

## ***Extended application report for roofs/roof coverings exposed to external fire No. 22050C***

### **Owner of the extended application report**

IKO PLC  
Appley Lane North, Appley Bridge  
Wigan - Lancashire WN6 9AB  
United Kingdom

### **Normative references**

This extended application (EXAP) report concerns test results obtained in accordance with test method CEN/TS 1187:2012 – test method 4. The extended application process is carried out in conformity with the following extended application documents: CEN/TS 16459:2019 and EN 15725: External fire exposure of roofs and roof coverings – Extended application of test results from CEN/TS 1187.

The extended application process also applies rules (if any) as defined in the following product standard(s) and/or EAD(s): EN 13707:2004.

**This extended application report consists of 13 pages.**

## 1. DETAILS OF PRODUCT CONCERNED

### 1.1. Nature

Product Technical Specifications: Bituminous waterproofing membrane  
Product family: EN 13707:2004  
End-use application: Waterproofing roof membrane

### 1.2. Description

*This description is based on information given by the sponsor.*

|                                          |                                                                                                                                                                                                                                                                                  | Nominal values (1) | Measured values (2) |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------|
| SUPPORTING DECK                          |                                                                                                                                                                                                                                                                                  |                    |                     |
| Material                                 | OSB/3                                                                                                                                                                                                                                                                            |                    |                     |
| Thickness (mm)                           | 18                                                                                                                                                                                                                                                                               |                    |                     |
| Density (kg/m³)                          | 620 ± 40                                                                                                                                                                                                                                                                         |                    |                     |
| PRIMER                                   |                                                                                                                                                                                                                                                                                  |                    |                     |
| Material                                 | Synthetic Rubber based Primer                                                                                                                                                                                                                                                    |                    |                     |
| Trade name                               | IKOpro Bonding Agent                                                                                                                                                                                                                                                             |                    |                     |
| Manufacturer / supplier                  | IKO PLC                                                                                                                                                                                                                                                                          |                    |                     |
| Flame retardants                         | None                                                                                                                                                                                                                                                                             |                    |                     |
| Solid content (m%)                       | 38                                                                                                                                                                                                                                                                               |                    |                     |
| Surface weight (g/m²)                    | 200                                                                                                                                                                                                                                                                              |                    |                     |
| Application                              | Roller applied                                                                                                                                                                                                                                                                   |                    |                     |
| VAPOUR BARRIER                           |                                                                                                                                                                                                                                                                                  |                    |                     |
| Material                                 | Air & Vapour Control Layer – Vapour barrier with polyester reinforced aluminium core and coated with a SBS modified, self-adhesive bitumen coating. The membrane is protected and the underside with a release film backing and coating on the top surface with a mineral finish |                    |                     |
| Trade name                               | IKO Ultra SA Air & Vapour Control Layer                                                                                                                                                                                                                                          |                    |                     |
| Manufacturer / Supplier                  | IKO PLC                                                                                                                                                                                                                                                                          |                    |                     |
| Reinforcement (material + g/m²)          | Polyester 175 g/m²<br>Aluminium 46 g/m²                                                                                                                                                                                                                                          |                    |                     |
| Mineral finish (material + g/m²)         | Medium Grey Mineral 590 g/m²                                                                                                                                                                                                                                                     |                    |                     |
| Thickness (mm)                           | 2,5                                                                                                                                                                                                                                                                              | (3)                |                     |
| Surface weight (g/m²)                    | 2400                                                                                                                                                                                                                                                                             | (3)                |                     |
| Flame retardants                         | None                                                                                                                                                                                                                                                                             | (3)                |                     |
| Fixing method                            | Adhered                                                                                                                                                                                                                                                                          |                    |                     |
| Reaction to fire according to EN 13501-1 | NPD                                                                                                                                                                                                                                                                              |                    |                     |
| ADHESIVE                                 |                                                                                                                                                                                                                                                                                  |                    |                     |
| Material                                 | Moisture cured single part PU Adhesive (Insulation-Green)                                                                                                                                                                                                                        |                    |                     |
| Trade name                               | IKOpro High Performance PU Adhesive (Insulation-Green)                                                                                                                                                                                                                           |                    |                     |
| Manufacturer / supplier                  | IKO PLC                                                                                                                                                                                                                                                                          |                    |                     |
| Flame retardants                         | None                                                                                                                                                                                                                                                                             |                    |                     |
| Weight percentage (w%)                   | 100                                                                                                                                                                                                                                                                              |                    |                     |
| Surface weight (g/m²)                    | 200                                                                                                                                                                                                                                                                              |                    |                     |
| Application                              | Pour from tin                                                                                                                                                                                                                                                                    |                    |                     |

