CIDEMCO
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TEST REPORT

CUSTOMER: **TRIFLEX VIDRIOPANTALLA, S.L.**

PERSON REQUESTING THE TEST: **JOSÉ MANUEL ESTADA**

ADDRESS: **POLIGONO INDUSTRIAL SEPES, C/ ARANDA Nº 8**
46520 SAGUNTO (VALENCIA)

MATERIAL TESTED:	**«TRIFLEX» DOUBLE GLAZING WITH VENETIAN BLIND**
PURPOSE OF THE REQUEST:	**DETERMINING THERMAL CONDUCTIVITY (UNE 92202:1989)**

DATE OF RECEIPT:	**04.04.2003**
TEST STARTING DATE:	**16.06.2003**
TEST COMPLETION DATE:	**30.06.2003**

Total No. of pages

4
(Including this one)

The results only refer to the material received and subjected to testing at this Research Centre on **04.04.2003**.

Asier Maiztegi
Construction Dept. Manager

Susana Santamaría
Construction Dept. Manager

Azpeitia, 10th of July 2003

FEATURES OF THE SAMPLE

On the 4th of April 2003, CIDEMCO received a (350 x 500) mm double glazing sample from the company TRIFLEX VIDRIOPANTALLA, S.L., whose reference is **«TRIFLEX».**

In accordance with the information provided by the customer, the composition and features of the sample are as follows:

- Exterior sheet of CLEAR glass of 4 mm in thickness
- Intermediate chamber made using an extruded aluminium perimeter profile of 16 mm in thickness
- Venetian blind fitted to the chamber and composed of aluminium slats of 12.5 mm in width, adjustable by means of a magnetic device. The blind has a run of 80 mm
- Exterior sheet of CLEAR glass of 4 mm in thickness
- Sealant composed of:
  - First barrier of butyl
  - Second barrier of polysulphur

TEST REQUESTED

The test requested has been that of determining the **thermal conductivity coefficient λ (W/m.ºC)** in accordance with UNE 92202:1989 and calculation of **internal thermal resistance (W/m^2.ºC)** and the **thermal transmission coefficient "K" (W/m^2.ºC)**.

TEST CARRIED OUT

The thermal conductivity coefficient λ has been determined in a chamber in which the test sample has been placed between two plates, one for heating and the other for cooling.

Several temperature and heat flow sensors have been placed on both surfaces of the test sample.

Once the heat transmission conditions have been obtained in a stable state, the surface temperature data is then collected (ºC) on both sides of the sample, in addition to the heat flow passing through it (W/m^2). From this data a mean statistic is obtained of the surface temperature and heat flow values. The value λ (W/m.ºC) is calculated in accordance with that specified in the aforementioned standard and corresponds to mean values calculated during the test.

RESULTS

The thermal conductivity λ has been estimated in a perpendicular direction to the surface of the plate.

The mean temperature of the sample has been 18.5ºC and the temperature gradient in the sample has been 5.8ºC.

Any edge effect has been eliminated given that the surfaces of its perimeter have been insulated using extruded polystyrene.

Once the system reflects stability from the thermal point of view – in other words, when the fluctuation of surface temperatures and heat flow is negligible – the mean surface temperatures are then recorded, in addition to the mean heat flow in the perpendicular direction to the test element.

The mean value of the thickness of the plate in the area tested is **e = 24 mm.**

Therefore, the thermal conductivity value is as follows:

$$\lambda = 0.12 \frac{W}{m^{o}C}$$

Internal thermal resistance is calculated by considering a sample thickness of 24 mm.

$$R_{\text{int}} = 0.20 \frac{W}{m^2 \text{º} C}$$

Furthermore, the NBE CT-79 states that for vertical separation enclosures with outside space or open premises, or with a horizontal gradient of >60º and horizontal flow, the following surface thermal resistance values on both the inside and outside are, respectively:

$$\frac{1}{h_i} = 0.11 \frac{m^2 \text{º} C}{W} \qquad \textit{and} \qquad \frac{1}{h_e} = 0.06 \frac{m^2 \text{º} C}{W}$$

The thermal transmission coefficient “K” with these surface resistance values is as follows:

$$K = 2.7 \frac{W}{m^2 \text{º} C}$$