

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

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 76.5m², 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 ² 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
Glasswork	Single glass window panes	5.68	

ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ, ΥΠΟΥΡΓΕΙΟ ΕΞΩΤΕΡΙΚΩΝ
ΜΕΤΑΦΡΑΣΤΙΚΗ ΥΠΗΡΕΣΙΑ

RÉPUBLIQUE HELLÉNIQUE, MINISTÈRE DES AFFAIRES ÉTRANGÈRES
SERVICE DES TRADUCTIONS

HELLENIC REPUBLIC, MINISTRY OF FOREIGN AFFAIRS
TRANSLATIONS SERVICE

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 building 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 ² K)	SR	Comments
Bearing structure	Reinforced concrete. No insulation	2.57	0.88	SILATEX REFLECT* ¹
External walls	Single brickwork made of clay bricks and two-side plasterwork. No insulation	2.75	0.88	SILATEX REFLECT* ¹
Inner walls	Single brickwork (stretcher	2.75		

ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ, ΥΠΟΥΡΓΕΙΟ ΕΞΩΤΕΡΙΚΩΝ
ΜΕΤΑΦΡΑΣΤΙΚΗ ΥΠΗΡΕΣΙΑ

RÉPUBLIQUE HELLÉNIQUE, MINISTÈRE DES AFFAIRES ÉTRANGÈRES
SERVICE DES TRADUCTIONS

HELLENIC REPUBLIC, MINISTRY OF FOREIGN AFFAIRS
TRANSLATIONS SERVICE



	bond) and two-side plasterwork.			
Terrace	Non-insulated surface of concrete, cement mortar. No insulation	3.01	0.88	NEOROOF ²
Glasswork	Single glass window panes	5.68		

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

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

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

		<u>SILATEX REFLECT & NEOROOF</u>
% Variation in primary energy consumption for cooling	Climatic Zone A	-68.8%
	Climatic Zone B	-59.7%
	Climatic Zone C	-72.4%
	Climatic Zone D	-87.0%

It is noted that an overall annual primary energy saving (for heating and cooling) of up to 19.6% is achieved in the warmer climatic zones.

Date: 26.5.2011

Professor Santamouris Mattheos

(Signed)

(Seal: University of Athens – Department of Physics)

True photocopy attested by the Citizen Services Center of the City of Athens. Athens, 1.8.2011 (Signed-Sealed)

=====

True translation of the attached certified copy in Greek.

Athens, 5.9.2011 M. Kontopidou – Translator

ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ, ΥΠΟΥΡΓΕΙΟ ΕΞΩΤΕΡΙΚΩΝ
ΜΕΤΑΦΡΑΣΤΙΚΗ ΥΠΗΡΕΣΙΑ

RÉPUBLIQUE HELLÉNIQUE, MINISTÈRE DES AFFAIRES ÉTRANGÈRES
SERVICE DES TRADUCTIONS

HELLENIC REPUBLIC, MINISTRY OF FOREIGN AFFAIRS
TRANSLATIONS SERVICE