| INSULATING LAYER                         |                                                                                                                           |                          |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Material                                 | Polyisocyanurate (PIR) Insulation board with a multi-layer gastight aluminium facing and backing                          |                          |
| Trade name                               | IKO Enertherm Gold Insulation Board                                                                                       |                          |
| Backing/facing material (g/m²)           | Multi-Layer Gastight Aluminium 197 g/m²                                                                                   |                          |
| Manufacturer                             | IKO Insulations                                                                                                           |                          |
| Supplier                                 | IKO Insulations                                                                                                           |                          |
| Thickness (mm)                           |                                                                                                                           |                          |
|                                          | Single-layered                                                                                                            | 50 & 140 (3)             |
|                                          | Double-layered                                                                                                            | 140 + 50 & 140 + 100 (3) |
| Density (kg/m³) of the foam              | ± 32                                                                                                                      | (3)                      |
| Flame retardants                         | Yes                                                                                                                       | (3)                      |
| Fixing method                            | Adhered                                                                                                                   |                          |
| Reaction to fire according to EN 13501-1 | E, according to classification report 20678B.                                                                             |                          |
| PRIMER                                   |                                                                                                                           |                          |
| Material                                 | Synthetic Rubber based Primer                                                                                             |                          |
| Trade name                               | IKOpro Bonding Agent                                                                                                      |                          |
| Manufacturer / supplier                  | IKO PLC                                                                                                                   |                          |
| Flame retardants                         | None                                                                                                                      |                          |
| Solid content (m%)                       | 38                                                                                                                        |                          |
| Surface weight (g/m²)                    | 200                                                                                                                       |                          |
| Application                              | Roller applied                                                                                                            |                          |
| ROOF COVERING                            |                                                                                                                           |                          |
| First layer                              |                                                                                                                           |                          |
| Material                                 | Self-adhesive (heat-activated) SBS bituminous underlay with a polyester reinforcement. There is a mineral finish on top.  |                          |
| Trade name                               | IKO Ultra H-A Underlay                                                                                                    |                          |
| Manufacturer / Supplier                  | IKO PLC                                                                                                                   |                          |
| Mineral finish (material + g/m²)         | Grey slate mineral 600 g/m²                                                                                               |                          |
| Reinforcement (material + g/m²)          | Polyester 175 g/m²                                                                                                        |                          |
| Thickness (mm)                           | 2,5                                                                                                                       | (3)                      |
| Surface weight (g/m²)                    | 2250                                                                                                                      | (3)                      |
| Flame retardants                         | None                                                                                                                      | (3)                      |
| Fixing method                            | Self-adhesive                                                                                                             |                          |
| Top layer                                |                                                                                                                           |                          |
| Material                                 | Torch on SBS bituminous cap sheet with a polyester reinforcement. There are mineral granules as mineral finishing on top. |                          |
| Trade name                               | IKO Ultra Gold 20                                                                                                         |                          |
| Manufacturer / Supplier                  | IKO PLC                                                                                                                   |                          |
| Mineral finish (material + g/m²)         | Black slate mineral 1235 g/m²                                                                                             |                          |
| Reinforcement (material + g/m²)          | Polyester 270 g/m²                                                                                                        |                          |
| Thickness (mm)                           | 3,8                                                                                                                       | (3)                      |
| Surface weight (g/m²)                    | 4750                                                                                                                      | (3)                      |
| Flame retardants                         | Yes                                                                                                                       | (3)                      |
| Fixing method                            | Torch on                                                                                                                  |                          |

