



BUILDING RESEARCH INSTITUTE - CERTIFICATION COMPANY Ltd.
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Certification Body for Products, Qualification, EPD and Quality Buildings Testing Laboratory Expert Institute

issues

CERTIFICATE

No. OV-15-0297

Producer: **THERMO INDUSTRY, a.s.**
Na Spravedlnosti 1533 ID: 287 81 481
530 02 Pardubice

Product: **AERO-THERM®**

Intended use: Modifying the external and internal building construction surfaces

This is to certify the effect of applying AERO-THERM® screed, a material with low spectral emissivity and high spectral reflectance, which forms the internal surface of the building structure for the purposes of reducing energy consumption in relation to space heating. The value of design transmission heat loss of the considered space is determined according to CSN EN 12831 Heating systems in buildings — Method for calculation of the design heat load for a heating source with dominant radiative component, while maintaining thermal comfort in the heated space.

According to CSN EN 12831, the average values of measured parameters set for the external and internal environment for the monitoring and evaluation period -

Design heat load of heated space **140 W**
and corresponding design energy for evaluated period **16,8 kWh**

The actual thermal performance of radiant heat measurements for the monitored evaluation period:

- Within the reference building without special feature added 17,9 kWh
and the corresponding design heat load **149 W**
- Within an identical building with internal AERO-THERM® screed 9,8 kWh
and corresponding design heat load **82 W**

This certifies that for the following parameters of the external and internal environment, it has proved possible to reduce the design heat load through the external structure from a radiant heat source, according to CSN EN 12831, by up to 35% to achieve the thermal comfort parameter of the internal space.

Average parameters of external and internal space for the monitored and evaluated period:

external air temperature $\Theta_e = 16,3^\circ\text{C}$, where $\Theta_{e,\text{min}} = 4,2^\circ\text{C}$, $\Theta_{e,\text{max}} = 31,8^\circ\text{C}$
internal air temperature of heated space of reference building $\Theta_i = 21,6^\circ\text{C}$; building with AERO-THERM $\Theta_i = 21,5^\circ\text{C}$
operative temperature 1100 mm above the floor of reference building $\Theta_v = 22,1^\circ\text{C}$; building with AERO-THERM $\Theta_v = 21,7^\circ\text{C}$

This certificate has been issued as part of a research project by the manufacturer THERMO INDUSTRY, a.s. to study of thermo active effect of AERO-THERM screed on the thermal protection of buildings. Results of the experimental measurements of the thermal behaviour of the building with internal surface adjustment by the thermo active AERO-THERM screed and the reference building are provided in the research report no. Z-15-004, dated 26 August 2015. Issued by The Building Research Institute – Certification Company Ltd..

An integral part of this certificate is an annex setting out the geometrical and thermal parameters of the structures and buildings.

Prague, 26 August 2015


Ing. Lubomír Keim, CSc.
director of company

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3013-C2_VP027-R11-Z1_100214

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Certification Body for Products, Qualification, EPD and Quality Buildings Testing Laboratory Expert Institute**Annex to certificate no. OV - 15 - 0297**Producer: **THERMO INDUSTRY, a.s.** ID: 287 81 481

Na Spravedlnosti 1533, 530 02 Pardubice

Product: **AERO-THERM®**

Intended use: Modifying the external and internal building construction surfaces.

This annex lists the geometrical and thermal parameters of the buildings, which monitored the impact of the thermo active AERO-THERM® screed on the thermal protection of buildings, measuring variants of the internal environment, internal surface temperatures and energy consumption for heating, with continuous monitoring of the external environment. Additional data of proven benefits for the thermal protection of buildings is also provided. The duration of the monitored period was 7 days and the duration of the evaluated period was 5 days.

Building parameters:

The two buildings were identical other than one had AERO-THERM® screed applied to the walls and ceiling. The buildings were freestanding, located in an unprotected position and adapted so that the air infiltration of the building envelope was close to zero. **The heat source was an electrical flat floor heating matt with a surface area of 7 m².**

internal width	3,0 m	internal length	4,0 m
ceiling height	2,6 m		
window area (south facing)	1,8 m ²	door area (north facing)	2,1 m ²
floor area	12 m ²	volume of heated space	31,2 m ³

Thermal technical parameters of building envelope design in the evaluated period:

Construction	Heat transfer coefficient U-Value [W/(m ² .K)]	Heat loss v [-]	Phase shift of thermal vibrations ψ [h]
Peripheral wall	0,29	1163	22,4
Ceiling	0,18	61	2,9
Floor	0,41	15	0,3
Window	0,9	-	-
Door	1,4	-	-

Operative temperature of the heated space at stated height above the floor in the evaluated period:

Reference Building with no particular screed		Reference Building with AERO-THERM® Screed	
operative temperature 0,15 m	22,2 °C	operative temperature 0,15 m	21,7 °C
1,1 m	22,1 °C	1,1 m	21,7 °C
1,7 m	22,0 °C	1,7 m	21,8 °C


