



## SUMMARY OF RESULTS

The thermal conductivity measured using the flux meter method gives the following results :

| Identification of the test specimen | Customer reference      | Reference FRD-CODEM | Average test temperature (°C) | Measured value of thermal conductivity (W/(m.K)) | Uncertainty of measure (W/(m.K)) |
|-------------------------------------|-------------------------|---------------------|-------------------------------|--|----------------------------------|
| Enduit léger                        | NOVASKIN<br>THERMO PLUS | ER23-086            | 9,94                          | 0,0793   | 0,0047                           |

Presence of flatness defects (in relation to the requirements of standard NF EN 12667 : 2001) :

Non

**RE0624FB-015**

## 1 DESIGNATION

| Customer references  | References FRD-CODEM | Sample mass on receipt (g) | Any other information given by the client : |
|----------------------|----------------------|----------------------------|---|
| NOVASKIN THERMO PLUS | ER23-086             | 2553,30                    | -   |

## 2 CHARACTERISTICS

*The physical characteristics of the test specimens were determined after oven drying and conditioning to equilibrium.*

These characteristics are summarised in the following table :

| Specimen reference | Dimensions          |                      |                     | Density (kg/m <sup>3</sup> ) | Test date | Duration of the test (hh:mm:ss) |                       |
|--------------------|---------------------|----------------------|---------------------|------------------------------|-----------|---------------------------------|-----------------------|
|                    | Reference FRD-CODEM | Average length L (m) | Average width I (m) |                              |           |                                 | Average thickness (m) |
| ER23-086           |                     | 0,299                | 0,300               | 0,086                        | 327,15    | 29/9/23                         | 02:34:50              |

Thickness of test piece(s) : Measured at FRD-CODEM

Possible product standard : No

Material : Rigid

Surfacing of test piece(s) : No

### 3 CONDITIONS OF REALIZATION

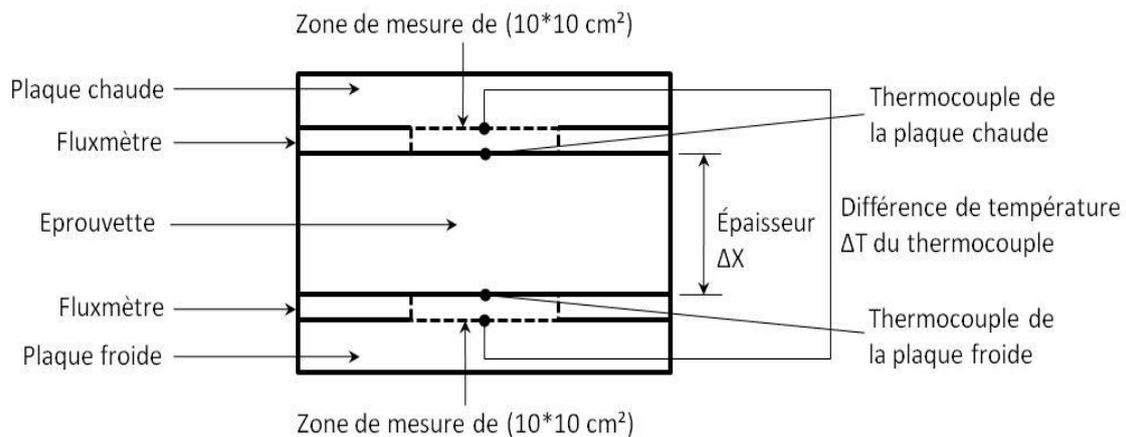
Environmental conditions :  $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$

The instruments used for these measurements are :

- A Lambdameter with two fluxmeters (reference EQC08-001)
- A drying oven : 700L/300°C (Référence EQC18-001)
- A scale of : 7kg  $\pm$  0,1g (Référence EQC09-006)
- A scale of : 7kg  $\pm$  0,1g (Référence EQC11-005)
- A caliper of : 450 mm (référence EQC11-009)
- A thickness measuring instrument (EQC16-011, EQC16-011A)
- A filming machine (EQC15-018)

### 4 METHOD

FRD- CODEM uses the fulxmeter method for measuring the thermal conductivity of materials. The instrument used is a twa-flux Lambdameter with a single sample as show in Figure 1



*Figure 1 : Schematic of the dual-flow meter device*

In the dual flux meter apparatus, the heat flux density is measured with two flux meters placed against in the specimen (the hot plate is above the specimen and the cold plate below)

The fluxmeter has a symmetrical horizontal configuration with a single test piece.

The apparatus used by FRD-CODEM for the measurement of the thermal conductivity was made according to ISO 8301 and NF EN 12667.

The preparation of the samples and the performance of the measurements are carried out in accordance with the standard NF EN 12667 and the internal operating procedure MO-ESS-013.

Date of last flux meter calibration

20/01/2023

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## 5 RESULTATS EXPERIMENTAUX

Conditioning of the material before testing : drying at 80°C

Relative variations in mass and thickness :

| References FRD-CODEM | Condition               |                       |                             |                                |                             |                      |                         |                             |
|----------------------|-------------------------|-----------------------|-----------------------------|--------------------------------|-----------------------------|----------------------|-------------------------|-----------------------------|
|                      | Drying of the specimens |                       |                             | relative humidity conditioning |                             | Test                 |                         |                             |
|                      | Mass at reception (g)   | Mass after drying (g) | Relative change in mass (g) | Mass after conditioning (g)    | Relative change in mass (g) | Mass before test (g) | Mass at end of test (g) | Relative change in mass (g) |
| ER23-086             | 2553,30                 | 2523,80               | -29,50                      | -                              | -                           | 2523,80              | 2525,90                 | 2,10                        |

Changes in thickness (and volume) observed during the test: No

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The average thermal conductivity obtained between the hot and cold plates gives the results shown in the following table :

Thermal conductivity obtained at : 10°C dry

| Customer reference   | Reference FRD-CODEM | Heat flux density<br>$F=N*V$ (W/m <sup>2</sup> ) | Average test temperature (°C) | T° difference (°C) | Measured thermal conductivity value (W/(m.K)) | Measurement uncertainty (W/(m.K)) |
|----------------------|---------------------|--|-------------------------------|--------------------|---|-----------------------------------|
| NOVASKIN THERMO PLUS | ER23-086            | 17,89  | 9,94                          | 20,13              | 0,0793  | 0,0047                            |

Special condition requested by the client : No

**Flatness defects :**

| Customer reference   | Reference CODEM | Flatness defect (yes/no) | Dimensions (mm) | Detail defect, comment |
|----------------------|-----------------|--------------------------|-----------------|------------------------|
| NOVASKIN THERMO PLUS | ER23-086        | Non                      | -               | -                      |

*The expanded uncertainties are twice the combined standard uncertainty. The standard uncertainties have been calculated taking into account the different uncertainty components, reference standards, calibration media, contribution of the calibrated, repeatability, ect.*

Legend : NA = no applicable

**End of the test report**