(1) Based on the information given by the sponsor

(2) Values verified by the laboratory

(3) Unverifiable by the laboratory

(4) Known by the laboratory

Summary of parameters and tested systems:

|                       | A-1                                   | A-2                              | A-3                                 | A-4                                  |
|-----------------------|---------------------------------------|----------------------------------|-------------------------------------|--------------------------------------|
| <b>Top coat</b>       | IKO Ultra Gold 20                     | IKO Ultra Gold 20                | IKO Ultra Gold 20                   | IKO Ultra Gold 20                    |
| <b>Fixing method</b>  | Torched on                            | Torched on                       | Torched on                          | Torched on                           |
| <b>Underlayer</b>     | IKO Ultra H-A underlay                | IKO Ultra H-A underlay           | IKO Ultra H-A underlay              | IKO Ultra H-A underlay               |
| <b>Fixing method</b>  | Self-adhered                          | Self-adhered                     | Self-adhered                        | Self-adhered                         |
| <b>Insulation</b>     | <b>Enertherm ALU/GOLD 50 mm</b>       | <b>Enertherm ALU/GOLD 140 mm</b> | <b>Enertherm ALU/GOLD 140+50 mm</b> | <b>Enertherm ALU/GOLD 140+100 mm</b> |
| <b>Fixing method</b>  | Adhered                               | Adhered                          | Adhered                             | Adhered                              |
| <b>Vapour barrier</b> | IKO Ultra SA AVCL                     | IKO Ultra SA AVCL                | IKO Ultra SA AVCL                   | IKO Ultra SA AVCL                    |
| <b>Fixing method</b>  | Adhered                               | Adhered                          | Adhered                             | Adhered                              |
| <b>Primer</b>         | IKOpro Bonding Agent                  | IKOpro Bonding Agent             | IKOpro Bonding Agent                | IKOpro Bonding Agent                 |
| <b>Support</b>        | OSB/3 (18 mm; 620 kg/m <sup>3</sup> ) |                                  |                                     |                                      |

## 2. TEST REPORTS & RESULTS IN SUPPORT OF THIS EXTENDED APPLICATION

### 2.1. Test reports

| Name of the laboratory         | Name of the sponsor | Test report ref. No. | Test dates                                | Test method                    |
|--------------------------------|---------------------|----------------------|-------------------------------------------|--------------------------------|
| WFRGENT N.V.<br>Ghent, Belgium | IKO PLC             | 22050A               | 04/05/2022                                | CEN/TS 1187:2012-test method 4 |
| WFRGENT N.V.<br>Ghent, Belgium | IKO PLC             | 22050B               | 04/05/2022,<br>14/04/2023 &<br>15/04/2023 | CEN/TS 1187:2012-test method 4 |

Deviations from test standard: Number of tested samples for report 22050A. Only one preliminary and one penetration test have been carried out instead of the standard one preliminary and three penetration tests.

## 2.2. Test samples

| Test report ref. No. | Sampling procedure | Conditioning | Number of samples tested |
|----------------------|--------------------|--------------|--------------------------|
| 22050A               | AVCP 3             | (*)          | 4 x 2                    |
| 22050B               | AVCP 3             | (*)          | 4                        |

**(\*) Impact of the deviation:** In accordance with clause 7.10.1 of ISO/IEC 17025 parts (b) [assessment of risk levels by the laboratory], (c) [evaluation of the significance of the non-confirming work], (d) [decision on acceptability] and (e) [customer notification], WFRGent has evaluated the risk of the deviation to the test outcome to be non-material and therefore concludes the test outcome remain valid.

## 2.3. Test results

### 2.3.1. Test results on CEN/TS 1187:2012 – test method 4

Test conditions: 22050A

| Specimen No.                            | A-1(')                                | A-2(')     | A-3(')     | A-4(')     |
|-----------------------------------------|---------------------------------------|------------|------------|------------|
| Date of test                            | 04/05/2022                            | 04/05/2022 | 04/05/2022 | 04/05/2022 |
| Roof pitch                              | 0°                                    | 0°         | 0°         | 0°         |
| Room temperature at start of test (°C): | 21                                    | 21         | 21         | 21         |
| Substrate                               | OSB/3 (18 mm; 620 kg/m <sup>3</sup> ) |            |            |            |

(') The conditions of preliminary test correspond with the conditions of the penetration test.

