INSTITUTE OF ARCHITECTURE AND
CONSTRUCTION OF KAUNAS
UNIVERSITY OF TECHNOLOGY

LABORATORY OF BUILDING PHYSICS

Notified Body number: 2018

LIETUVOS NACIONALINIS AKREDITACIJOS BIURAS

BANDYMAI
ISO/IEC 17025 Nr. LA. 01.031

TEST REPORT No. 112 SF/15 U

Date: 27 of June 2015

Determination of thermal transmittance of window

(test title)

Test method: LST EN ISO 12567-1:2010 Thermal performance of windows and doors – Determination of thermal transmittance by hot box method – Part 1: Complete windows and doors (EN ISO 12567-1:2010/AC:2010; LST EN ISO 12567-1:2010/AC:2011)

(number of normative document or test method, description of test procedure, test uncertainty)

Specimen description: Wood-Alu window of Doleta Moderna 78 system. Dimension: width 1230 mm, height 1480 mm. Frame: 78×70 mm, sash 78×88 mm. Fittings: SIEGENIA, filling piece H-12/18 TS C500 (1 pcs.), stay arm H-12/18 DH TS (1 pcs.), rebate corner hinge RH (1 pcs.), distance piece H12/18 -13 RH C250 (1 pcs.), bottom hinge H-12 TS C100 (1 pcs.), bottom hinge pin D7 TS (1 pcs.), top hinge pin D6 TS C100 (1 pcs.), tilt lock bear. S-ES FH RH A4500 TS (1 pcs.), striker plate 56 A4500 (6 pcs.), stop FBS (1 pcs.), stay hinge H-12 /18-13 DH TS K100 (1 pcs.), corner drive AF VSO 1RS TS K50 (1 pcs.), corner drive AF VSU/K+ FH 1S TS K50 (1 pcs.), mishandling device silver K250 (1 pcs.), gear 15 AF SZ.120/G600 1RS TS K25 (1 pcs.), handle globe RAL9016 C100 (1 pcs.). Glass panel seals: glazing tape 9x3 ASTORPOL, 8 mm ASTORPROFIL circle filler, clear sealer Silirub 2. Seals: small sash gasket SP33B WE and main gasket SP1212c-4. Glazing: glass panel 4XN-20Ar-4-20Ar-4XN, plastic glass panel spacer (SWISSPACER). 5x40x100 glazing plastic bricks for glass positioning. Aluminium rain drip, rain drip keeper (6 pcs.). Finish: acrylic paint (RAL9010).

(name, description and identification details of a specimen)

Customer: UAB „Doleta“ Vilniaus str. 52, LT-59422 Jieznas, Prienų dstr.

(name and address)

Manufacturer: UAB „Doleta“ Vilniaus str. 52, LT-59422 Jieznas, Prienų dstr.

(name and address)

Test results:

Name of the indicator and unit	Test method reference no.	Test result
Thermal transmittance, W/(m²·K)	LST EN ISO 12567-1:2010; LST EN ISO 12567-1:2010/AC:2011	0,80
Note. The testing are carried out in purpose for conformity assessment of the product according to LST EN 14351-:2006+A1:2010		

Tested at: Laboratory of Building Physics, Institute of Architecture and Construction of Kaunas University of Technology

(name of the test laboratory)

Specimen delivery date: 2015-07-22 Date of testing: 2015-07-23

Sampling: The test specimen sampled by customer. Description No. 112/15, 2015-07-22

Additional information: Application 2015-07-22, drawing.

(any deviations, complementary tests, exceptions and any information related with particular test)

Annexes:
Annex 1. Test results.
Annex 2. Specimen data.
Annex 3. Scheme of climate chamber „Hot box“.

(indicate annex numbers and titles)

Technical manager: _____ J. Ramanauskas
(approves the test results) (signature) (n., surname)

Tested by: _____ A. Burlingis
(technically responsible for testing) (signature) (n., surname)

AKTAMS
S.P.

Annex 1. Test results:

Data element	unit	Value
Air velocity on warm side, downwards, v_i	m/s	0,27
Air velocity on cold side, upwards, v_e	m/s	2,70
Total power input to metering box, Φ_{in}	W	47,75
Heat flow density through a specimen, q_{sp}	W/m^2	17,08
Warm side air temperature, θ_{ci}	°C	20,68
Cold side air temperature, θ_{ce}	°C	0,06
Environmental temperature of the warm side, θ_{ni}	°C	20,70
Environmental temperature of the cold side, θ_{ne}	°C	0,11
Measured thermal transmittance of a specimen, U_m	$W/(m^2 \cdot K)$	0,83
Standardized surface thermal resistance, $\Delta R_{(s,t),st}$	$m^2 \cdot K/W$	0,17
Thermal transmittance of a specimen, U_{st}	$W/(m^2 \cdot K)$	0,804
Uncertainty of the measurement, ΔU_m	$W/(m^2 \cdot K)$	± 0,02105

