŽNICÍ
Testing Laboratory No. 1026 accredited by ČIA
Notified Testing Laboratory
Workplace Veselí nad Lužnicí

REACTION TO FIRE TEST REPORT

No. Pr-20-1.164-En

Issued on 2020-09-03

For product

Fire protection coating

FRED

Sponsor of the report: Intelligent Membranes Ltd
Clopton Farm
Lower Road
Croydon
SG 80EF
Cambridgeshire
United Kingdom

Sponsor of the tests: **Hevadex BV**
Spinnerslaan 6
9160 Lokeren
Belgium

Test method:

EN ISO 1716
» Reaction to fire tests for products
– Determination of the gross heat of combustion
(calorific value) «

Report contains: 5 pages No. of copies: 2
(3 text pages + 2 annexes) **Copy No.: 1**

1 INTRODUCTION

The gross heat of combustion of product was determined following the order of the company Hevadex BV in Fire Testing Laboratory of PAVUS, a.s. Veselí nad Lužnicí (order No. Z210200070). The product name was FLAME-EX. The FLAME-EX is identical with the product distributed under private name FRED (declared by statement from Hevadex BV and Intelligent Membranes Ltd).

The tests were prepared, performed and evaluated on the basis of following documents:

[1] EN ISO 1716:2018 Reaction to fire tests for products – Determination of the gross heat of combustion (calorific value)

[2] EN 13238:2010 Reaction to fire tests for building products – Conditioning procedures and general rules for selection of substrates

[3] Information provided by the sponsor

For the purposes of this report the definitions stated in [1] and [2] are valid together with following abbreviations:
ČIA   Český institut pro akreditaci, o.p.s. *(Czech Institute for Accreditation, Public Service Company)*
ATL   accredited testing laboratory
FTL   fire technical laboratory

2 TESTS SUBJECT

Acc. to [3]: Product name:	FRED
Product identification:	reactive coating for fire protection
Producer:	Hevadex BV Spinnerslaan 6 9160 Lokeren Belgium
Coating composition:	waterbased intumescent coating
Colour:	white
Coating density:	(1.35 ± 0.1) kg/l
Total indicative consumption:	580 g/m^2
Solids:	(70 ± 2) %
Date of sample arrival:	2020-02-19
Sampling procedure:	sponsor without the participation of the ATL
Conditioning:	according to [2]

Test subjects were three specimens obtained by weighing of dry coating, supplied by the sponsor.

3 TESTS PERFORMANCE

Tests were performed according to [1].

The testing and measuring equipment used is given in Annex A.

The tests were performed in the room V218 of FTL on 25th February 2020. The ambient air temperature was 25 °C with 27 % relative ambient air humidity.

The gross heat of combustion has been with all specimens determined by crucible method in adiabatic calorimeter.

4   TESTS RESULTS

The gross heat of combustion of the specimen has been calculated from the measured values given in Annex B.

Specimen	Gross heat of combustion Q_{PCS} (MJ/kg)
1_008/20.4	9.76
2_008/20.4	9.91
3_008/20.4	9.81
Average	9.83

The gross heat of combustion of the specimen is 9.83 MJ/kg.

The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

Report and annexes sheets
are valid with embossed stamp only.

Elaborated by: ....   Approved by:...
                                 Ladislav MĚSTKA   Jiří KÁPL
                                   ATL Engineer   ATL Manager

ANNEX A: TESTING AND MEASURING EQUIPMENT, MEASUREMENT UNCERTAINTY

Test apparatus:	Registration number
Adiabatic calorimeter IKA C4000, pressure equipment, cooler	0059
Conditioning air chamber PO 1	0057

Measuring equipment:	Metrological registration number:
Electronic thermometer of calorimeter	3 10 57
Thermo-hygro-baro-graph D 4130	3 13 08, 3 09 11
Digital balance KERN EW 6000	3 04 09
Analytical balance WAX 60/220	3 04 14

The metrological relationships of the device are defined in the metrological registration card of the device; this card is expressly identified by the metrological registration number of the device.

Measured quantity			Expanded measurement uncertainty
Name	Symbol	Unit	
Ambient air temperature	T	°C	< 0.7
Calorimeter temperature	Q	°C	< 0.001
Ambient air relative humidity	φ	%	< 2.6
Water mass	m	g	< 0.12
Specimen mass	m	g	< 0.0001

The reported expanded uncertainties of measurement are stated as the standard uncertainties of measurement multiplied by the coverage factor k = 2, which for a normal distribution corresponds to a coverage probability of approximately 95 %.

The standard uncertainty of measurement has been determined in accordance with EA-4/16 and GUM.

ANNEX B: MEASUREMENT

Component mass and temperature rise during the individual determination:

Specimen	Specimen mass (g)	Combustion aid mass (g)	Temperature rise ΔT (K)
1_008/20.4	1.24779	0.00000	1.322
2_008/20.4	1.39080	0.00000	1.495
3_008/20.4	1.33345	0.00000	1.420

In all three cases a firing wire with 30 J caloric content and a cotton thread with 50 J caloric content has been used.

Calculation of the gross heat of combustion:

$$Q_{PCS} = \frac{E(T_m - T_i + c) - b}{m}$$

where:
Q_{PCS} . gross heat of combustion   (MJ/kg)
E ...... water equivalent of calorimeter with accessories (in this case 9,273)   (J/K)
ΔT .... temperature rise $(T_m - T_i)$ (K)
b .... correction to combustion supporting means   (MJ)
c .... temperature correction required for the exchange of heat with the outside (zero in this case)   (K)
m ...... mass of the test specimen   (kg)

From the above expression the final values given in chapter 4 have been calculated.