### **PRELIMINARY IGNITION TEST WITH BURNING BRANDS (STAGE 1)**

| Specimen No:                                                     | A-1'              | A-2'              | A-3'(*)           | A-4'              |
|------------------------------------------------------------------|-------------------|-------------------|-------------------|-------------------|
| Duration of flaming after withdrawal of the test flame (min:sec) | 00:00             | 00:00             | 00:00             | 00:00             |
| Maximum flame spread distance (mm)                               | 85                | 87                | 90                | 90                |
| Time to fire penetration (min:sec)                               | Did not penetrate | Did not penetrate | Did not penetrate | Did not penetrate |
| Nature of the penetration                                        | N.a.              | N.a.              | N.a.              | N.a.              |

(') The conditions of preliminary test correspond with the conditions of the penetration test.

(\*) Reused in the official test 22050B.

**PENETRATION TEST WITH BURNING BRANDS, WIND AND SUPPLEMENTARY RADIANT HEAT (STAGE 2)**

| Specimen No:                                                                                                                                                                                                                                                                                                                                                                    | A-1               | A-2               | A-3(*)            | A-4               | Average           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Time to fire penetration (min:sec)                                                                                                                                                                                                                                                                                                                                              | Did not penetrate | Did not penetrate | Did not penetrate | Did not penetrate | Did not penetrate |
| Nature of the penetration                                                                                                                                                                                                                                                                                                                                                       | N.a.              | N.a.              | N.a.              | N.a.              | -                 |
| Damaged depth of the insulation layer (mm)                                                                                                                                                                                                                                                                                                                                      | 30                | 50                | 90                | 85                | -                 |
| Last damaged layer                                                                                                                                                                                                                                                                                                                                                              | PIR               | PIR               | PIR               | PIR               | -                 |
| <p>Additional observations: All specimens ignited and experienced carbonization and melting.</p> <p>Specimen A-1: Flaming ceased after 28:39.</p> <p>Specimen A-2: Flaming ceased after 36:51.</p> <p>Specimen A-3: Flaming ceased after 33:21. Specimen reignited after 42:12 with flames being extinguished after 60:00.</p> <p>Specimen A-4: Flaming ceased after 40:43.</p> |                   |                   |                   |                   |                   |

(\*) Reused in the official test 22050B.

Test conditions: 22050B

| Specimen No.                            | 1                        | 2          | 3          | 4          |
|-----------------------------------------|--------------------------|------------|------------|------------|
| Date of test                            | 04/05/2022               | 04/05/2022 | 14/04/2023 | 15/04/2023 |
| Roof pitch                              | 0°                       | 0°         | 0°         | 0°         |
| Room temperature at start of test (°C): | 21                       | 21         | 21         | 21         |
| Substrate                               | OSB/3 (18 mm; 620 kg/m³) |            |            |            |

Build-up: OSB/3 + IKOpro Bonding Agent + IKO Ultra SA Air & Vapour Control Layer + IKOpro High Performance PU Adhesive (Insulation-Green) + IKO Enertherm Gold Insulation Board (140 + 50 mm) + IKOpro Bonding Agent + IKO Ultra H-A Underlay + IKO Ultra Gold 20

|         | Specimen number | Time to fire penetration (min:sec) | Duration of flaming after withdrawal of test flame (min:sec) | Maximum flame spread distance (mm) |
|---------|-----------------|------------------------------------|--------------------------------------------------------------|------------------------------------|
| Stage 1 | 1               | Did not penetrate                  | 00:00                                                        | 90                                 |
| Stage 2 | 2               | Did not penetrate                  | (-)                                                          | (-)                                |
|         | 3               | Did not penetrate                  | (-)                                                          | (-)                                |
|         | 4               | Did not penetrate                  | (-)                                                          | (-)                                |
|         | Average         | Did not penetrate                  | (-)                                                          | (-)                                |

(-) not applicable

## 2.4. Additional supporting data used in the extended application process

### 2.4.1. Observations and additional supporting data

- The reaction to fire classification of IKO Enertherm Gold Insulation Board is Euroclass E, according to classification report No. 20678B. This declared reaction to fire classification has been verified with the classification report.
- The reaction to fire classification of IKO Ultra SA Air & Vapour Control Layer is NPD.

## 3. RESULTS OF THE EXTENDED APPLICATION

### 3.1. Principles applied for the extension of the field of application

This extended application procedure is based on:

#### **CEN/TS 16459:2019 §5.1:**

**Option 1:** by use of additional test results which, together with the initial test result, enables consideration of a larger range of one or several product parameters and end-use application parameters.