Tested by: A. Burlingis A Burlingis Date: 2015-07-23

Annex 2. Specimen data

Specimen description:

a) Wood-Alu window of Doleta Moderna 78 system. Dimension: width 1230 mm, height 1480 mm. Frame: 78×70 mm, sash 78×88 mm. Fittings: SIEGENIA, filling piece H-12/18 TS C500 (1 pcs.), stay arm H-12/18 DH TS (1 pcs.), rebate corner hinge RH (1 pcs.), distance piece H12/18 -13 RH C250 (1 pcs.), bottom hinge H-12 TS C100 (1 pcs.), bottom hinge pin D7 TS (1 pcs.), top hinge pin D6 TS C100 (1 pcs.), tilt lock bear. S-ES FH RH A4500 TS (1 pcs.), striker plate 56 A4500 (6 pcs.), stop FBS (1 pcs.), stay hinge H-12 /18-13 DH TS K100 (1 pcs.), corner drive AF VSO 1RS TS K50 (1 pcs.), corner drive AF VSU/K+ FH 1S TS K50 (1 pcs.), mishandling device silver K250 (1 pcs.), gear 15 AF SZ.120/G600 1RS TS K25 (1 pcs.), handle globe RAL9016 C100 (1 pcs.). Glass panel seals: glazing tape 9x3 ASTORPOL, 8 mm ASTORPROFIL circle filler, clear sealer Silirub 2. Seals: small sash gasket SP33B WE and main gasket SP1212c-4. Glazing: glass panel 4XN-20Ar-4-20Ar-4XN, plastic glass panel spacer (SWISSPACER). 5x40x100 glazing plastic bricks for glass positioning. Aluminium rain drip, rain drip keeper (6 pcs.). Finish: acrylic paint (RAL9010).

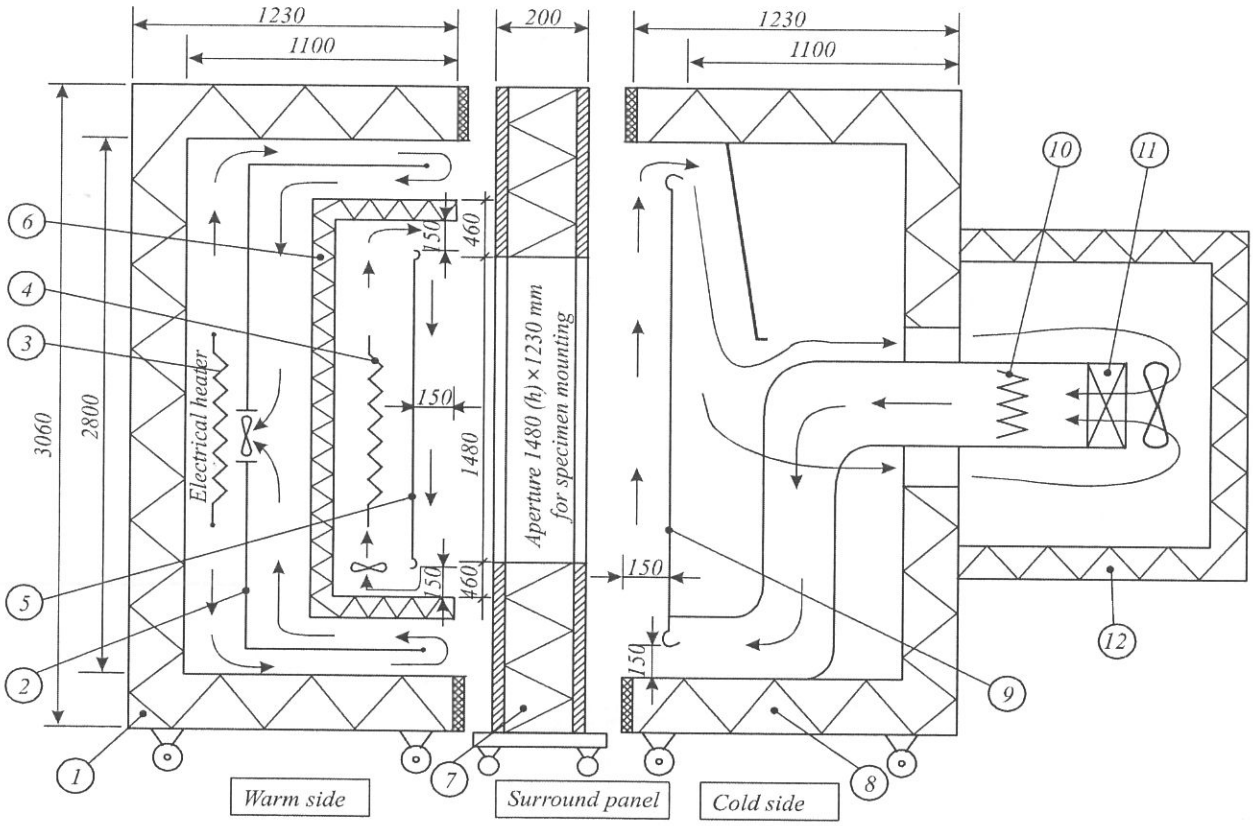
b) specimen dimensions

— height, 1,48 m;
— width, 1,23 m;
— projected area, 1,83 m^2;
— frame thickness, 93 mm.

