

UNIVERSITY OF ATHENS  
DEPARTMENT OF PHYSICS  
DIVISION OF APPLIED PHYSICS  
GROUP FOR STUDIES ON THE BUILT ENVIRONMENT

Energy Study Report,

Department of Physics of the University of Athens

SILATEX REFLECT & NEOROOF & DEPRON 6mm

The Group for Studies on the Built Environment, Department of Physics of the University of Athens, carried out simulations using TRNSYS software, for the company NEOTEX, under a contract signed between the National and Kapodistrian University of Athens – Special Account for Research Grants and NEOTEX S.A. on 13.5.2011. The initial conditions/assumptions used are described in detail in the relevant study, and in summary are as follows:

A one-storied detached house of an area of  $76.5\text{m}^2$ , assumed to have been built prior to the implementation of the Regulation on Thermal Insulation.

Structural elements for the reference building

	Description	u-value W/(m <sup>2</sup> K)	SR
Bearing structure	Reinforced concrete. No insulation	2.57	0.35
External walls	Single brickwork made of clay bricks and two-side plasterwork. No insulation	2.75	0.35
Inner walls	Single brickwork (stretcher bond) and two-side plasterwork.	2.75	
Terrace	Non-insulated surface of concrete, cement mortar. No insulation	3.01	0.25

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ΜΕΤΑΦΡΑΣΤΙΚΗ ΥΠΗΡΕΣΙΑ

RÉPUBLIQUE HELLÉNIQUE, MINISTÈRE DES AFFAIRES ÉTRANGÈRES  
SERVICE DES TRADUCTIONS

HELLENIC REPUBLIC, MINISTRY OF FOREIGN AFFAIRS  
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Glasswork	Single glass window panes	5.68	
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A shading coefficient of 0.8 for summer months and 0.2 for winter months was assumed.

Heating was assumed to be achieved using an old technology burner having a COP=0.8.

Cooling was assumed to be achieved using old technology air-conditioning units having a COP=1.5.

Calculations were made for all climatic zones of Greece. The changes from the reference buildings are described in the following table:

#### Representative areas of each climatic zone

Zone A: Heraklion

Zone B: Athens (Elliniko)

Zone C: Thessaloniki

Zone D: Kastoria

*Schematic representation of the climatic zones of the Hellenic territory. Source: TOTEE 20701-3/2010 (TOTEE= Technical Guidelines of the Technical Chamber of Greece)*

Structural elements for the building following the combination of solutions proposed by NEOTEX S.A.

	Description	u-value W/(m <sup>2</sup> K)	SR	Comments
Bearing structure	Reinforced concrete. DEPRON 6mm ON THE INSIDE	1.99	0.88	SILATEX REFLECT <sup>1</sup>

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External walls	Single brickwork made of clay bricks and two-side plasterwork. DEPRON 6mm ON THE INSIDE	1.98	0.88	SILATEX REFLECT* <sup>1</sup>
Inner walls	Single brickwork (stretcher bond) and two-side plasterwork.	2.75		
Terrace	Non-insulated surface of concrete, cement mortar. DEPRON 6mm ON THE INSIDE	2.18	0.88	NEOROOF* <sup>2</sup>
Glasswork	Single glass window panes	5.68		

\*1 Infrared Emittance (c) value = 0.86 (+/- 0.02)

\*2 Infrared Emittance (c) value = 0.86 (+/-0.02)

Percentage of variation in annual primary energy consumption compared to the reference building for all climatic zones.

		<u>SILATEX REFLECT &amp; NEOROOF &amp; DEPRON 6mm</u>
% Variation in primary energy consumption	Climatic Zone A	-31.2%
	Climatic Zone B	-25.1%
	Climatic Zone C	-17.2%
	Climatic Zone D	-5.3%

Date: 26.5.2011

Professor Santamouris Mattheos

(Signed)

(Seal: University of Athens – Department of Physics)

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True translation of the attached document in Greek.

Athens, 29.7.2011 M. Kontopidou – Translator

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