**Option 2:** by use of test results in combination with application of calculation methods (§5.3 of CEN/TS 16459:2019) relating the product and end-use application parameters to the fire performance.

**Option 3:** by use of historical data, see §5.4 of CEN/TS 16459:2019, and other relevant information e.g. data from previous tests.

### 3.2. Procedure

Under annex D of the above-mentioned standard, extrapolation rules are stated which are relevant to the test method and type of product used for this extrapolation. The paragraphs below are relevant for the extrapolation, performed in this report.

3.2.1 Rules for extrapolation according to §5 and annex D of CEN/TS 16459:2019 – Test method 4 of CEN/TS 1187:2012

| Product / End-use parameter for which an extended application is obtained       | Extended application based on                           | Rule or statement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Thickness or Mass per unit area or Density                                      | § D.2 General rules of CEN/TS 16459:2019                | "Following the classification of the roofing systems to EN 13501–5 using the maximum and minimum values of the given parameter for the component layer under investigation, where no change in class occurs, the resulting classification for the roofing system is valid within and including the limits of the component layer."                                                                                                                                                                                                                                                                                                                                                                                                  |
| Reaction-to-fire classification (EN 13501–1) of any layer in the roofing system | § D.2 General rules of CEN/TS 16459:2019                | Substitution is possible for a component or layer with the same or better reaction-to-fire classification when tested in the same end use application provided that the substitute component or layer is of the same generic product group. Note that this rule excludes the substitution of the external (top) layer.                                                                                                                                                                                                                                                                                                                                                                                                              |
| Surfacing on lower side (backing) of any layer in the roof system.              | § D.2 General rules of CEN/TS 16459:2019                | The % of organic content of the surfacing product (by mass) shall not be increased. Note that this rule excludes the substitution of the external (top) layer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Surfacing on upper side (facing) of any layer in the roof system.               | § D.2 General rules of CEN/TS 16459:2019                | The % of organic content of the surfacing product (by mass) shall not be increased. Note that this rule excludes the substitution of the external (top) layer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Roof pitch                                                                      | § D.2 General rules of CEN/TS 16459:2019                | "Covered by CEN/TS 1187, test 4 and EN 13501-5."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Number of layers                                                                | § D.3.3. Reinforced bitumen sheets of CEN/TS 16459:2019 | "As tested"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Substrate or underlying construction details                                    | § D.3.3. Reinforced bitumen sheets of CEN/TS 16459:2019 | "Where the roofing system is laid directly onto a combustible substrate such as plywood or particle board of a tested thickness, the classification results apply to all such roof covering systems using thicker boards made from the same type of combustible substrate." Test with vapour control layer with defined reaction to fire class E or better. The vapour control layer can then be replaced with product of equal or better performance. Where the roof covering system is laid and tested on an insulation layer, the classification obtained shall apply to the insulation thicknesses between those tested provided that the generic insulation product remains unchanged, see insulation layer information below. |
| Reinforcement: mass per unit area, type of material; position within layer etc. | § D.3.3. Reinforced bitumen sheets of CEN/TS 16459:2019 | Tests on a given mass of reinforcement per unit area will apply to lower masses. Limits to be agreed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Spacing and type of mechanical fixing (fasteners)                               | § D.3.3. Reinforced bitumen sheets of CEN/TS 16459:2019 | As tested.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

|                                |                                                               |                                                                                                                                                                                                                                      |
|--------------------------------|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type of material<br>Insulation | § D.3.3. Reinforced bitumen<br>sheets of CEN/TS<br>16459:2019 | “As tested; general principle: Make sure that the tested component has no better reaction-to-fire classification than indicated in a product specification [e.g. Declaration of performance (DOP)].”                                 |
| Thickness<br>Insulation        | § D.3.3. Reinforced bitumen<br>sheets of CEN/TS<br>16459:2019 | Where the roof covering system is laid and tested on an insulation layer, the classification obtained shall apply to the insulation thicknesses between those tested provided that the generic insulation product remains unchanged. |
| Density<br>Insulation          | § D.3.3. Reinforced bitumen<br>sheets of CEN/TS<br>16459:2019 | As tested at nominal density as defined in the relevant Product standards The classification obtained shall apply to the insulation densities between those tested provided that the generic insulation product remains unchanged.   |

To evaluate the product parameter “**Insulation thickness and number of layers**” tests were performed according to CEN/TS 1187:2012 on:

- A-1: system with IKO Enertherm Gold Insulation Board 50 mm
- A-2: system with IKO Enertherm Gold Insulation Board 140 mm
- A-3: system with IKO Enertherm Gold Insulation Board 140 + 50 mm
- A-4: system with IKO Enertherm Gold Insulation Board 140 + 100 mm

Other parameters of the system were kept the same between the samples.