c) cross-section:

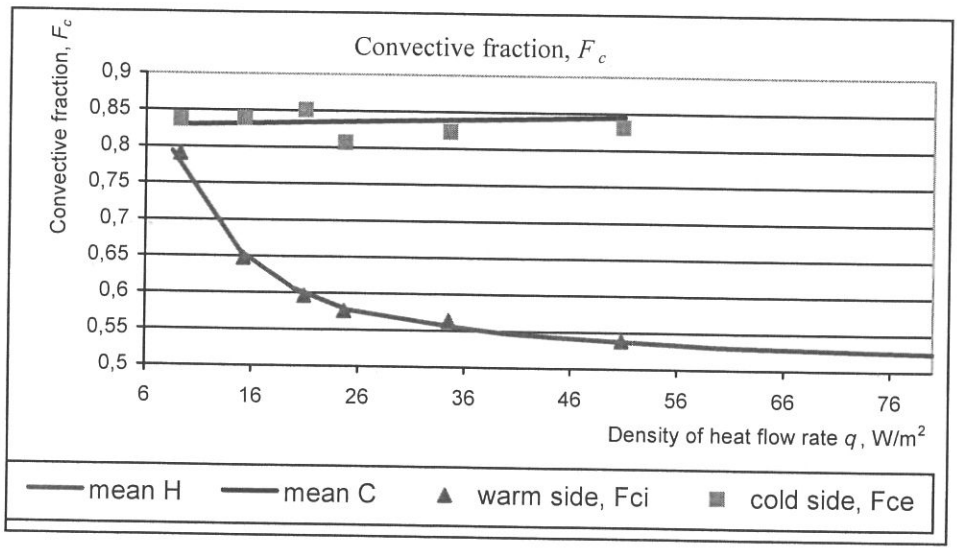
Fig 1. Window drawing (by the customer submitted information)

Annex 3. *Scheme of climate chamber „Hot box"*

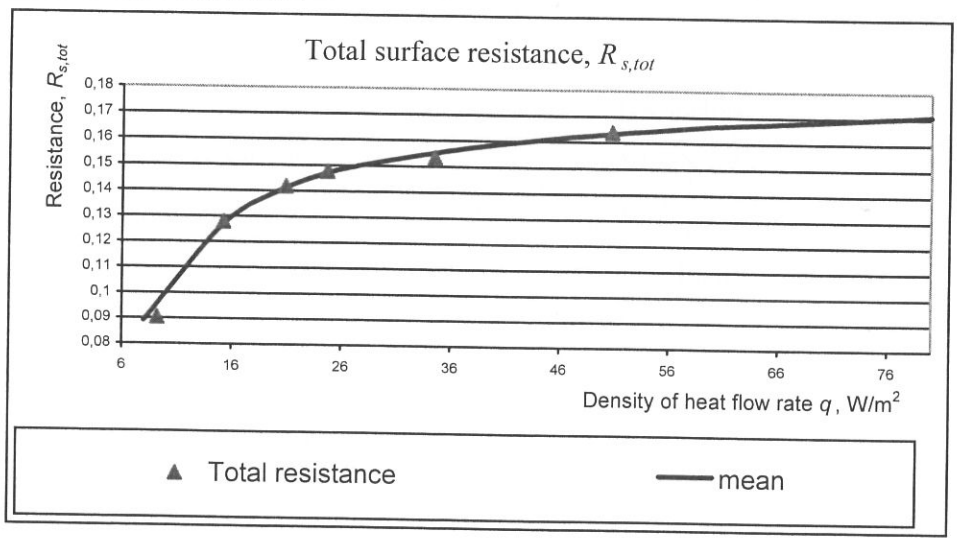


1. Warm side guard box:
   - internal dimensions 2800 × 2800 × 1100 mm;
   - wall thickness 130 mm, total thermal resistance about 3 $m^2 \cdot K/W$.
2. Guard air flows deflecting screen.
3. Electrical heater, power 660 W, controlled according to a set point temperature in metering box (6).
4. Electrical heater of metering box, power control from 13W to 660 W.
5. Warm side baffler (of metering box) with surface and air temperature sensors.
6. Metering box – internal dimensions 2400 × 2400 × 360 mm.
7. Surround panel: 200 mm thick, core material EPS polystyrene (faced with 3 mm thick cellular PVC plastic sheet on either side), thermal resistance about 6 $m^2 \cdot K/W$, 1484 x 1234 mm aperture for specimen mounting.
8. Cold side box:
   - internal dimensions 2800 × 2800 × 1100 mm;
   - wall thickness 130 mm, total thermal resistance about 3 $m^2 \cdot K/W$.
9. Cold side baffler with surface and air temperature sensors.
10. Cold side box controlled
11. Cold side controlled cooling air unit, max. cooling power up to 3 kW.
12. Cold side air cooling box with 5 speed motor fan. electrical heater, max. power 2 kW.

Calibration curves:
Convective fraction



Total surface resistance



Thermal resistance of the surround panel: $R_{sur} = 6{,}1918555 + 0{,}0518 \cdot t - 0{,}0075635 \cdot t^2$.