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CERTIFICATE

No. OV-15-0298

Producer: **THERMO INDUSTRY, a.s.**
Na Spravedlnosti 1533 ID: 287 81 481
530 02 Pardubice

Product: **AERO-THERM®**

Intended use: Modifying the external and internal building construction surfaces

This is to certify the effect of applying AERO-THERM® screed, a material with low spectral emissivity and high spectral reflectance, which forms the internal surface of the building structure for the purposes of reducing energy consumption in relation to space heating. The value of design transmission heat loss of the considered space is determined according to CSN EN 12831 Heating systems in buildings — Method for calculation of the design heat load for a heating source with dominant convective component, while maintaining thermal comfort in the heated space.

According to CSN EN 12831, the average values of measured parameters set for the external and internal environment for the monitoring and evaluation period -

Design heat load of heated space **155 W**
and corresponding design energy for evaluated period **18,6 kWh**

The actual thermal performance of convective heat measurements for the monitored evaluation period:

- Within the reference building without special feature added **20,0 kWh**
and the corresponding design heat load **167 W**
- Within an identical building with internal AERO-THERM® screed **12,3 kWh**
and the corresponding design heat load **103 W**

This certifies that for the following parameters of the external and internal environment, it has proved possible to reduce the design heat load through the external structure from a convective heat source, according to CSN EN 12831, by up to 26% to achieve the thermal comfort parameter of the internal space.

Average parameters of external and internal space for the monitored and evaluated period:

external air temperature $\Theta_e = 15,7^\circ\text{C}$, where $\Theta_{e,\text{min}} = 7,6^\circ\text{C}$, $\Theta_{e,\text{max}} = 28,2^\circ\text{C}$
internal air temperature of heated space of reference building $\Theta_i = 21,7^\circ\text{C}$; building with AERO-THERM $\Theta_i = 21,4^\circ\text{C}$
operative temperature 1100 mm above the floor of reference building $\Theta_v = 22,1^\circ\text{C}$; building with AERO-THERM $\Theta_v = 21,5^\circ\text{C}$

This certificate has been issued as part of a research project by the manufacturer THERMO INDUSTRY, a.s. to study of thermo active effect of AERO-THERM screed on the thermal protection of buildings. Results of the experimental measurements of the thermal behaviour of the building with internal surface adjustment by the thermo active AERO-THERM screed and the reference building are provided in the research report no. Z-15-004, dated 26 August 2015. Issued by The Building Research Institute – Certification Company Ltd.

An integral part of this certificate is an annex setting out the geometrical and thermal parameters of the structures and buildings.

Prague, 26 August 2015


Ing. Lubomir Keim, CSc.
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Certification Body for Products, Qualification, EPD and Quality Buildings Testing Laboratory Expert Institute**Annex to certificate no. OV - 15 - 0298**

Producer: **THERMO INDUSTRY, a.s.** ID: 287 81 481
 Na Spravedlnosti 1533, 530 02 Pardubice

Product: **AERO-THERM®**

Intended use: Modifying the external and internal building construction surfaces

This annex lists the geometrical and thermal parameters of the buildings, which monitored the impact of the thermo active AERO-THERM® screed on the thermal protection of buildings, measuring variants of the internal environment, internal surface temperatures and energy consumption for heating, with continuous monitoring of the external environment. Additional data of proven benefits for the thermal protection of buildings is also provided. The duration of the monitored period was 7 days and the duration of the evaluated period was 5 days.

Building parameters:

The two buildings were identical other than one had AERO-THERM® screed applied to the walls and ceiling. The buildings were freestanding, located in an unprotected position and adapted so that the air infiltration of the building envelope was close to zero. **The heat source was mobile electric radiator which was placed under the window.**

internal width	3,0 m	internal length	4,0 m
ceiling height	2,6 m		
window area (south facing)	1,8 m ²	door area (north facing)	2,1 m ²
floor area	12 m ²	volume of heated space	31,2 m ³

Thermal technical parameters of building envelope design in the evaluated period:

Construction	Heat transfer coefficient U-Value [W/(m ² .K)]	Heat loss v [-]	Phase shift of thermal vibrations ψ [h]
Peripheral wall	0,29	1163	22,4
Ceiling	0,18	61	2,9
Floor	0,41	15	0,3
Window	0,9	-	-
Door	1,4	-	-

Operative temperature of the heated space at stated height above the floor in the evaluated period:

Reference Building with no particular screed		Reference Building with AERO-THERM® Screed	
operative temperature 0,15 m	21,6 °C	operative temperature 0,15 m	21,3 °C
1,1 m	22,1 °C	1,1 m	21,5 °C
1,7 m	22,2 °C	1,7 m	21,7 °C


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