As a conclusion, there were no significant differences. Based on visual observations and the burn time during the penetration test, the laboratory selected the system with IKO Enertherm Gold Insulation Board 140 + 50 mm as the worst-case system.

Therefore, this worst-case result can be considered the upper limit for results of the range insulation thicknesses and number of layers. The laboratory concludes the EXAP program end the worst-case system is officializes in report 22050B.

| System/ parameter                                                                               | A-1                                       | A-2                                        | A-3                                             | A-4                                              |
|-------------------------------------------------------------------------------------------------|-------------------------------------------|--------------------------------------------|-------------------------------------------------|--------------------------------------------------|
| Parameters of the system :<br>Insulation thickness and number of layers                         | IKO Enertherm Gold Insulation Board 50 mm | IKO Enertherm Gold Insulation Board 140 mm | IKO Enertherm Gold Insulation Board 140 + 50 mm | IKO Enertherm Gold Insulation Board 140 + 100 mm |
| Maximum flame spread distance (in preliminary test) (mm)                                        | 85                                        | 87                                         | 90                                              | 90                                               |
| Percentage (%) of maximal flame spread (380 mm)                                                 | 22,4                                      | 22,9                                       | 23,7                                            | 23,7                                             |
| After withdrawal of the test flame, specimens burn for < 5 min (in preliminary test) (min :sec) | 00:00                                     | 00:00                                      | 00:00                                           | 00:00                                            |
| Penetration (Yes/No)                                                                            | No                                        | No                                         | No                                              | No                                               |
| Within the Broof(T4) classification                                                             | Yes                                       | Yes                                        | Yes                                             | Yes                                              |

#### 4. **EXTENDED APPLICATION RESULTS**

##### 4.1. Application range – product family

This extended application for the product as described in §1.2, is valid for the following end-use applications:

- Range of layer 0: The top layer: IKO Ultra Gold 20

|                         |                                                                                                                             |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Material:               | Torched on SBS bituminous cap sheet with a polyester reinforcement. There are mineral granules as mineral finishing on top. |
| Thickness:              | 3,8 mm                                                                                                                      |
| Surface weight:         | 4750 g/m <sup>2</sup>                                                                                                       |
| Reinforcement:          | Polyester 270 g/m <sup>2</sup> or less                                                                                      |
| Mineral finish:         | Black slate mineral 1235 g/m <sup>2</sup>                                                                                   |
| Use of fire retardants: | Yes                                                                                                                         |
| Fixing method:          | Torched on                                                                                                                  |

- Range of layer 1: The top layer: IKO Ultra H-A Underlay

|                         |                                                                                                                          |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Material:               | Self-adhesive (heat-activated) SBS bituminous underlay with a polyester reinforcement. There is a mineral finish on top. |
| Thickness:              | 2,5 mm                                                                                                                   |
| Surface weight:         | 2250 g/m <sup>2</sup>                                                                                                    |
| Reinforcement:          | Polyester 175 g/m <sup>2</sup> or less                                                                                   |
| Mineral finish:         | Grey slate mineral 600 g/m <sup>2</sup>                                                                                  |
| Use of fire retardants: | No                                                                                                                       |
| Fixing method:          | Torched on                                                                                                               |

- Range of layer 2: Adhesive: IKOpro Bonding Agent, as tested and described in §1.2.

- Range of layer 3: PIR insulation with IKO Enerthem Gold Insulation Board

|                                  |                                                     |
|----------------------------------|-----------------------------------------------------|
| Thickness:                       |                                                     |
| Single-layered                   | 50 – 140 mm                                         |
| Double-layered                   | 140 + 50 mm – 140 + 100 mm                          |
| Density:                         | 32 kg/m <sup>3</sup>                                |
| Facing/backing:                  | Multi-Layer Gastight Aluminium 197 g/m <sup>2</sup> |
| Reaction to fire classification: | E or better (*)                                     |
| Fixing method:                   | Adhered                                             |

(\*) The reaction to fire classification of IKO Enerthem Gold Insulation Board is Euroclass E, according to the classification report No. 20678B.

- Range of layer 4: Adhesive: IKOpro High Performance PU Adhesive (Insulation-Green), as tested and described in §1.2.

- Range of layer 5: Vapour control layer: IKO Ultra SA Air & Vapour Control Layer

|                                  |     |
|----------------------------------|-----|
| Reaction to fire classification: | NPD |
|----------------------------------|-----|

➤ Range of layer 6: Primer: IKOpro Bonding Agent, as tested and described in §1.2.

➤ Range of layer 7: Supporting deck

|                           |                                  |
|---------------------------|----------------------------------|
| Range of supporting deck: | OSB3 (18 mm or more ; 620 kg/m³) |
|---------------------------|----------------------------------|

#### 4.2. Fire performance parameters

All products as described in §1.2. and within the field of application as defined in §4.1., can be considered to obtain reaction to fire test results that are better or comply with the following:

##### PRELIMINARY TEST (STAGE 1)

| Parameter             | Criteria                        |                                 |                                 |                                 | Compliance                      |                                 |                                 |                                 |
|-----------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
|                       | Class<br>B <sub>ROOF</sub> (t4) | Class<br>C <sub>ROOF</sub> (t4) | Class<br>D <sub>ROOF</sub> (t4) | Class<br>E <sub>ROOF</sub> (t4) | Class<br>B <sub>ROOF</sub> (t4) | Class<br>C <sub>ROOF</sub> (t4) | Class<br>D <sub>ROOF</sub> (t4) | Class<br>E <sub>ROOF</sub> (t4) |
| Burn time             | < 5 min                         | < 5 min                         | < 5 min                         | ≥ 5 min                         | Yes                             | Yes                             | Yes                             | No                              |
| Flame spread distance | < 0,38 m                        | < 0,38 m                        | < 0,38 m                        | No limit                        | Yes                             | Yes                             | Yes                             | Yes                             |
| Penetration           | None                            | None                            | None                            | None                            | Yes                             | Yes                             | Yes                             | Yes                             |

##### PENETRATION TEST (STAGE 2)

| Parameter   | Criteria                        |                                 |                                 |                                 |
|-------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
|             | Class<br>B <sub>ROOF</sub> (t4) | Class<br>C <sub>ROOF</sub> (t4) | Class<br>D <sub>ROOF</sub> (t4) | Class<br>E <sub>ROOF</sub> (t4) |
| Penetration | ≥ 60 min                        | < 60 min<br>≥ 30 min            | < 30 min                        | < 30 min                        |
| Parameter   | Compliance                      |                                 |                                 |                                 |
|             | Class<br>B <sub>ROOF</sub> (t4) | Class<br>C <sub>ROOF</sub> (t4) | Class<br>D <sub>ROOF</sub> (t4) | Class<br>E <sub>ROOF</sub> (t4) |
| Penetration | Yes                             | No                              | No                              | No                              |

## 5. ADDITIONAL STATEMENT

The extended application results relate to the behaviour of a product/product family 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/product family in use.

Provisions of Regulation (EU) 305/2011, commonly known as the Construction Products Regulation (CPR), prevail over any conflicting provisions in the harmonised standards and technical specifications.

### PREPARED BY

|                                                                                   |                                                                                            |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
|  | Mikel Nachtergaele<br>(Signature)<br>Project coordinator<br>2023.09.14 15:08:36<br>+02'00' |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|

### APPROVED BY

|                                                                                    |                                                                                                         |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|  | Jarich Van Wesemael<br>(Signature)<br>Technical Sales Associate<br>Ghent<br>2023.09.19 13:08:52 +02'00' |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|

This document is the original version of this extended application report and is written in English.

This report may be used only literally and completely for publications. For publications of certain texts, in which this report is mentioned, our permission must be obtained in advance.

The authenticity of the electronic signatures is assured by Belgium Root CA.